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Site-Level Normalized Metered Energy Consumption (NMEC) Impact and Net-to-Gross Evaluation, Program Year 2024

California Public Utilities Commission

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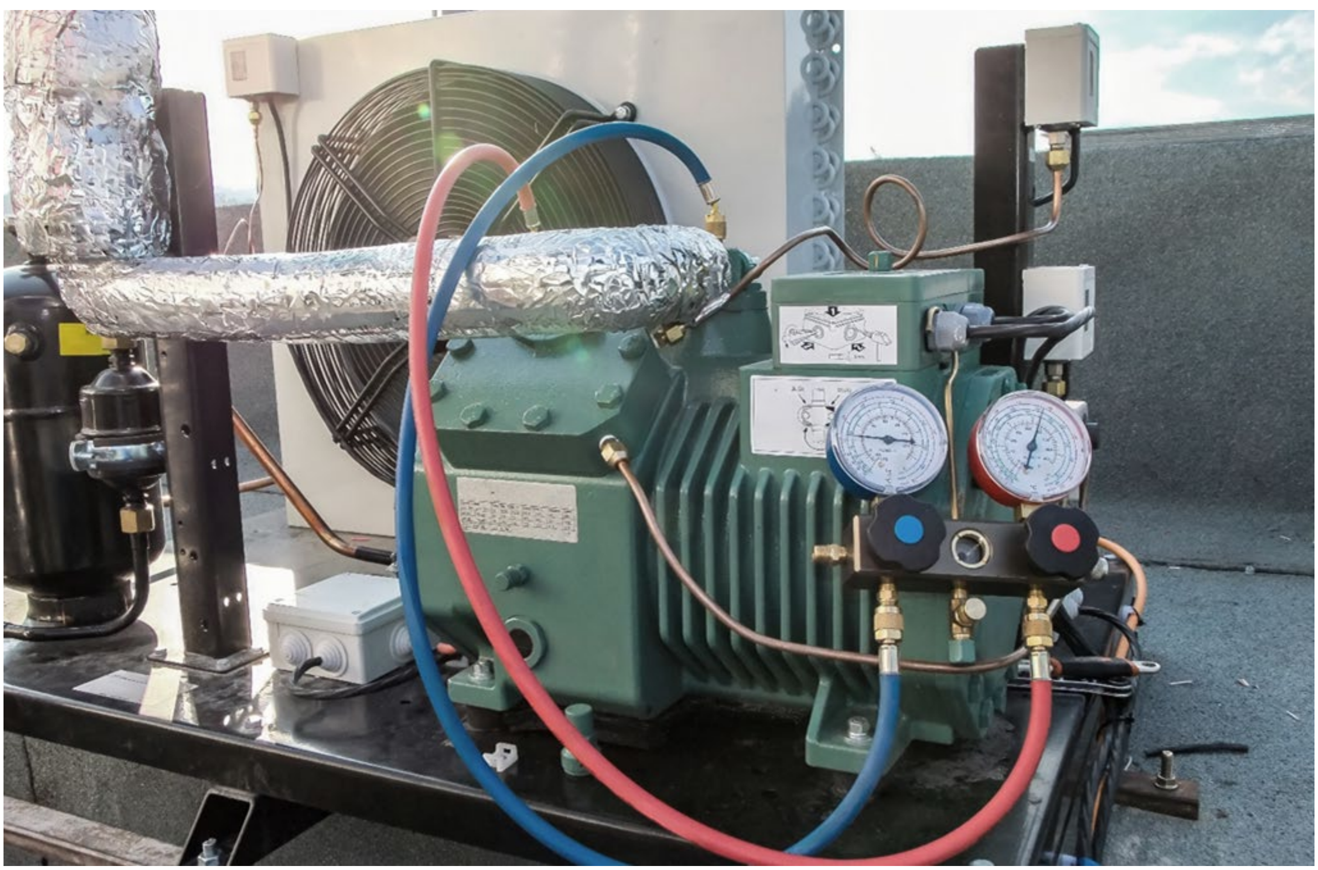

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Glossary of key terms and acronyms

Avoided Cost Calculator (ACC) – ACC estimates hourly, system-level costs of providing electric or gas services for 30 years and is updated every two years, with the most recent major update in 2024. Total system benefit uses avoided costs to represent the total present value lifecycle benefits of energy efficiency programs.

Baseline period – The 12-month period leading up to the energy efficiency intervention or retrofit.

Calculated savings – For NMEC projects, a sum of the initial claimed savings and trued-up savings found in CEDARS. Calculated savings is expected to equal normalized savings.

California Database for Energy Efficiency Resources (DEER) – This database contains information on energy efficient technologies and measures. DEER provides estimates of the energy-savings potential for these technologies in residential and non-residential applications. DEER is used by California Energy Efficiency (EE) Program Administrators (PAs), private sector implementers, and the EE industry across the country to develop and design energy efficiency programs.

California Energy Data and Reporting System (CEDARS) – This database securely manages California Energy Efficiency Program data reported to the Commission by investor-owned utilities, regional energy networks (RENs), and certain community choice aggregators (CCAs).

Coefficient of determination (R-squared or R^2) – A model goodness-of-fit statistic, the proportion of the variation in the dependent variable (in this case, energy consumption) explained by the regression model. The higher the R^2, the better the model explains variation in the dependent variable.

Coefficient of variation of the root mean square error (CV(RMSE)) – A model goodness-of-fit statistic, a measure of variability (the square root of the consumption model's squared error) relative to the average value of the variable (in this case, average energy consumption) used to determine how well the model predicting the variable (in this case, baseline consumption) fits the data. The lower the CVRMSE, the better the model fit.

Cost-effectiveness tool (CET) – An online tool designed for the CPUC to determine the cost effectiveness and examine other properties of EE programs and portfolios.

Custom project review (CPR) – The process of selecting custom projects, submitted biweekly by the program administrators, for review of all forecasted savings parameters and project documents.

Disposition – Usually, the CPUC Project Review document that summarizes any issues or comments related to project eligibility, baseline, savings calculation, or program influence documentation.

Documented realization rate (DRR) – The ratio of the evaluation-verified savings relative to the savings forecasted in the project documentation.

Documented savings – Meter-based savings calculated by the PAs at the end of the reporting period, which serve as the basis for final claimed savings. We refer to these as documented savings, as the PAs provide the supporting data, models, and results as part of the evaluation.

Early opinion – Review that allows the PAs to request from CPUC staff clarification of custom-project policies or rules before submitting a project.

Effective useful life (EUL) – An estimate of the median number of years that installed measures are still in place and operable.

Final claimed savings – Meter-based savings calculated by the PAs at the end of a project's reporting period, covering the 12-month period after installation. Final claimed savings equal the initial savings the PAs claim in CEDARS at the time of installation, plus any true-up savings based on meter-based calculations.

Forecasted savings – An engineering-based savings estimate calculated before installation.

Fractional savings – The percent of annual energy usage saved through program participation. For NMEC projects, the rulebook recommends that projects have a forecasted fractional savings of at least 10%.

Fractional savings uncertainty (FSU) – CV(RMSE) combined with percent savings; this statistic is similar to relative precision in that it measures the uncertainty around the expected savings. As the value of FSU decreases, confidence in the estimated savings level increases.

Gross realization rate (GRR) – The ratio of achieved energy savings to forecasted energy savings. As a multiplier on Unit Energy Savings, the GRR considers the likelihood that not all CPUC-approved projects undertaken by PAs will come to fruition.

Gross savings – The energy savings from installed energy efficiency measures irrespective of whether those savings are from free riders, i.e., those customers who would have installed the measure(s) even without the incentives offered under the program.

Impact shape – A unitized hourly profile of annual electric or gas savings that represents the distribution of savings across the hours of the year.

Initial claimed savings – For NMEC projects, the forecasted savings claimed in CEDARS following project implementation.

International Performance Measurement and Verification Protocol (IPMVP) [1] – A standardized approach to measuring and verifying energy efficiency investments. IPMVP incorporates M&V best practices in a non-prescriptive framework, allowing it to be applied flexibly based on a measure's application and the available information.

Lifecycle savings – The savings associated with the lifetime of an efficiency measure undertaken by a program participant. Equipment replaced early in its useful life might receive reduced savings to account for the untapped useful life of the outgoing equipment.

Measure – A specific customer action that reduces or otherwise modifies energy end-use patterns; a product whose installation and operation at a customer's premises reduces the customer's on-site energy use.

Measure application type (MAT) – The installation basis for efficiency claims. There are seven approved measure application types: Add-on Equipment, Accelerated Replacement, BRO-Behavioral, BRO-Operational, BRO-Retro-commissioning (RCx), New Construction, and Normal Replacement.

Meter-based savings – Project-level savings measured or estimated using metered energy consumption data. These estimates are derived from metered data and energy-consumption models.

Net savings – The savings realized after accounting for free-ridership, calculated by multiplying gross savings by the net-to-gross ratio.

Net-to-gross ratio (NTGR) – A ratio or percentage of net program savings divided by gross or total impacts; used to estimate and describe the free-ridership that may be occurring within energy efficiency programs.

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[1] Efficiency Valuation Organization (EVO). https://evo-world.org/en/.

Non-routine adjustment (NRA) –Adjustments used to account for the effects of non-routine events (NREs), when the NRE unsuitably distorts the baseline or reporting period adjustment models. NRAs are made separately from routine adjustments, which use independent variables in the adjustment model. NRAs are developed using methods including, but not limited to, engineering analysis, sub-metering, or other analyses using the metered energy use data.

Non-routine event (NRE) – A change not related to the energy efficiency intervention but affecting energy use in the baseline or the reporting period and which must be accounted for in savings estimations. Typical NREs include changes in facility size, changes in facility activity not affected by the energy efficiency measures (such as addition or removal of a data center), or other modifications to the facility or its operation that alter energy consumption patterns and are unrelated to the program intervention.

Normalization – A process by which consumption estimates from two different periods are put on a common basis. Baseline and performance period model predictions are observed at common values for the model's independent variables, e.g., temperature variables from typical meteorological year (TMY) data. Normalization accounts for differences in underlying drivers of consumption during the baseline and performance periods.

Normalized mean bias error (NMBE) – A model goodness-of-fit statistic that can indicate whether a model is overestimating or underestimating energy use.

Normalized metered energy consumption (NMEC) – High opportunity programs or projects that provide incentives based on metered energy consumption. This initiative fulfills the directive for utilities to quickly identify high energy-efficiency savings opportunities in existing buildings using a program and project approach where incentive payment and claimed savings are based on NMEC and include only approved NMEC building programs.

Normalized savings – Savings calculated as the difference between a weather normalized baseline and performance period statistical models.

Occupied/unoccupied split – Within the standard time-of-week and temperature (TOWT) model structure, the use of two models to account for changes in occupancy over the course of a week. This enables the model to capture an occupancy-temperature interaction.

Parameter – Output of a regression model. For NMEC models, parameters measure how fuel consumption changes in response to a change in a given independent variable.

Peak demand – The maximum level of metered demand during a specified peak demand period for installed or implemented measures. CPUC Resolution E-4952 approved the Database for Energy-Efficient Resources (DEER) for 2020 and revised the DEER Peak Period definition to 4:00 p.m. to 9:00 p.m. effective January 1, 2020

Performance period – The 12-month period following the energy efficiency intervention or retrofit, during which savings are realized.

Program administrator (PA) – An entity tasked with the functions of portfolio management of energy efficiency programs and program choice, i.e., Pacific Gas & Electric (PG&E), Southern California Edison (SCE), Southern California Gas (SCG), and San Diego Gas & Electric (SDGE), Inland Regional Energy Network (IREN).

p value – The probability that a given parameter's true value is different from zero.

Relative precision – A ratio of the error bound divided by the value of the measurement itself. This provides the error on a relative basis, frequently used to show uncertainty as a fraction of a quantity. In this report, all relative precisions are provided at the 90% confidence interval, which means that in repeated sampling, 90 times out of 100 the true value will fall within the lower and upper bounds of the estimate.

Savings delta – The difference between normalized savings and forecasted savings.

Spline – A model that is a collection of lines with different slopes that change at defined points (nodes), allowing for more flexible response to the given independent variable than a constant linear relationship.

Temperature node – In a temperature spline model, a boundary temperature at which the slope changes.

Time-of-week and temperature (TOWT) model – A standard regression model approach whereby fuel consumption is modeled against temperature, included as a spline and a set of time-of-week indicator variables, generally at the daily- or hourly-level. May be split into occupied and unoccupied models. Other variables may also be included.

Total System Benefit (TSB) – TSB is an expression, in dollars, of the lifecycle energy, ancillary services, generation capacity, transmission and distribution capacity, and GHG benefits of energy efficiency activities, on an annual basis.

True-up savings – The savings claimed in CEDARS following the end of the performance period. This value is expected to be the difference between initial claimed savings and the normalized savings.

Typical meteorological year (TMY) – A data set of temperatures representing a typical year and used to normalize NMEC models to weather conditions. The CALEE CZ data sets are the standard used for NMEC.

Verified savings – Project-level savings confirmed by the third-party independent evaluation, such as the current evaluation.

1 EXECUTIVE SUMMARY

This report presents DNV's evaluation of the Site-Level Normalized Metered Energy Consumption (SLNMEC) Programs for program year (PY) 2024, performed on behalf of the California Public Utilities Commission (CPUC). This study evaluates the impacts of the SLNMEC programs implemented by five Program Administrators (PA)[2] and assesses how effectively the programs support energy efficiency projects.

1.1 Study background

NMEC uses statistical methods to quantify the impact of energy efficiency programs by comparing pre- and post-intervention meter data. Unlike traditional energy efficiency programs that claim final savings based on the expected and predefined efficiency of an intervention,[3] NMEC programs calculate and claim final savings based on actual measured changes in energy consumption at the meter.

This evaluation builds on the PY2023 Additional Research Report,[4] the PY2020 – PY2022[5] and PY2023[6] evaluations, and the SLNMEC Evaluability Study[7] and is guided by the NMEC workplan.[8] This evaluation estimates how much energy customers save at the meter (energy impacts), the grid impact of those savings (Total System Benefit or TSB),[9] and whether the programs caused those savings (attributed to SLNMEC program influence). Program influence, in addition to meter-based savings, is key to this evaluation as it assesses how well ratepayer funded programs are driving energy efficiency improvements by spurring new projects or expanding or accellerating planned projects.

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[2] The five PAs with programs included in this evaluation are Pacific Gas and Electric Company (PG&E), San Diego Gas and Electric Company (SDG&E), Southern California Edison (SCE), Southern California Regional Energy Network (SoCalREN), and Inland Regional Energy Network (IREN).

[3] Interventions in traditional energy efficiency programs typically consist of the installation of energy efficient technologies with researched, vetted, and predictable savings that are well-established. We refer to savings from these energy efficiency technologies as "deemed" or "calculated" savings. The savings from installing a high-efficiency lightbulb, for example, are well-established, and non-NMEC energy efficiency programs could use those known values to claim savings. This contrasts with custom energy efficiency technologies and services that require unique savings calculations and do not use predefined values.

[4] DNV, *Site-Level Normalized Metered Energy Consumption (NMEC) Impact Additional Research Report*, pda.energydataweb.com, October 30, 2025, https://pda.energydataweb.com/api/view/4239/Site-Level%20NMEC%20Additional%20Research%20PY2023%20Final.pdf.

[5] DNV, *Site-Level Normalized Metered Energy Consumption (NMEC) Impact and Net-to-Gross Evaluation, Program Years 2020–2022*, calmac.org, May 23, 2024, https://www.calmac.org/publications/Site-level_NMEC_Evaluation_Final_Report_PY2020-2022.pdf.

[6] DNV, *Site-Level Normalized Metered Energy Consumption (NMEC) Impact and Net-to-Gross Evaluation, Program Year 2023*, calmac.org, June 10, 2025, https://www.calmac.org/publications/Site-level_NMEC_Evaluation_PY2023.pdf.

[7] DNV, *Site-Level NMEC Evaluability Study, Program Years 2020-2021*, calmac.org, December 7, 2023, https://www.calmac.org/publications/Site-Specific_NMEC_Evaluability_Study_Report_-_Final.pdf.

[8] DNV, *Normalized Metered Energy Consumption (NMEC) Evaluation, Measurement, & Verification Work Plan*, pda.energydataweb.com, October 29, 2025, https://pda.energydataweb.com/#!/documents/4237/view.

[9] The CPUC adopted TSB as the new goal metric for energy efficiency programs starting in PY2024. TSB assigns a dollar value to the lifecycle energy, capacity, and greenhouse gas benefits of a program, encouraging "high value" load reduction and longer-duration energy savings while being fuel agnostic.

1.2 Evaluation objectives

The objectives of this evaluation include:

1. **Evaluate the accuracy and attribution of programs' forecasted and achieved savings.** Given the embedded evaluation structure of SLNMEC programs, DNV sought to replicate and validate the embedded evaluation results for site-level NMEC projects that made final savings claims in PY2024. The evaluation team estimated TSB, impacts at the meter (gross kWh,[10] peak kW,[11] and therm savings), and whether the programs caused those savings.
2. **Provide early feedback on projects that have not yet made final savings claims so that programs can make adjustments earlier in the evaluation cycle.**
3. **Identify whether program Measurement and Verification (M&V) plans and practices comply with the protocols in the CPUC's "Rulebook for Programs and Projects Based on Normalized Metered Energy Consumption version 2.0" (NMEC rulebook)[12] and are sufficient to ensure successful SLNMEC implementation.** The CPUC would like to inform future policy decision making by gathering additional data about the strengths of and barriers to effective SLNMEC programs.

1.3 Study approach

This report presents both gross and net savings.[13] For the gross evaluation, the evaluation team reviewed important project documentation and, where necessary, updated the project's approach to calculate project-level savings. For the net evaluation, the evaluation team investigated how much the program influenced the participant's decision to make energy efficient improvements. As the CPUC adopted TSB as the new goal metric for energy efficiency programs starting in PY2024, the evaluation team also conducted an exploratory assessment of current SLNMEC TSB claiming practices. Figure 1-1 illustrates the gross and net savings methodology in more detail.

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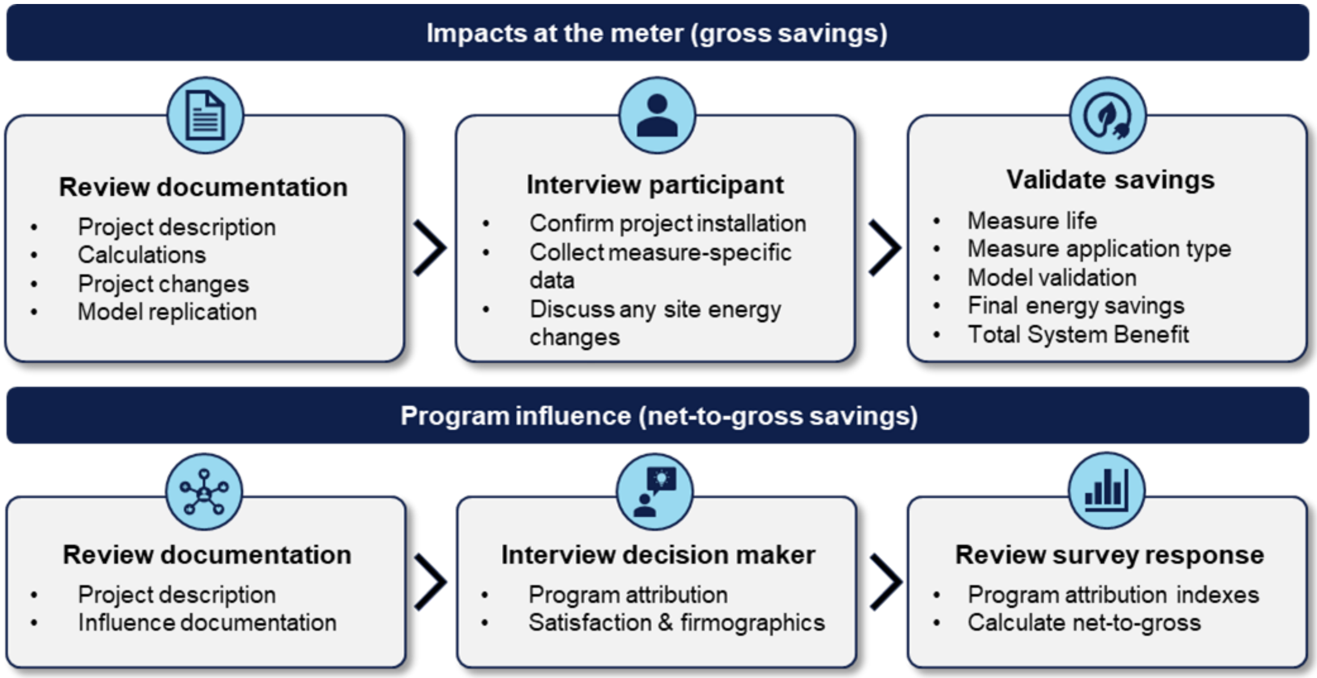
[10] Gross savings are the energy savings from installed energy efficiency measures irrespective of whether those savings are from free riders—those customers who would have installed the measure(s) even without the incentives offered under the program.

[11] Peak savings are those that occur when electrical demand is highest. Meeting that peak demand is particularly expensive, as strain on the grid is greatest and reserve generation must be brought online. Energy savings during that time are especially beneficial. Average peak demand savings are calculated using the hours from 4pm to 9pm during the three hottest consecutive weekdays of the year. A detailed description of the peak demand period and how it is calculated can be found in CPUC, *Resolution E-5152*, August 5, 2021, p. A-12, cedars.cpuc.ca.gov/deer-resources/deer-versions/2023/file/11/download/.

[12] CPUC, *Rulebook for Programs and Projects Based on Normalized Metered Energy Consumption*, January 7, 2020, https://www.cpuc.ca.gov/-/media/cpuc-website/files/legacyfiles/n/6442463694-nmec-rulebook2-0.pdf. DNV evaluated PY2024 programs under this version of the NMEC rulebook, not version 2.1, which was released in 2025.

[13] Net savings are changes in energy use attributable to a particular energy efficiency program. They include savings from participants who would not have purchased energy efficient technologies without the program. Savings attributable to participants who would have purchased energy efficient technologies with or without the program influence are excluded from net savings. These participants, whom the program did not influence, are considered free riders.

Figure 1-1. SLNMEC gross and net savings methods



1.4 Evaluated projects

This study evaluated two distinct groups of projects, defined by claim status in PY2024:

1. **Projects with final meter-based savings claims in PY2024.** A total of 42 projects. The evaluation team evaluated the savings impact at the meter (gross savings) for 24 of the 42 projects with final savings claims, as shown in Table 1-1.

Table 1-1. SLNMEC evaluation population and savings claimed in the tracking data

PA	Projects	First year savings			Lifecycle savings		TSB*
		kWh	kW	therm	kWh	therm	$
Gross evaluation population							
PG&E	22	10,282,490	1,574	102,418	80,105,966	497,997	3,771,980
SDG&E	2	969,133	128	0	11,629,600	0	455,324
SCE	13	909,733	186	-68	10,445,791	-799	1,703,867
SoCalREN	5	367,753	14	0	3,351,615	0	358,283
Total	**42**	**12,529,110**	**1,901**	**102,350**	**105,532,971**	**497,198**	**6,289,454**

* PG&E claimed negative TSB for a single project which had a final claimed TSB of -4,684,078 in the tracking data. This project's initial claim in 2021 did not include TSB, while the true-up claim did—resulting in the negative final TSB claim. We removed this outlier from the TSB claims shown in this table.

2. **Projects that made initial claims in PY2024**. This group includes 48 projects that completed installation in PY2024 but had not yet finalized savings at the time of evaluation. For this group, the evaluation team conducted (1) an early partial review of 20 projects to provide early feedback and facilitate continuous program improvement and (2) an assessment of all projects to gauge program influence on project decision making net-to-gross (NTG).

1.4.1 PY2024 savings impacts

Gross savings reflect the extent to which all ratepayer subsidized projects—those that needed an incentive and those that did not—are increasing efficiency and easing grid demand, benefits that increase reliability and drive down system costs borne by all ratepayers. This gross evaluation looked at 24 of the 42 projects with final claims in PY2024.

Table 1-2 presents the statewide evaluated electricity, peak demand, and gas savings. The table shows two sets of realization rates: a gross realization rate (GRR), which compares the evaluated savings (shown in the "verified" column in the tables) with the savings claimed in the tracking data ("claimed"), and the net-to-gross ratio (NTGR) calculated last year[14] for the same group of projects. While gross NMEC savings methods measure a project's impact at the meter, NTGRs represent the portion of those gross savings that can be attributed to the program's influence, assessing how well program funds motivate participant decisions—as opposed to simply subsidizing projects that would happen anyway. Evaluators use NTGRs to determine net savings ("net"), which reflect the savings at the meter motivated by program funds. PA-level results are discussed in the Results section of the main report.

Table 1-2. PY2024 gross and net evaluated savings

Savings category	Unit	Sample size	Claimed*	Verified**	GRR†	NTGR	Net
First-year electricity savings	kWh	24	12,529,110	11,748,983	93.8%	75.5%	8,867,106
Lifecycle electricity savings	kWh	24	105,532,971	90,720,741	86.0%	74.7%	67,802,153
Peak demand savings	kW	16	1,901	1,736	91.3%	78.0%	1,353
First-year energy savings	therm	3	102,350	90,613	88.5%	76.1%	68,993
Lifecycle energy savings	therm	3	497,198	384,203	77.3%	76.0%	291,994

* Claimed savings are the final claimed project savings in the tracking data.
** Verified savings are the evaluated project savings.
† Gross realization rate (GRR) compares verified savings with the claimed savings.

Table 1-3 presents the statewide claimed and evaluated TSB for the same group. TSB is a newly adopted metric that incorporates the value of savings in each hour. While first-year GRRs reflect evaluated delivered savings at the meter, TSB RRs also incorporate measure life, program influence, avoided cost assumptions, and all fuel types. These additional factors account for the differences between the two metrics.

Table 1-3 SLNMEC PY2024 Total System Benefit

Savings category	Sample size	Claimed	TSB RR	Verified
Total System Benefit	**24**	**6,289,454**	**64.5%**	**4,054,401**

* PG&E claimed negative TSB for a single project with a final claimed TSB of -4,684,078 in the tracking data. This project did not include a TSB value in its initial claim, but reported a negative TSB at true-up. We removed this outlier from the results shown in the table. The statewide TSB realization rate (RR) is 46.4% when this outlier is included.

1.4.2 Net-to-gross ratios

The evaluation team interviewed participants about the influence of program funds on their decisions before their projects submitted final savings claims. This report presents the results of this year's NTG evaluation here to provide insight into the current influence of programs on participant decision-making.

> "The program gave the ability to come up with a reasonable energy efficiency project that is viable to the company keeping in mind all the things that are important to us, such as cost outlays and capital expenditures."
> - SLNMEC participant

14 DNV, *Site-Level NMEC Evaluation, PY2023*, June 10, 2025, https://www.calmac.org/publications/Site-level_NMEC_Evaluation_PY2023.pdf.

> We appreciate "the flexibility of the measures you can install, and that the measures are performance based. It's not just engineering calculations, but it's showing the actual performance and savings for your specific facility."
> - SLNMEC participant

Table 1-4 shows the statewide NTGRs, along with the count of projects, the count of customers, the NTGR, and the relative precision (RP%). Results are split by electricity (kWh), demand (kW), and natural gas (therm). The statewide NTGR is 71.9% for energy savings, 58.4% for demand savings, and 67.1% for natural gas savings. This evaluation's NTGRs are based on interviews with 94% of program participants.

Table 1-4. Net-to-gross ratios by PA

Savings Category	Projects	Customers	First-year	
			NTGR*	RP%**
Electricity (kWh)	47	11	71.9%	±15.0%
Demand (kW)	45	9	58.4%	±45.0%
Natural gas (therm)	13	8	67.1%	±0.0%

* DNV used tracked savings in the ratio estimation.
** Relative precision is at the 90% confidence level.
† The statewide relative precision is greater than zero despite the PG&E relative precision being zero and other PA relative precisions being N/A because the combined statewide sample does not include the entire population.

1.5 Key findings & recommendations

This section presents the key findings and recommendations from this evaluation.

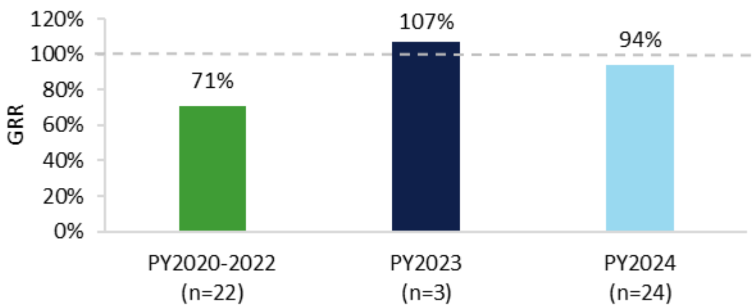
1.5.1 Energy savings findings and recommendations

This section presents the findings and recommendations regarding the savings impacts and program influence over the last three evaluations.

SLNMEC programs continued to achieve high savings realization rates.

Figure 1-2 shows the statewide SLNMEC GRRs for first-year electricity (kWh) savings over the last three evaluations. The GRR of 94% indicates both that verified savings are close to the program normalized savings and that the tracking data claims have substantially improved since PY2020 – 2022, when tracking data errors drove the largest savings discrepancy.

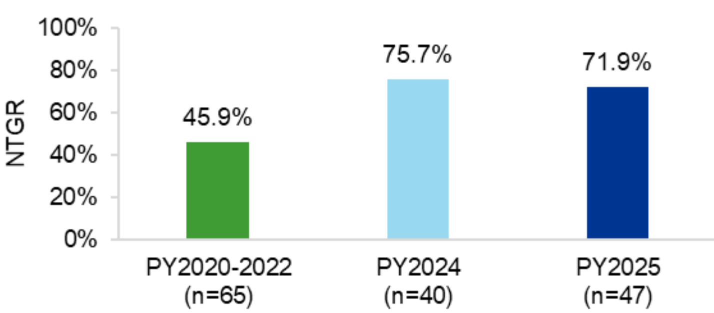
Figure 1-2. Statewide electricity GRRs over time



Participants continued to indicate that the SLNMEC programs were highly influential in their decision to complete energy efficiency projects.

Figure 1-3 shows the statewide SLNMEC NTGRs for electricity over the last three evaluations. The program year listed is the year in which the evaluation team will apply the ratio, once the project savings are finalized. SLNMEC programs continued to demonstrate strong program influence, despite one respondent indicating that they were already planning to do the projects at nine sites without the program, reducing the NTGR from 84.4% to a still-strong 71.9%. The SLNMEC electricity NTGRs are higher than the NTGRs for population NMEC programs (53%) and Commercial, Industrial, and Agricultural programs (56%) and reflect strong program motivation for claimed savings.

Figure 1-3. Statewide electricity NTGR over time



1.5.2 Findings and recommendations for reducing SLNMEC savings risks

In the planning stages, the NMEC rulebook requires that a project be appropriate for meter-based methods. The programs pursued multiple projects despite issues evident during project planning that foretold conflicts with a meter-based savings approach.

Sites with other large, planned changes. Six sites undertook significant construction projects at the same time as the SLNMEC program-funded energy efficiency projects. These activities impacted both the total energy consumption at the site and the distribution of that consumption, obscuring the impact of the ratepayer-funded energy efficiency project.

Sites with process load driven consumption. The NMEC rulebook makes clear that SLNMEC is designed for commercial loads that are stable over time. Manufacturing and industrial site energy use is often driven by production levels, which can change over time and directly affect energy consumption. Multiple evaluated sites, including a food processing facility and an advanced aerospace electronics manufacturing facility, indicated the presence of process load.

Sites likely to increase in energy usage. Five schools with HVAC retrofits experienced increased energy usage following project implementation. Prior to the retrofit, occupants could open windows to bypass mechanical ventilation. The new systems delivered the code-required minimum ventilation, increasing HVAC operation and meter-level energy usage, rather than producing measurable savings.

These issues undermine NMEC's core assumption that the impact of energy efficiency projects can be isolated using whole-facility metered data. When the customer and PA identify or foresee conditions like the above during the project planning phase, they should consider savings pathways other than NMEC, such as custom programs.

Recommendations 1 – 3 | **Project planning: assessing eligibility**

- Sites with large planned changes not related to their NMEC program project should only participate in NMEC programs if they can isolate the SLNMEC energy efficiency impacts from the other changes through either submetering or another suitable approach. When not feasible, PAs should redirect projects to a methodology that can more accurately estimate savings, such as calculated savings through the custom pathway.
- PAs should review site-level energy consumption data over multiple years to assess whether it can support a reliable modeled savings approach. They should also follow the commercial and commercial-like eligibility requirements outlined in NMEC rulebooks 2.0 and 2.1 to reduce the likelihood of selecting sites for which NMEC approaches cannot create effective models.
- PAs should document the condition and efficiency of replaced equipment (e.g., operational viability and nameplate/rated efficiency) and the code-minimum baseline assumptions.

Implementation of these recommendations should result in fewer model failures
and zero-savings determinations in future evaluations leading to higher program realization rates.

Documentation of the full planning and implementation process of each project is essential. While programs have improved documentation dramatically since the last evaluation,[15] updating documentation as projects evolve is equally critical and remains an area for improvement. Unforeseen scope changes within several projects led to inaccurate claims of savings and the duration of project savings (i.e., a project's effective useful life or EUL).

Fewer measures installed than planned, saving less energy. Five schools installed fewer measures than planned, leading to a significant drop in the metered savings results compared to the savings forecasted during the planning stage. A refrigerated warehouse also installed fewer measures than planned, amounting to a 20% reduction in the site's forecasted savings. When a project's expected savings drop substantially, savings may be too small for the SLNMEC meter-based approach to reliably identify. Consequently, when project scopes decrease, reassessing whether the project is still eligible for SLNMEC is important.

Project-level lifecycle impacts. Programs report how long they expect savings to last (EUL) and use EULs to calculate lifecycle savings and, going forward, the new metric that incorporates the hourly value of savings (TSB). In this evaluation cycle, the share of projects with EUL discrepancies declined substantially compared to the PY2023 Additional Research Report, indicating improved documentation and reporting of project EULs. Remaining discrepancies mostly resulted from the use of planning-stage EULs rather than EULs updated post-installation to reflect the project's final measures.

Recommendations 4 – 6 | Project implementation: tracking scope change

- PAs should continue successful efforts to improve documentation of project processes and savings claims, including (1) ensuring final claimed savings align with final report documentation, (2) submitting true-up claims in a timely manner consistent with program expectations, and (3) clearly documenting measures actually installed and any changes to scope since the planning stage.
- PAs should develop processes to facilitate timely updates to documentation with post-installation information, including scope changes, subsequent EUL updates, and other unexpected project changes. Such processes—of which the new NMEC project feasibility study (PFS) template is one example—should span planning, installation, and post-installation phases.
- When project changes affect project eligibility considerations, PAs should carefully document those changes and engage CPUC staff for support.

Implementation of these recommendations should lead to streamlined evaluation, more accurate model performance metrics and estimated savings, and higher lifecycle realization rates.

Even with proper planning and vetting, sites may experience changes that challenge the capabilities of NMEC meter-based methods. In some cases, participating sites had unexpected added or removed load that the programs did not identify until after the full 12-month performance period.

Multiple projects experienced non-project-related changes in energy consumption (non-routine events or NREs) that significantly undermined the reliability of NMEC savings estimates. Among evaluated projects, common NREs included added or removed loads, concurrent facility improvements outside the project scope, and the installation of on-site solar generation. High-impact NREs identified in this evaluation created several risks: Major operational shifts introduced confounding effects that prevented NMEC models from isolating project-related savings, and late NRE detection reduced the effectiveness of corrective measures such as submetering or targeted data collection, potentially removing a substantial amount of data. As a result, many modeled savings carried high uncertainty and did not reflect actual project impacts.

[15] DNV, *Additional Research Report*, October 30, 2025, https://pda.energydataweb.com/api/view/4239/Site-Level%20NMEC%20Additional%20Research%20PY2023%20Final.pdf.

Recommendations 7 & 8	Project performance: monitoring energy use

- Implementers should incorporate routine NRE monitoring such as periodic review of meter data, regular check-ins with customers, and timely updates to project documentation during the performance period. If they identify potential NREs, they should investigate and document the NREs in a timely manner and be prepared to sub-meter to capture added loads and/or generation.
- NREs without meter-based solutions may not affect more than 25% of performance period data.[16]

Implementation of these recommendations should result in fewer large engineering-based NRAs and fewer model failures, improving the reliability of savings estimates and associated hourly impact shapes for TSB.

PAs used engineering-based predictions of savings to adjust savings for projects experiencing extensive NREs rather than taking a fully meter-based approach, posing challenges to the credibility of reported savings.

Five projects required engineering-based non-routine adjustments, with the impact of the adjustments varying significantly, both positively and negatively, ranging from −69% to 394% of forecasted savings. Three of the five projects involved construction activities that the evaluation team considers foreseeable. The remaining two underwent unexpected changes that no one could have foreseen.

NMEC methods seek to produce meter-based savings estimates. Using engineering-based adjustments, particularly when the magnitude of the adjustments is comparable to or even exceeds the metered savings, introduces significant uncertainties and challenges the accuracy and credibility of the savings estimates. Looking forward, applying savings adjustments after the metering period also complicates the development of reliable savings profiles for TSB calculation as those adjustments will not be captured in time-series meter data.

Recommendations 9 – 11	Project adjustments: maintaining credibility

- Engineering adjustments, when necessary, should meet custom project rigor requirements. Incorporating sub-metering data may allow for a less stringent rigor requirement.
- If engineering adjustments increase savings, the adjustment should be less than the forecasted project savings. DNV recommends a maximum adjustment size based on the difference between a project's fractional savings uncertainty (FSU)[17] and 100%. For a project just meeting the updated NMEC rulebook's 90/50 FSU requirement, the maximum adjustment size would be 50% of forecasted savings. For a stronger FSU, the percentage of forecasted savings could grow toward but not reach 100%. For example, an FSU of 90/25 would allow a maximum adjustment of 75% of forecasted savings. Conceptually, this magnitude represents the buffer beyond which a project's forecasted savings estimate would no longer be statistically different than zero, the lowest possible bar for statistical validity.
- Projects with complex NREs or those that programs cannot adjust may not be suitable for the NMEC pathway. Instead, programs should transition such projects to the custom pathway, which determines savings through measure-specific analysis.

Implementation of these recommendations should improve the rigor and credibility of engineering-based adjustments and increase timely redirection of unsuitable projects to alternative pathways such as CIAC or SEM.

[16] American Society of Heating, Refrigerating and Air-Conditioning Engineers, *ASHRAE Guideline 14-2014 – Measurement of Energy, Demand, and Water Savings*, December 18, 2014, section 4.3.2.2, bullet b. https://store.accuristech.com/standards/guideline-14-2014-measurement-of-energy-demand-and-water-savings?product_id=1888937

[17] FSU is similar to relative precision in that it measures the uncertainty around the expected savings. As the value FSU decreases, confidence in the estimated savings level increases.

For the first time in the history of SLNMEC evaluations, multiple projects showed an increase in energy usage relative to historical usage and claimed negative energy savings.

Seven school projects with HVAC retrofit measures resulted in increased energy usage rather than energy savings and claimed the project impacts as negative total savings. Likely due to non-energy-related code requirements, the NMEC baseline did not capture savings associated with the more efficient measures installed. These projects' files did not clearly document multiple key actions: 1) when the program identified an increase in energy usage and the investigative steps it took to identify non-routine events, problems with the installed equipment, or other causes; 2) any steps the programs or PAs will take in the future to reduce the likelihood of the same issue occurring in other projects. Project documentation includes no discussion of the underlying causes. The significant decline in energy savings from the forecasted estimates to the metered results led to a sharp drop in the incentives paid to the customers. This outcome raises concerns regarding customer risk, as significant capital investments and implementation efforts may not have yielded the expected energy performance or financial benefits. The evaluation team zeroed out the negative savings for these projects.

Recommendations 12 & 13 | Claiming projects that do not save energy

- When projects do not result in savings, PAs should still claim the project with zero final savings instead of claiming the project with negative savings or dropping the records. The tracking database does not require negative savings, but documenting that the project occurred is still important.
- PAs should strengthen upfront project screening by more closely reviewing baseline operating conditions during project planning, consistent with NMEC rulebook 2.1 viability requirements for existing equipment. Projects with elevated risk, such as multi-site implementations or sites where retrofits are expected to increase energy usage, should be flagged for custom project review to reassess eligibility, savings expectations, or pathway selection before entering NMEC.

1.5.3 Assessing the SLNMEC program process

This section presents key findings regarding how PAs and implementers deliver SLNMEC programs.

Participants continued to indicate high levels of satisfaction with SLNMEC programs, placing particular emphasis on the programs' technical support and incentives.

On a scale of zero to 10, respondents reported an average satisfaction rating of 8.7, up from 8.4 in PY2023 and 8.1 in PY2020 – PY2022. No respondents reported satisfaction ratings below 7, and qualitative feedback consistently highlighted clear communication, strong technical expertise, and a streamlined program process.

Redirecting projects from population NMEC to SLNMEC created traceability and documentation gaps that limited project evaluability.

The OBF program redirected two projects in this evaluation from pop NMEC to SLNMEC. Upon further investigation, one of these claimed projects was actually an aggregation of three distinct projects, but the PA could no longer disaggregate the program information to a sufficient level to enable evaluation. The evaluation team could not verify another project due to failed NMEC models. These factors reduced transparency and constrained the evaluation's ability to verify the savings.

Recommendation 14 | Pop-to-site NMEC transition mechanism

The PAs should establish a transparent and documented process for transitioning projects from population NMEC to site-level NMEC and ensure that all converted projects meet site-level documentation and evaluability requirements.

2 INTRODUCTION

This report presents key findings from DNV's impact and net-to-gross evaluation, performed on behalf of the California Public Utilities Commission (CPUC), of site-level normalized metered energy consumption (SLNMEC) programs for program year (PY) 2024. NMEC is a set of statistical tools and approaches that estimate the impact that energy efficiency (EE) programs have on energy consumption by comparing pre- and post-intervention meter data. While most other EE programs claim final savings based on the expected and predefined efficiency of an intervention,[18] NMEC programs calculate and claim final savings based on measured impacts at the meter.

Each SLNMEC project makes two claims in the California Energy Data and Reporting System (CEDARS) tracking database. First, at the time of project installation, a SLNMEC project makes an engineering-based, forecasted savings claim. A year later, after the performance period, the project calculates the meter-based normalized savings and makes a true-up claim reflecting the difference between the forecasted and metered-based savings.

SLNMEC projects offer unique advantages compared to other EE programs. They can help unlock the potential savings stranded when customers maintain equipment beyond its expected useful life. EE programs that claim savings based on calculated results assume a hypothetical, up-to-code baseline. Customers operating below that baseline are not incentivized to upgrade to code-level and may not be able to afford to upgrade beyond it. Because NMEC calculates savings against a pre-intervention, metered baseline, customers can realize savings on any improvement in efficiency. This can be especially valuable to customers who struggle to raise capital for site improvements.

SLNMEC projects can also shift risk away from the ratepayer and onto the program administrator (PA), implementer, and customer. Post-installation savings do not remain hypothetical; NMEC programs calculate them based on actual shifts in metered consumption. If, for any reason, a project does not realize savings, the program discovers that failure and reflects it in the true-up claim.

This evaluation focuses on SLNMEC projects for which savings are estimated at the individual commercial site level. The gross evaluation provides savings estimates for SLNMEC projects with initial claims in PY2022 or PY2023 that were trued-up in PY2024. The study also evaluates total system benefit (TSB), the CPUC's newly adopted metric that values energy savings based on both their magnitude and timing across the hours of the year. The evaluation also includes an early review of projects with initial claims in PY2024 that have completed installation but have not yet made final savings claims. This early review provides early feedback and facilitates continuous program improvement. The evaluation assesses program influence through net-to-gross (NTG)[19] analysis for projects with initial claims in PY2024. This analysis examines the extent to which ratepayer-funded programs drive energy efficiency outcomes by inducing new projects or by expanding or accelerating projects that would not otherwise have occurred.

2.1 Background

Over the last decade, the CPUC and the California PAs[20] have been working to develop whole-building measurement and verification (M&V) program pathways to achieve deep savings in commercial buildings.

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[18] Researched, vetted, and predictable savings for EE technologies and services with well-established properties are known as "deemed" or "calculated" savings. The savings from installing a high-efficiency lightbulb, for example, are well-established, and non-NMEC EE programs could use those known values to claim savings. This contrasts with custom EE technologies and services that require unique savings calculations and do not use predefined values.

[19] Net savings are changes in energy use attributable to a particular energy efficiency program and consider savings from participants who would not have purchased energy-efficient technologies without the program. Savings attributable to participants who would have purchased energy-efficient technologies with or without the program influence are excluded from net savings. These participants whom the program did not influence are considered free riders.

[20] A program administrator is an entity tasked with the functions of portfolio management of energy efficiency programs and program choice.

- 2012: The CPUC requested that its regulated investor-owned utilities (IOUs) develop energy efficiency programs to encourage more comprehensive commercial building retrofits (Decision 12-05-015, 2012).[21]
- 2015: The governor signed California Assembly Bill 802, which directed the CPUC to allow savings claims using an NMEC methodology (AB 802 Williams 2015).[22]
- May 2019: The CPUC released the Commercial Whole Building Demonstration Joint Study. This study evaluated a 12-building demonstration program and developed recommendations for future NMEC programs.[23]
- December 2019: The Lawrence Berkeley National Laboratory (LBNL) published its Option C Technical Guidelines, which showed how to use NMEC methods to calculate energy and demand savings for site-level NMEC projects.[24]
- 2020: The CPUC released an updated "Rulebook for Programs and Projects Based on Normalized Metered Energy Consumption" (NMEC rulebook).[25]
- 2023: DNV completed the Site-level NMEC Evaluability Study on behalf of the CPUC.[26] The evaluability study investigated project characteristics and identified those projects ready for evaluation.
- 2024: DNV completed the first comprehensive site-level NMEC impact evaluation.[27] The TSB goal metric is replacing energy and peak demand savings goals (D.21-05-0.31[28]) starting in PY2024 for ratepayer-funded energy efficiency portfolios.
- 2025: DNV completed a second comprehensive site-level NMEC impact evaluation[29] and an additional research report[30] that performed an early gross evaluation of some not-yet-trued up projects and filled information gaps regarding how site-level NMEC programs were functioning.
- 2025: The CPUC released the final version of an updated "Rulebook for Programs and Projects Based on Normalized Metered Energy Consumption version 2.1" (NMEC rulebook 2.1).[31]

This evaluation builds on DNV's previous evaluations[32] and is guided by the Site-level Normalized Metered Energy Consumption (NMEC) workplan.[33]

2.2 Evaluation objectives

For this evaluation, DNV estimated the gross and net savings of site-level NMEC programs, leveraging each site's embedded performance measurements and assessing the application of NMEC program requirements. The evaluation team

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[21] "Decision 12-05-015," calmac.org. 5/18/12. https://www.calmac.org/events/Decision_12-05-15.pdf.

[22] California Legislative Information, "AB-802 Energy efficiency, Assembly Bill No. 802, Chapter 50," leginfo.legislature.ca.gov., 10/8/2015. https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB802

[23] California Public Utilities Commission, Pacific Gas and Electric Company, "Commercial Whole Building Demonstration Joint Study Report," calmac.org, 5/1/19. https://www.calmac.org/publications/Commercial_Whole_Building_Joint_Study_ID_PGE0431.01.pdf

[24] Ibid

[25] CPUC, *Rulebook for Programs and Projects Based on Normalized Metered Energy Consumption*, January 7, 2020, https://www.cpuc.ca.gov/-/media/cpuc-website/files/legacyfiles/n/6442463694-nmec-rulebook2-0.pdf

[26] DNV, *Site-Level NMEC Evaluability Study, Program Years 2020-2021*, December 7, 2023, https://www.calmac.org/publications/Site-Specific_NMEC_Evaluability_Study_Report_-_Final.pdf

[27] DNV, *Site-Level Normalized Metered Energy Consumption (NMEC) Impact and Net-to-Gross Evaluation, Program Years 2020–2022*, May 23, 2024, https://www.calmac.org/publications/Site-level_NMEC_Evaluation_Final_Report_PY2020-2022.pdf

[28] Assessment of energy efficiency potential and goals and modification of portfolio approval and oversight process, CPUC, Decision 21-05-031, May 20, 2021, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M385/K864/385864616.PDF

[29] DNV, *Site-Level Normalized Metered Energy Consumption (NMEC) Impact and Net-to-Gross Evaluation, Program Year 2023*, calmac.org, June 10, 2025, https://www.calmac.org/publications/Site-level_NMEC_Evaluation_PY2023.pdf.

[30] DNV, *Site-Level Normalized Metered Energy Consumption (NMEC) Impact Additional Research Report*, pda.energydataweb.com, October 30, 2025, https://pda.energydataweb.com/api/view/4239/Site-Level%20NMEC%20Additional%20Research%20PY2023%20Final.pdf.

[31] CPUC, *Rulebook for Programs and Projects Based on Normalized Metered Energy Consumption version 2.1*, September 10, 2025, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/energy-efficiency/rolling-portfolio-program-guidance/nmec-rulebook-21-march-2025.pdf

[32] The only other evaluation to-date that touched on site-level NMEC was "PY2018–2019 California Statewide On-Bill Financing Impact Evaluation" written by Opinion Dynamics and published in 2022. That report focused only on the On-Bill Financing (OBF) Program, which was primarily a population NMEC program, but did assess some projects via site-level NMEC. DNV considered the findings in that report as we assessed the wider site-level NMEC programs.

[33] DNV, *Normalized Metered Energy Consumption (NMEC) Evaluation, Measurement, & Verification Work Plan*, pda.energydataweb.com, October 29, 2025, https://pda.energydataweb.com/#!/documents/4237/view.

determined the programs' application of NMEC requirements by referring to the NMEC rulebook, version 2.0, which includes the CPUC's specific requirements for NMEC programs and measurement and verification (M&V) plans.

The objectives of this evaluation include:

3. **Evaluate the accuracy and attribution of programs' forecasted and achieved savings.** Given the embedded evaluation structure of site-level NMEC programs, DNV sought to replicate and validate the existing evaluation framework. To address this objective, the evaluation team investigated the following research questions:
   - What was the energy savings impact of the programs?
   - What was the TSB of the programs?
   - How much of the energy savings and TSB were attributable to the programs?
4. **Provide early feedback on projects that have not yet made final savings claims so that programs can adjust earlier in the evaluation cycle.** To address this objective, the evaluation team investigated the following research questions:
   - How consistently and effectively is TSB being calculated across PAs within the site-level NMEC context?
   - For installed projects that have not yet made final savings claims, is documentation sufficient for the next evaluation?
5. **Identify whether program M&V plans and practices comply with the protocols in the CPUC's NMEC Rulebook and are sufficient to ensure successful SLNMEC implementation.** The CPUC sought to inform future policy decision making by gathering additional data about the strengths of and barriers to effective site-level NMEC programs. To address this objective, the evaluation team investigated the following research questions:
   - To what extent do site-level NMEC PIPs and program M&V plans comply with requirements in the NMEC rulebook?
   - How well are programs learning and adapting based on the embedded evaluation framework of site-level NMEC programs?
   - How are participants dropped or redirected from population NMEC to site-level NMEC?
   - How do program characterization elements—such as design, outreach, delivery, and implementation approaches—compare across programs? What are the implications for participation and performance?
   - How are incentives and compensation structured across the programs (timing, recipients, and mechanisms)? What are the implications for program performance?

2.3 Evaluated programs

The CPUC offers the site-level NMEC pathway as part of multiple programs that serve commercial or commercial-like buildings. As described in Table 2-1, our SLNMEC gross savings evaluation included 12 programs that trued up SLNMEC claims in PY2024 (column titled "Full gross"). Our early gross and net-to-gross evaluation included eight programs that made initial claims in PY2024 (column titled "Net").

Table 2-1. Programs included in gross and net evaluation

PA	Program ID	Program name	Description	Included in: Full gross	Net
IREN	IREN-PUBL-002	Public Buildings NMEC Program	Targets public sector buildings with stranded savings.		✓
PG&E	PGE_Ag_001	Agricultural Efficiency Program	A program targeting agricultural customers, offering energy data and analysis, technical assistance, process optimization, and flexible incentives.	✓	
	PGE_Com_001	Grocery Efficiency Program (CoolSave)	A program targeting grocery stores, offering comprehensive retrofits and retro-commissioning.	✓	✓
	PGE_Com_002	Laboratory Performance Efficiency Program	An NMEC-specific program targeting laboratories for ventilation, other retrofits, and BRO measures.	✓	✓
	PGE_Com_003	Commercial Efficiency Program	Open to the entire commercial segment, offering site-level NMEC, population NMEC, custom, and deemed pathways.	✓	
	PGE_Com_005	Healthcare Efficiency Program	Targets healthcare customers to optimize energy performance by providing concierge level support, technical assistance, innovative incentives and financing solutions.		✓
	PGE_Ind_003	Manufacturing and Food Processing Efficiency Program	A program for industrial customers, offering energy coaches, technical training, on-site scoping, and energy management support and software. Site-level NMEC is one pathway within this program.	✓	
	PGE_OBFAP	On-Bill Financing Alternative Pathway	Open to the entire commercial segment, offering on-bill financing without participation in another program.	✓	✓
	PGE21011	Commercial Calculated Incentives	Open to the entire commercial segment, offering incentives for EE opportunities identified through utility-sponsored audits, facility/process assessments, or retro-commissioning studies.	✓	✓
	PGE2110012	University of California/California State University	An institutional partnership between University of California/California State University and IOUs, providing performance-based incentives for lighting, controls, heating, ventilation and air conditioning (HVAC), new construction, and commissioning measures.	✓	✓

PA	Program ID	Program name	Description	Included in: Full gross	Net
SCE	SCE-13-L-003I	Public Sector Performance-Based Retrofit High Opportunity Programs and Projects (HOPPs)	Targets public sector buildings with stranded savings resulting from improvement delays or indefinite equipment repairs.	✓	
	SCE-13-SW-002B	Commercial Calculated Program	Open to the entire commercial segment, NMEC projects must include at least two distinct energy efficiency measures (including capital, BRO, to-code, and above-code measures) affecting at least two distinct building systems.	✓	
SoCalREN	SCR-PUBL-B3	Public Agency NMEC Program	Targets public sector buildings with stranded savings.	✓	✓
SDGE	SDGE4012	Federal Customer Services Program	Open to federal buildings, US Postal Service, military bases, and tribal nations on qualifying rates schedules, providing end-to-end services, including marketing, outreach, engineering, operations, customer service, and data management and reporting.	✓	

3 METHODOLOGY

DNV followed International Performance Measurement and Verification Protocol (IPMVP) and the California Evaluation Protocol in determining sample sizes, gross savings, measurement and verification (M&V) activities, net savings, and the expansion procedures that yield final results.

3.1 Sample designs

The evaluation team created three sample designs: two in support of gross impact evaluation objectives and one in support of net savings impact evaluation. The purpose and design of each is discussed in this section.

Table 3-1 shows the population included in the gross evaluation, broken out into the following strata:

6. **Gross evaluation – Projects trued up in PY2024:** This stratum includes projects that were trued-up in PY2024 with final claimed savings. The evaluation team conducted a full gross evaluation of 24 of these projects using information collected from project documentation and customer interviews. The evaluation team also calculated the evaluated TSB for this group.
7. **Early gross evaluation – Projects with initial claims in PY2024:** This stratum includes projects that made initial savings claims in PY2024. Consistent with the approach used in the Additional Research Report,[34] the evaluation team conducted a partial gross evaluation of 20 projects, selecting the sample to include representation across project types, programs, and levels of data availability. The partial evaluation included most activities performed in the full gross evaluation, with the exception of the performance period modeling and verified savings review.

Table 3-1. Gross and early gross evaluation sample by PA

PA	Population (N)	Sample design quota	Final sample (n)	Percentage of sample complete
Gross sample				
PG&E	22	14	9	64%
SCE	13	10	8	80%
SoCalREN	5	4	5	125%
SDGE	2	2	2	100%
Total	42	30	24	80%
Early gross sample				
PG&E	34	12	12	100%
IREN	1	1	1	100%
SoCalREN	13	7	7	100%
Total	48	20	20	100%

The NTG population includes all those projects with initial claims in PY2024. NTG evaluations hinge on project decision making, and initial savings claims are made after installation—that is, after project decisions have been made. Conducting NTG interviews as close to the time of decision making as possible increases the likelihood of accurate recall and reduces the likelihood of decision-maker turnover. The PY2025 evaluation will apply the NTGRs from this evaluation to the SLNMEC projects that finalize claims in PY2025. This approach combines the timely NTG evaluation completed here with the future gross evaluation results for claims finalized in PY2025. The evaluation team attempted a census of the NTG population.

[34] DNV, "Site-Level Normalized Metered Energy Consumption (NMEC) Impact Additional Research Report," pda.energydataweb.com, October 30, 2025, https://pda.energydataweb.com/api/view/4239/Site-Level%20NMEC%20Additional%20Research%20PY2023%20Final.pdf.

Table 3-2 shows the net sample design population, sample target, and sampled sites by PA. Overall, the evaluation team interviewed participants covering 98% of projects.

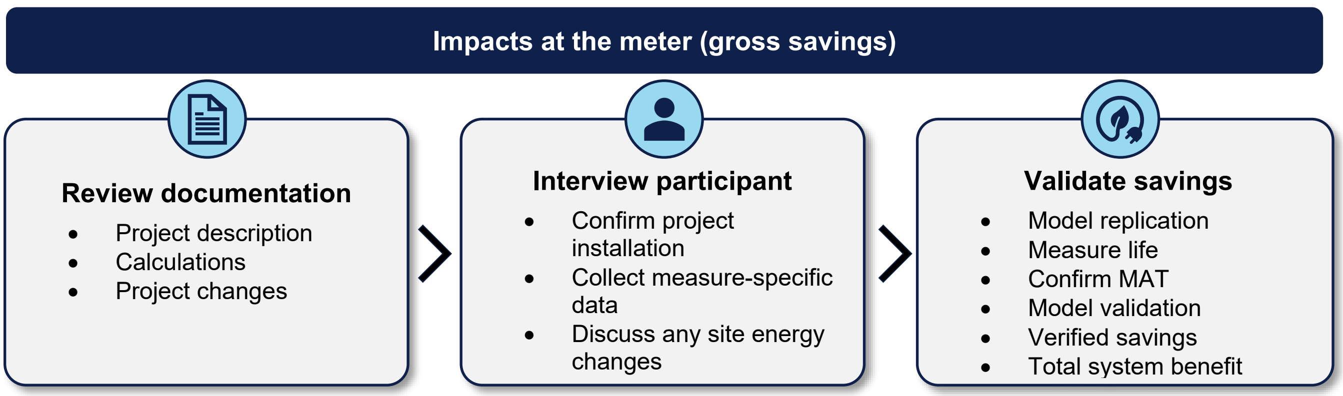
Table 3-2. Net sample coverage by PA

PA	Population (N)	Sample design quota	Final sample (n)	Percentage of sample complete
PG&E	34	34	34	100%
IREN	1	1	1	100%
SoCalREN	13	13	12	92%
Total	**48**	**48**	**47**	**98%**

3.2 Gross savings methods

Figure 3-1 summarizes the key steps of the gross savings evaluation, which are further described in the following sections.

Figure 3-1. Gross savings methodology



3.2.1 Documentation review

During the initial review of project files, DNV used a modified version of the Custom Core Template (CCT) to validate project eligibility and several key project details, described below.

- **Installed measures**: The evaluation team reviewed the measure documentation for completeness and determined which planned measures were implemented and when installation occurred. Some planned measures were not installed. In other cases, the scope of a project changed between planning and implementation. These kinds of discrepancies affected savings and required further validation during participant interviews.
- **Measure-level measure application type (MAT)**: Determining effective useful life (EUL) requires MATs. The evaluation team reviewed PAs' MAT assignments, identified documentation that supported these assignments, and prepared questions to confirm them. This process was particularly crucial when attempting to verify whether the program accelerated the customer's adoption of a measure.
- **Measure-level EUL**: Measure-level EUL is the basis of the savings-weighted project EUL used to calculate a project's lifecycle savings. The evaluation team reviewed the measure-level EULs provided in the documentation and investigated the sources of those EULs.
- **Engineering-based savings estimates**: The evaluation team confirmed the presence and general reasonableness of the engineering-based savings estimates. In cases where projects had multiple EULs, the evaluation team examined the engineering-based savings estimates more closely, as they are used to calculate the savings-weighted EUL.
- **Project dates:** The evaluation team determined key project dates such as project implementation start and end, and the dates of identified non-routine events (NREs). These dates are important for identifying any overlap between

installation and the baseline or performance period models and for addressing any NREs. The evaluation team flagged dates to collect or confirm with participants during interviews.

- **Non-IOU fuel sources:** The evaluation team reviewed project documentation for onsite generation, as it could impact NMEC model results if the generation source is on the same meter as the participating building. Additionally, the evaluation team verified that savings do not exceed the energy imported from the grid, which is a requirement to claim NMEC savings.
- **Non-routine events (NREs):** The evaluation team reviewed identified NREs and explored potential additional NREs by interviewing customers about site activities that would impact energy consumption (e.g., repurposing the space) and examining energy use patterns.
- **Project Review dispositions:** For projects that went through CPUC Project Review, the evaluation team reviewed the relevant dispositions.
- **Gas Savings:** The evaluation team reviewed measure-level gas savings impacts and determined whether PAs documented or claimed those impacts. This effort found notable unclaimed gas savings impacts, similar to previous evaluation findings.
- **Other:** The evaluation team also looked for other less common situations, such as fuel switching and Early Opinions.

3.2.2 Participant interview

The evaluation team interviewed customer to confirm the installation of proposed measures, the operation of those measures, key project dates, the existence of onsite generation, identification of NREs, occupancy patterns relevant to model specification, and the effects of COVID-19. For replacement measures, interviewers collected information about the condition of pre-existing equipment and program influence in order to evaluate the MAT. When necessary, the evaluation team followed up with additional data requests of the participant and the PA.

3.2.3 Savings validation

The evaluation team's final analysis included engineering, policy, and model review. If warranted by the results of the engineering and policy reviews, the evaluation team modified the project parameters and documentation based on the customer interview and additional data provided.

The evaluation model review included both model replication and model validation. During model replication, the evaluation team reproduced the models and savings results within the code, spreadsheets, or other tools provided in the project documentation. During model validation, on the other hand, the evaluation team independently reproduced the models and savings results outside the provided documentation, modifying the models as necessary to more closely align with best practices and CPUC guidance.

3.2.3.1 Model replication

In general, the evaluation team replicated four steps for each model:

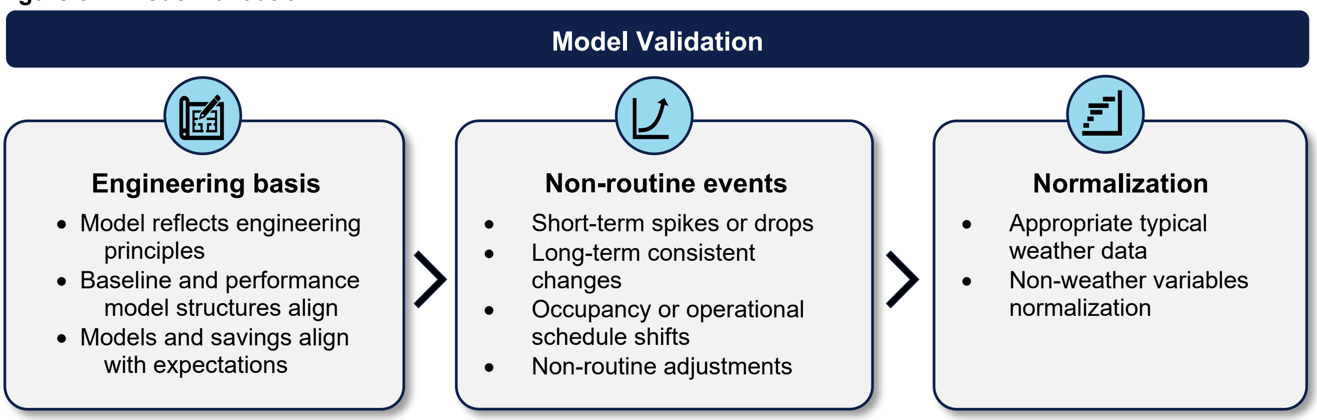
- The baseline model
- The performance model
- Normalization of baseline and performance consumption
- Calculation of normalized savings

The evaluation team considered a replication to be successful by achieving the same goodness of fit statistics for both baseline and performance models, fractional savings uncertainty (FSU) for the baseline model, total normalized savings, fractional savings, and normalized FSU.[35]

3.2.3.2 Model validation

The evaluation team used model validation to identify discrepancies between the way the PAs modeled their data and standard modeling practices and CPUC guidelines. Such discrepancies could produce biased estimates of savings. The evaluation team documented the discrepancy and estimated the savings impact for each change it made during model validation.

Figure 3-2. Model validation



Engineering basis: The evaluation team reviewed for appropriateness all dependent and independent variables in each model. At minimum, the evaluation team expected each model to use consumption as the dependent variable and observed outdoor temperature as an independent variable. For any other independent variables, the evaluation team considered whether the PA provided sufficient justification for their inclusion. The team also evaluated whether, based on engineering principles, the site's energy consumption would be expected to correlate with those additional variables. The evaluation team also checked that both baseline and performance models included the same dependent and independent variables, as this is crucial for valid model comparison and savings estimation. Finally, the evaluation team considered whether any variables or data critical for accurate modeling were missing. Where warranted, the evaluation team requested missing data from participants.

The evaluation team assessed how the model parameter estimates changed between the baseline model and performance period model. Parameter estimates represent how building consumption changes with the associated independent variable and should be consistent with engineering principles. For example, if an installed measure would reduce the effect outdoor temperature has on consumption, the performance model's temperature parameter estimates ought to be smaller and of less statistical significance than those of the baseline model. Any parameter estimates not aligned with expected engineering-based outcomes suggest that those parameters were capturing some unknown influence on energy consumption.

Non-routine events: The evaluation team assessed error and model fit plots to investigate the presence of NREs. NREs represent abnormal changes in building consumption that can severely bias models if not properly accounted for. The evaluation team looked for short-term spikes or drops, long-term consistent changes, and other trends in energy

[35] Fractional savings are calculated as normalized savings divided by normalized baseline consumption. They are a required input to the calculation of fractional savings uncertainty (FSU). Definitions of normalized savings, fractional savings, and FSU are provided in the Glossary.

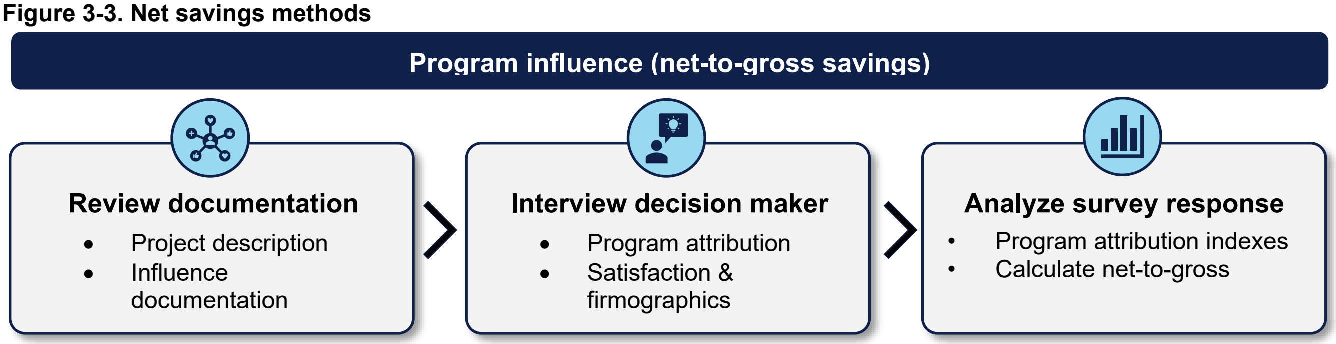
consumption not explained by variation in the independent variables. For those NREs found, the evaluation team confirmed whether the PA properly accounted for them, generally by removing from the model any data coinciding with short-term NREs or including in the model indicator variables during long-term NREs. The evaluation team also checked whether NREs were appropriately accounted for during normalization.

Normalization: When reviewing normalization, the evaluation team assessed whether standard guidance was followed. For temperature normalization, the evaluation team confirmed that an appropriate typical meteorological year (TMY) data set was used. The evaluation team also checked that the bounds of temperature values in the chosen TMY data did not exceed 10% of the temperature bounds from either the baseline or performance period model. For other variables, standard practice is to use performance period values if the bounds of the baseline model's values do not exceed 10% of the bounds of the performance period. In cases where this does not hold, it is acceptable to use the baseline period's data. Any other set of values is considered non-standard and would require justification.

3.3 Net savings methods

In addition to the gross savings interviews, DNV interviewers completed NTG in-depth interviews (IDIs) with participant decision makers for projects with initial claims in PY2024. Projects with initial claims in PY2024 were all included in the NTG sample.

Figure 3-3. Net savings methods



Before each interview, interviewers reviewed project documentation to gain an understanding of the project scope, timing, and existing influence documentation. The review prepared each interviewer to ask follow-up questions when responses contradicted existing documentation. DNV interviewers then used a census approach to reach out to every project with initial claims in 2024. DNV interviewed participants representing 47 sites (94% of the population). Interviews occurred over the phone or Microsoft Teams.

The evaluation team used the IDI answers to calculate three program attribution indexes (PAI_1, PAI_2, and PAI_3), capturing program and non-program influences, participants' prior plans, and project timing. APPENDIX H presents the methodology used to calculate each PAI, which is consistent with the approach used in the NMEC evaluation of PY2023.[36] While building on a well-established approach used for nearly a decade to evaluate commercial programs, adjustments made for PY2023 to the NTGR scoring algorithm better reflect NMEC program influences. These adjustments also reduce overlap among the PAIs, countering the previous methodology's tendency to push NTGRs to 0.5.

[36] This methodology reflects a change from that used for the PY2020-2022 evaluation. For a full description of that NTG methodology update, see the Group D NTG Methodology Update memorandum provided to the CPUC by DNV on January 7, 2025.

In addition to questions relevant to the methodology detailed in APPENDIX H, IDIs included questions on project scope, program processes, program satisfaction, and firmographics. These questions were not used directly for scoring but instead helped provide context for the interviews and shed light on participant experiences with the programs.

3.4 Total system benefit

Total system benefit (TSB) assigns a monetary value to lifecycle energy efficiency savings. it reflects not only the quantity of energy saved over a project's lifetime but also the timing of those savings. Unlike metrics that value all energy savings equally, TSB recognizes that energy reductions occurring during periods of higher grid stress are more valuable than reductions occurring when supply is abundant. CPUC adopted TSB as the primary goal metric for energy efficiency programs beginning in PY2024. In response, this evaluation conducted an exploratory assessment of SLNMEC programs' TSB claiming practices and calculated evaluated TSB values for projects with true-up claims in PY2024.

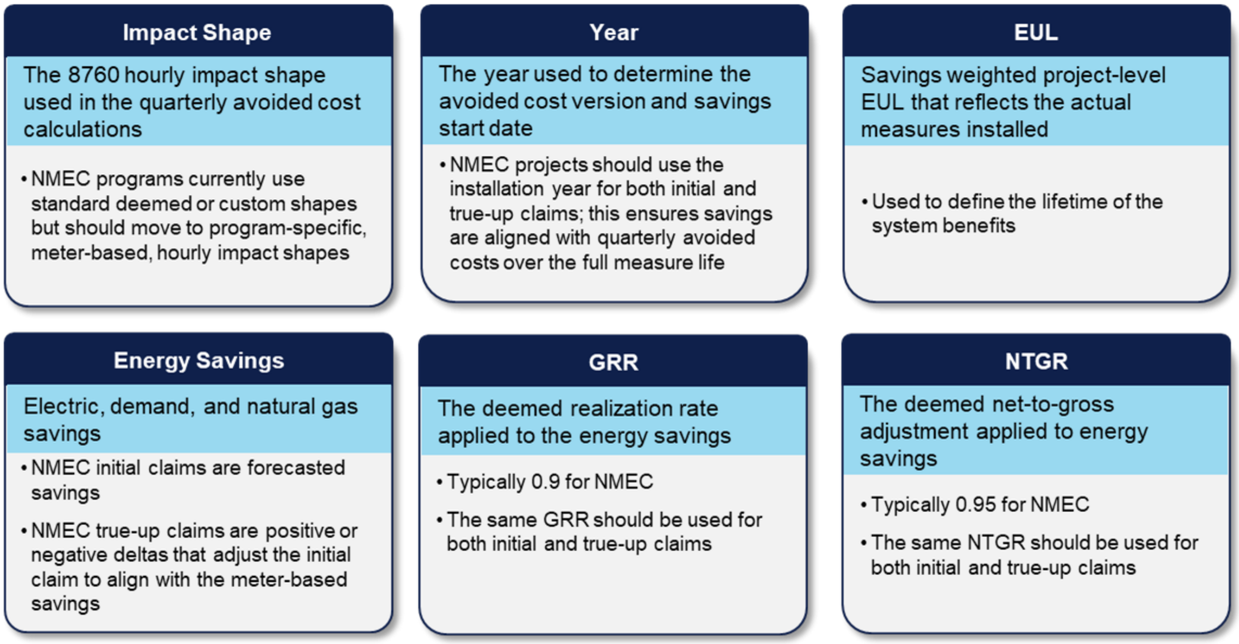
TSB is calculated by applying avoided cost values to evaluated gross energy savings (kWh and therm) over the measure's effective life. For electric savings, hourly avoided cost values are applied using unit-level hourly impact profiles; for gas savings, monthly avoided cost values are applied using monthly impact profiles. These results are aggregated to quarterly values and then summed across the measure lifetime to estimate lifecycle TSB. Lifecycle gross TSB is subsequently adjusted using the NTGR to align benefits with program attribution.

Avoided cost values reflect multiple system components, including generation, transmission, and distribution, as well as emissions. These component-specific avoided costs are weighted by the timing of savings through the applicable impact profiles, ensuring that system, delivery, and environmental benefits are appropriately captured in quarterly and lifecycle TSB.

The year in which savings are claimed affects TSB values because, consistent with CPUC decisions, projects in each reporting year must apply that year's corresponding Avoided Cost Calculator (ACC) version in TSB calculations. In addition, the first claim year determines the set of years over which TSB is calculated across the measure life. ACCs are updated over time, and hourly avoided cost values can vary materially between ACC versions. As a result, identical savings profiles may yield different TSB values depending on the claim-year ACC. SLNMEC projects typically report savings through two claims—an initial claim and a true-up claim—submitted in different program years. If different ACC versions and savings start years are applied to these claims without appropriate alignment, project-level TSB may be over- or under-valued.

Figure 3-4 shows the key TSB inputs for NMEC project claims.

Figure 3-4. Key TSB inputs for NMEC claims



The evaluation team reviewed the claimed TSB methodology and calculated evaluated TSB values using verified savings, project-level EULs, net-to-gross ratios (NTGRs) and avoided cost year. Because TSB calculations rely on hourly impact shapes—with energy savings in certain hours of the day or seasons valued more highly than others—the evaluation team also reviewed two projects as a case study to compare the impact of changing from the DEER impact shapes used to calculate claimed TSB to actual savings shapes derived from project-specific metered data.

3.5 Program implementation review

DNV reviewed program implementation plans (PIPs) for all 14 site-level NMEC programs to identify to what extent the plans documented policies in line with the 2020 NMEC rulebook.[37] Since PIPs reflect programs as a whole, the review focused on program-level policies rather than project-level requirements. Specifically, DNV assessed documentation relevant to the policies listed in Table 3-3 Additionally, DNV assessed to what extent PIPs already included provisions to address policy updates in the new NMEC rulebook 2.1, published in the fall of 2025.[38] The NMEC rulebook 2.1 was not in place when the evaluated projects were completed or when the programs published these PIPs, but future projects will need to comply with the new rulebook. The rulebook updates include the use of functional testing to support to-code savings, a maximum fractional savings uncertainty of 50%, measure application type and effective useful life documentation requirements, and an exclusion of below-code savings in normal replacement scenarios.

Table 3-3. NMEC rulebook 2.0 policy groups

Rulebook Policy	Description
Follow cost-effectiveness policies	Statement that program will follow cost-effectiveness using CPUC-approved methods
Define target population and eligibility	Describe the program target population, and participant eligibility criteria.

[37] CPUC, *Rulebook for NMEC*, January 7, 2020, https://www.cpuc.ca.gov/-/media/cpuc-website/files/legacyfiles/n/6442463694-nmec-rulebook2-0.pdf

[38] CPUC, *Rulebook for NMEC, version 2.1*, September 10, 2025, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/energy-efficiency/rolling-portfolio-program-guidance/nmec-rulebook-21-march-2025.pdf

Rulebook Policy	Description
Describe incentive structure	A description of the incentive structure, including a) a description of which entity receives compensation at each stage of the project; and b) method(s) and tools utilized in the calculation of incentives and/or compensation
Ensure transparency and replicability	Methodology, analytical methods and software employed for calculating Normalized Metered Energy Consumption, as well as both gross and net savings, resulting from the energy efficiency measures installed and not influenced by unrelated changes in energy consumption. Approach to ensure adequate monitoring and documentation of energy savings for each project over the reporting period.
10% minimum savings requirement or explain how small savings are distinguishable	Programs targeting savings that comprise less than 10% of annual consumption must provide a rationale and explanation of how savings will be distinguishable from normal variations in consumption.
Document feasibility, application, implementation, reporting	Description of processes for a Baseline Period (including project feasibility study), Implementation Period, and Performance Period (including noting how savings will be monitored or documented).
Program influence	Method of determining program influence, either through a detailed data collection and analysis plan provided in the M&V Plan or adoption of Commission approved default NTG values.
To-code savings documentation	Statement declaring program will adhere to Decision 17-11-006 Ordering Paragraph 2 for programs targeting to-code savings or narrative that addresses the questions put forth by Decision 17-11-006 described above this table.

DNV also interviewed all six PAs of site-level NMEC programs to understand current compensation and incentive frameworks and the distribution of ratepayer funds to program vendors and participants. DNV conducted the interviews via Microsoft Teams in January and February of 2026.

4 RESULTS

This section presents findings related to gross and net savings by key reporting dimensions. It includes a discussion of the reasons for differences in gross savings claims versus evaluated results. In addition, we include an examination of the drivers of the NTGR, which measures the program's influence on decisions to implement efficiency measures.

As TSB becomes the program performance goal metric, this section includes an exploratory assessment of current TSB claiming practices and evaluation of TSB values, followed by findings from the early gross evaluation organized by major evaluation topics. Finally, the section presents findings from the PIP review, including compliance with NMEC Rulebook requirements, as well as insights from PA interviews related to compensation and incentive frameworks.

4.1 Gross savings and realization rates

The following sections present gross savings results by fuel type (i.e., electricity, demand, and gas) for projects with final savings claims in PY2024. For each subsection, we compare final claimed savings with evaluated results and discuss the drivers of the discrepancies.

4.1.1 Electric savings

Table 4-1 presents the gross electricity realization rates and savings results by PA and by claim sign. For the first time in SLNMEC evaluation history, some projects reported negative final savings. To isolate the impacts of these projects, savings results are therefore also presented by claim sign. Final claimed savings are the savings claimed by the PAs in the CEDARS tracking database. Verified savings are the savings resulting from this evaluation. The gross realization rate (GRR) compares the verified savings with the savings claimed in the tracking data (claimed). Ideally, the GRR is 100%, indicating alignment between claimed and verified savings. However, Table 4-1 shows first-year and lifecycle electricity GRRs of 93% and 86%, respectively. The remainder of this section explores the key contributors to these first-year GRRs. Lifecycle GRRs account for both the first-year savings GRRs and the discrepancies between claimed and evaluated EULs. Consequently, the lifecycle GRRs are lower than the first-year GRRs.

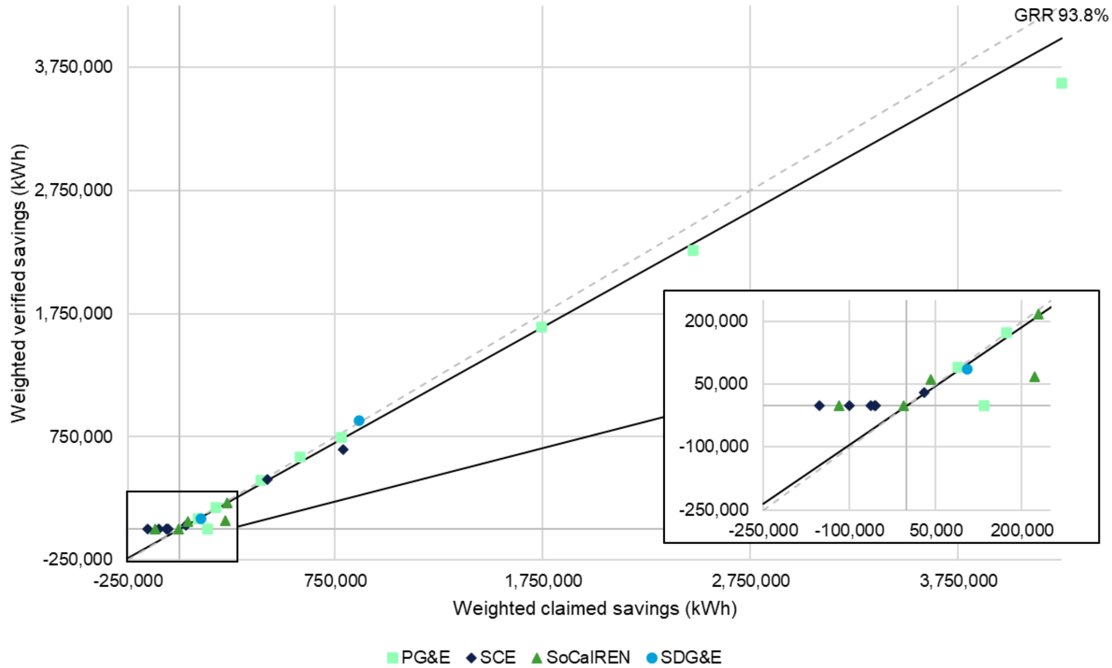
Table 4-1. Gross electricity (kWh) savings

Group	Projects	Customers	First-year			Lifecycle		
			Claimed	Verified	GRR	Claimed	Verified	GRR
PA								
PG&E	9	6	10,282,490	9,221,337	89.7%	80,105,966	61,825,784	77.2%
SCE	8	3	909,733	1,210,301	133.0%	10,445,791	12,041,538	115.3%
SoCalREN	5	2	367,753	348,502	94.8%	3,351,615	5,227,308	156.0%
SDGE	2	1	969,133	968,843	100.0%	11,629,600	11,626,111	100.0%
Statewide	**24**	**12**	**12,529,110**	**11,748,983**	**93.8%**	**105,532,971**	**90,720,741**	**86.0%**
Claim sign								
Positive	17	10	13,129,703	11,748,983	89.5%	113,436,859	90,720,741	80.0%
Negative	7	2	-600,593	0	0.0%	-7,903,888	0	0.0%
Statewide	**24**	**12**	**12,529,110**	**11,748,983**	**93.8%**	**105,532,971**	**90,720,741**	**86.0%**

Figure 4-1 compares the weighted final claimed savings and weighted verified savings. The diagonal dashed line indicates where each sample point would be plotted if the project realized 100% of the final claimed savings. The points below the dashed line achieved less verified savings than final claimed savings, while the points above the dashed line achieved greater verified savings than final claimed savings. The solid line illustrates the overall relationship, namely GRR, between the verified and final claimed savings. Overall, the verified savings track closely with final claimed savings, with an estimated

GRR of 93.8%. Most projects cluster near the dashed line, suggesting general alignment between claimed and verified savings. However, greater dispersion is observed among smaller projects and projects with negative final claimed savings. As shown in the inset box, several projects lie along the horizontal gray line, indicating evaluated savings of zero for those projects.

Figure 4-1. Weighted first-year electric energy savings scatterplot



The deviations from the 100% line in Figure 4-1 are the result of discrepancies between the evaluation savings estimate and the final claimed savings. DNV categorizes the discrepancies to better understand the nature of changes that directly affect GRR. Table 4-2 summarizes the types of discrepancies identified, ordered by the magnitude of the discrepancies. Most discrepancies are relatively small, given the high overall GRR.

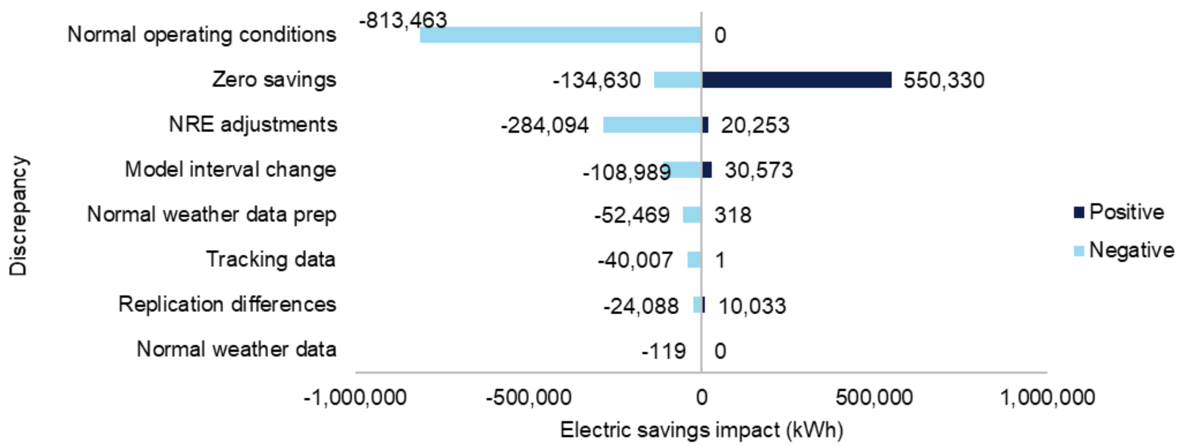
Table 4-2. Savings discrepancy factors

Discrepancy factor	Description
Normal operating conditions	Changes from normalizing to performance period operating conditions
Zero savings	Savings change due to zeroing out the final claimed savings
Non-routine event (NRE) adjustments	Changes the evaluation made to address non-routine events, such as excluding any periods where the data may be skewed due to abnormal facility operations, disruptions, or non-operation, to ensure accurate estimates of project savings
Model interval change	Changes due to switching from a daily model to an hourly model
Normal weather data prep	Changes due to corrections made to the weather data preparation
Tracking data	Differences attributed to incorrect adjustments or unexplained changes to savings that occurred between completion of the analysis and entry into the PA tracking system
Replication differences	The difference between the savings replicated using the provided code and project data and those reported in the final reports or output files
Normal weather data	Changes due to updating the normal weather data so that the appropriate weather station was used

DEER peak period	Changes due to corrections made to the days and hours used to calculate demand savings
Normalized consumption	Changes due to removing a rule that set negative predicted consumption values to zero
Interval data	Changes due to correcting interval data preparation prior to modeling

Figure 4-2 shows the savings impacts of each type of discrepancy ordered of magnitude of discrepancies. Discrepancies can be either positive or negative (adding to, or subtracting from, savings, respectively). When compared with the total claimed first-year savings of 12.5 million kWh, even the largest discrepancy represents under 10% of the total. By necessity, these discrepancies reflect an ordered set of adjustments applied through the process of replication and validation. There is assuredly overlap amongst discrepancies, and as a result, the magnitudes might be different if the adjustments were applied in a different order.

Figure 4-2. Summary of weighted first-year kWh savings discrepancy factors by sum of savings impact



This section provides a high-level discussion of discrepancies, organized in descending order by the absolute magnitude of the drivers of differences in evaluated savings. Detailed evaluation findings can be found in Section 4.2.

Normal operating conditions: For two projects with process-driven loads, the implementer incorporated production-related independent variables in their weekly kWh models but did not normalize savings using post-period production conditions. DNV updated the normalization to reflect post-period conditions, which resulted in the largest electric savings discrepancies.

Zero savings: Discrepancies leading to zero savings arose from two situations: 1) a project with positive savings but for which no savings could be validated, and 2) multiple projects with negative final claimed savings. In total, DNV set eight of 24 projects to zero savings, including seven projects with negative savings claims and one project that could not be validated. Setting the projects with negative final claimed savings to zero limits the negative effect of those projects on the aggregate saving estimate. Despite the risk of truncating results at zero, there is no meaningful justification for blaming these projects for load building. For the project whose savings could not be validated, the implementer relied on an engineering-based custom approach after the meter-based models failed. This project also involved a process-driven facility whose highly variable operations did not meet the NMEC rulebook's facility type eligibility requirement.

NRE adjustments: NRE adjustment was a material discrepancy driver for six projects, with the majority of NRE-related impacts concentrated among five similar school projects within one district. Across these cases, DNV updated the NRE adjustment approach to improve consistency and alignment with observed conditions (e.g., excluding DR-impacted days, revising the approach for solar installed during the performance period, and removing outlying data points identified as NREs), which contributed to some of the largest differences between claimed and evaluated kWh savings.

Model interval change: Frequently, the implementers claim annual kWh using a daily model while using an hourly model for kW claims. While this sometimes reflects FSU requirements only being met by the daily model, this is not always the case. Because hourly impact shapes from NMEC are an important part of TSB, it is critical to estimate savings with hourly models whenever possible. For this evaluation, DNV used savings estimates based on the hourly model whenever that model met FSU requirements. The results had both negative and positive effects, with the larger negative effects representing only about 1% of overall savings.

Normal weather data prep: Four projects involved the incorrect preparation of normal weather data. The evaluation fixed the data prep errors; the discrepancy represents the savings impact of that correction.

Tracking data: Compared to the PY2020–2022 evaluation, in which tracking data issues were a primary driver of discrepancies, reporting practices and savings claims in CEDARS have continued to improve for SLNMEC projects. 23 of the 24 sampled projects, claimed first-year kWh savings matched the documented savings within 1 kWh. For the remaining project, claimed first-year kWh savings exceeded documented savings by approximately 40,000 kWh, or approximately 5%. In this case, limitations in the available documentation prevented a determination of whether the final claimed savings were accurate. The final savings claims matched the documented savings for 20 of the 24 sampled projects. The final savings claims and documented savings were within 5 kWh for three of the 24 sampled projects.

Replication differences: DNV replicated first-year kWh savings within 10 kWh for 20 of the 24 sampled projects. The other four sampled projects' replication differences amount to small negative and positive discrepancies.

Normal weather data: One project's model incorporated normal weather data that did not correspond to the weather data used to fit the consumption models. In this case, we substituted the normal weather data that corresponds to the actual weather data used to fit the models and recalculated savings.

4.1.2 Demand savings

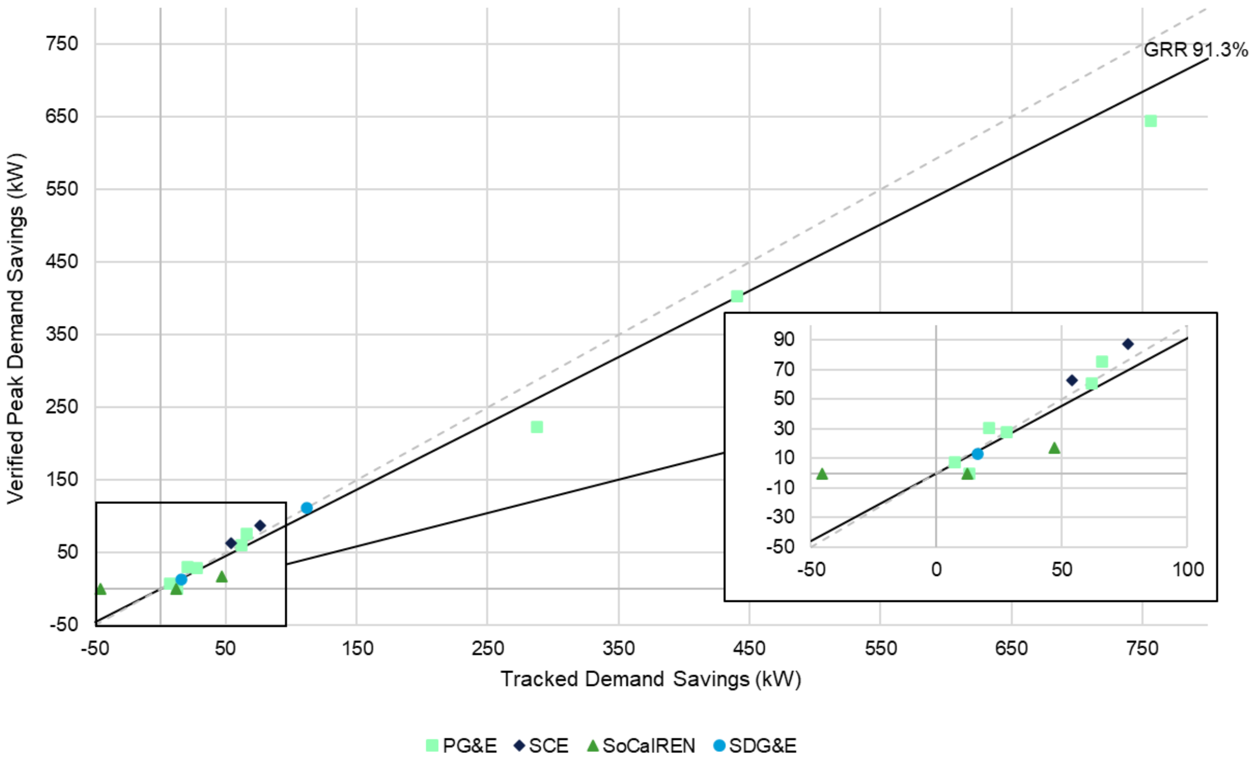
Sixteen of the 24 projects claimed demand savings. Table 4-3 presents the gross demand realization rates and savings results by PA and by claim sign for projects with final savings claims in PY2024. Similar to the electric savings, we report the number of projects, customers, and claimed and verified demand savings, and compare the verified demand savings to claimed demand savings (GRR).

Table 4-3. Gross demand (kW) savings

Group	Projects	Customers	First-year		
			Claimed	Verified	GRR
PA					
PG&E	9	6	1,573.7	1,379.5	87.7%
SCE	2	1	185.7	214.1	115.3%
SoCalREN	3	2	13.7	17.4	126.7%
SDGE	2	1	128.1	125.2	97.7%
Statewide	**16**	**10**	**1,901.2**	**1,736.1**	**91.3%**
Claim sign					
Positive	14	9	1,934.6	1,736.1	89.7%
Negative	2	1	-33.4	0.0	0.0%
Statewide	**16**	**10**	**1,901.2**	**1,736.1**	**91.3%**

Figure 4-3 compares the weighted final claimed savings to weighted verified savings. The diagonal dashed line indicates where each sample point would be plotted if the project realized 100% of the final claimed savings. The points below the dashed line achieved less verified savings than final claimed savings, while the points above the dashed line achieved greater verified savings than final claimed savings. Overall, the fitted line (solid dark line) closely aligns with the dashed line, indicating a high overall GRR (91.3%). Most projects cluster near the dashed line, suggesting that claimed demand savings are generally representative of verified results. Similar to the electric savings results, greater discrepancies are observed among projects with smaller demand savings, including projects with negative demand savings.

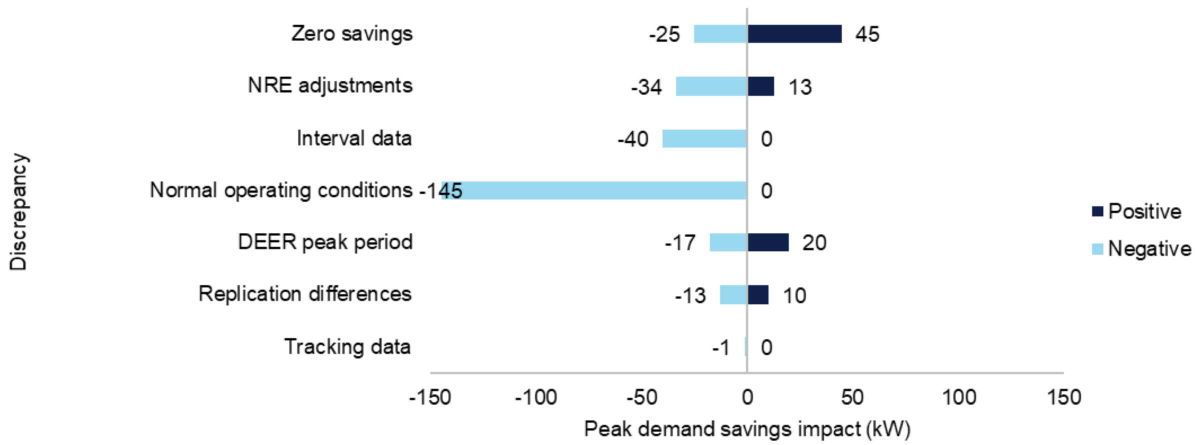
Figure 4-3. Weighted demand savings scatterplot



The deviations from the 100% line in Figure 4-4 are the result of discrepancies in the evaluation demand savings estimate and the claimed demand savings. Those deviations are presented in Figure 4-5 by kind of discrepancy. Demand follows the same categories of discrepancies as kWh (see Table 4-2).

As with the electric energy discrepancy plot, the discrepancies can be either positive or negative (adding to or subtracting from savings, respectively). When compared with the claimed first-year demand of roughly 2,000 kW, the biggest discrepancy represents approximately 7% of the total demand. Detailed evaluation findings are in Section 4.2. This section provides a high-level discussion of discrepancies, organized in descending order by the absolute magnitude of the drivers of differences in evaluated savings.

Figure 4-4. Summary of weighted first-year kW savings discrepancy factors by project count and savings



Normal operating conditions: The kW normal operating conditions savings discrepancies parallel the kWh normal operation conditions savings discrepancies. Across the same two cases, DNV updated the normalization to reflect post-period conditions, which resulted in the largest demand savings discrepancies.

Zero savings: Discrepancies leading to zero-savings adjustments to kW occurred for projects with negative kWh claims, as discussed in the prior section. Only two of the three projects had associated negative kW savings claims. One project had a positive kW claim despite having a negative kWh claim. That claim could not be verified, so we set it to zero.

DEER peak period: DNV corrected the DEER-defined peak period in order to produce accurate verified kW savings for four sites.

Interval data: The kW savings claim for a single site involved the use of hourly kW interval data that reflected the max kW within the hour rather than the typical average hourly kW.

NRE adjustments: The kW NRE adjustments parallel the kWh NRE adjustments. Across the same cases, DNV updated the NRE adjustment approach to improve consistency and alignment with observed conditions.

Replication differences: The replication differences for kW are based on failures to replicate claimed kW. We could not replicate kW exactly for five out of 16 sampled projects. These sites partially overlap with the 4 replication differences identified for kWh.

4.1.3 Gas savings

Only three projects claimed gas savings. Table 4-4 presents the gross gas savings realization rates and savings results by PA. The overall first-year gas savings GRR for the three projects is 88.5%

Table 4-4. Gross gas (therm) savings

Group	Projects	Customers	First-year			Lifecycle		
			Claimed	Verified	GRR	Claimed	Verified	GRR
PG&E	2	1	102,418	90,681	88.5%	497,997	385,002	77.3%
SCE	1	1	-68	-68	100.0%	-799	-799	100.0%
Statewide	**3**	**2**	**102,350**	**90,613**	**88.5%**	**497,198**	**384,203**	**77.3%**

Figure 4-5 compares the weighted claimed gas savings to the weighted verified gas savings. The diagonal dashed line indicates where each sample point would be plotted if the project realized 100% of the final claimed savings. The points below the dashed line achieved less verified savings than final claimed savings, while the points above the dashed line achieved greater verified savings than final claimed savings. As the plot shows, one project claimed the interactive effects of interior lighting using engineering calculations, resulting in a 100% realization rate. The remaining two projects exhibit lower realization rates due to replication differences and updates to the normalization approach.

Figure 4-5. Weighted gas savings scatterplot

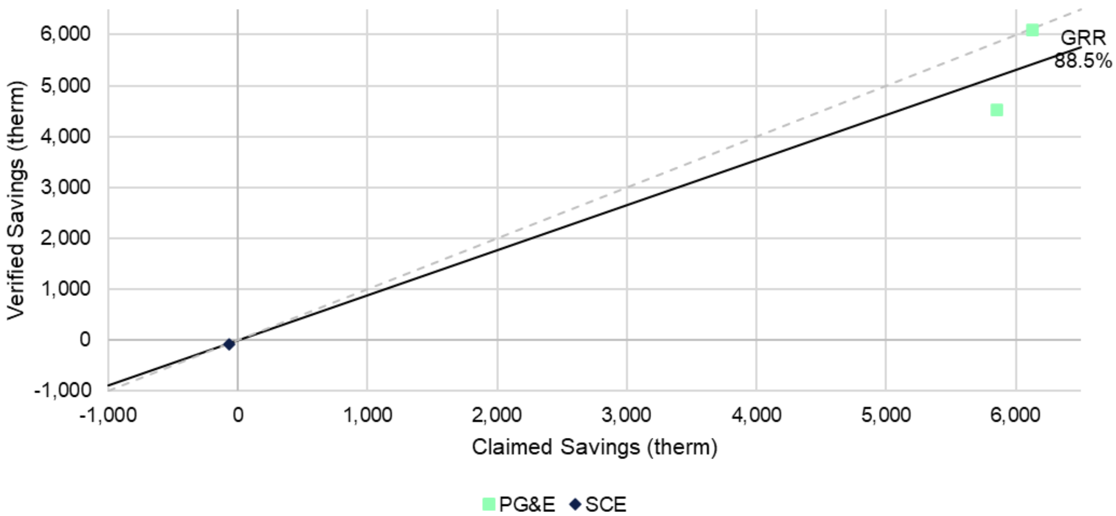
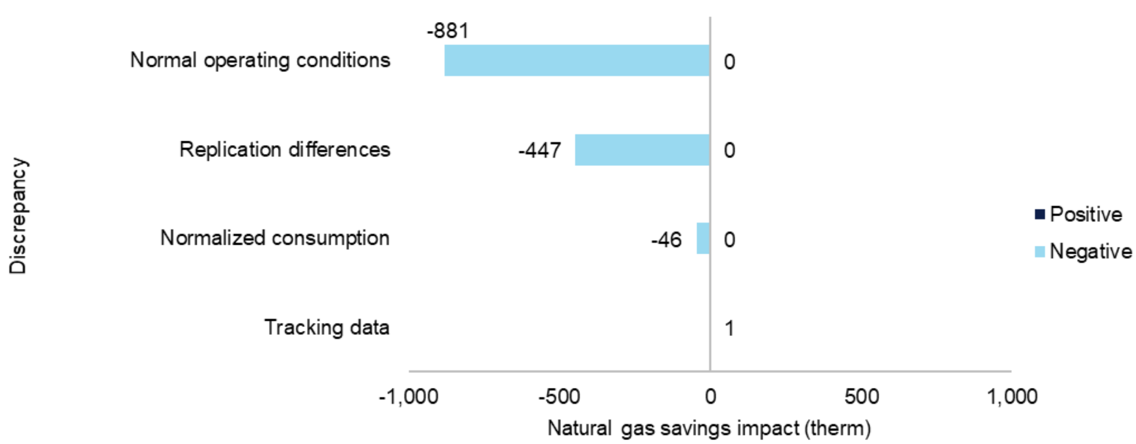


Figure 4-6 illustrates gas discrepancies. The largest discrepancy represents just under 10% of total claimed therms.

Figure 4-6. Summary of first-year gas (therm) savings discrepancy factors by sum of savings impact



Normal operating conditions: Operating conditions are expected to be normalized to performance period values. We corrected this issue for one project, resulting in the largest discrepancy.

Replication differences: For both sites with gas claims, DNV was unable to exactly replicate the natural gas consumption models. This discrepancy primarily reflects the adjustment of one of these two sites.

Normalized consumption: The normalization process for one project applied a rule that set negative predicted consumption values to zero. We removed the rule, resulting in a small reduction in therm savings.

4.2 Gross evaluation findings

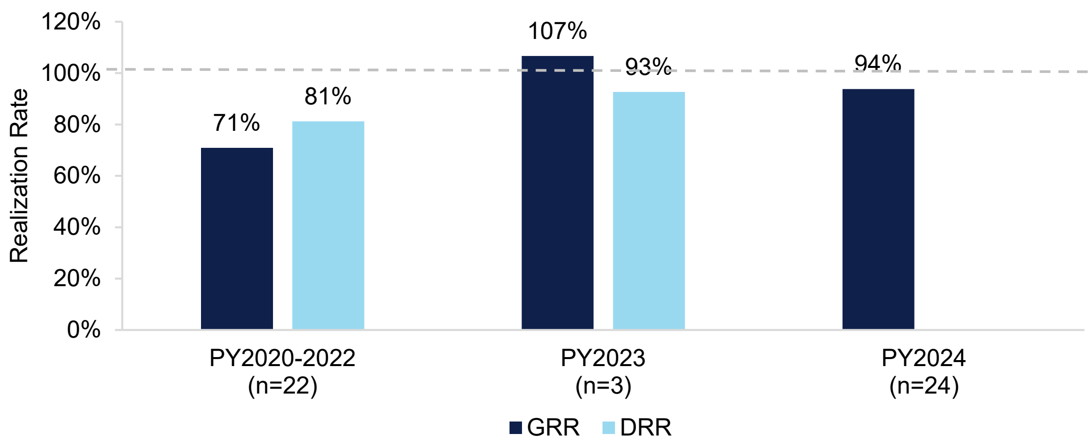
This section focuses on the fully evaluated projects that underlie the gross evaluation results. Most of these evaluated projects with final savings claims in PY2024 (22 of 24) were previously reviewed as part of last year's early gross evaluation documented in the Additional Research Report.[39] Findings related to EUL, measure application type (MAT), gas savings, Custom Project Review (CPR), and project documentation were addressed in that report and are not repeated here.

Sections 4.2.1 to 4.2.7 present the primary findings aligned with the Executive Summary. Subsequent subsections (Sections 4.2.8 to 4.2.9) present additional supporting findings that are not highlighted in the Executive Summary but provide context for interpreting results and discrepancies between claimed and evaluated savings and inform future program improvements.

4.2.1 Cross-year realization rate comparison

Figure 4-7 shows the statewide SLNMEC GRRs and documented realization rates (DRRs) for first-year electricity (kWh) savings over the last three evaluations. The DRR compares the savings verified through the evaluation with the savings provided in the project documentation. The GRR of 94% in PY2024 indicates both that our verified savings are close to the program normalized savings and that the tracking data claims have substantially improved since PY2020–2022, when tracking data errors drove the largest savings discrepancy. Tracking data errors have dropped to the fifth largest source of discrepancy, with only one small discrepancy identified this evaluation. In fact, tracking data has improved so much that we have stopped gathering the extra data from the whole population that would be needed to calculate the DRR. Overall, the consistently high realization rates indicate strong program performances in effectively converting ratepayer funds into realized energy efficiency.

Figure 4-7. SLNMEC cross-year GRRs and DRRs



4.2.2 Eligibility

While project eligibility did not appear directly in the gross savings discrepancies, it is an important topic within the evaluation. Compliance with the NMEC rulebook in the planning stage is a particularly important aspect of project eligibility that is likely to face greater scrutiny in future evaluations as SLNMEC programs become more developed.

[39] DNV, "Site-Level Normalized Metered Energy Consumption (NMEC) Impact Additional Research Report," pda.energydataweb.com, October 30, 2025, https://pda.energydataweb.com/api/view/4239/Site-Level%20NMEC%20Additional%20Research%20PY2023%20Final.pdf.

The NMEC approach to developing performance-based estimates of savings is a powerful tool when applied under the right conditions. When applied under problematic conditions, savings estimates become less reliable and risks increase for all stakeholders. There are three kinds of problematic conditions exemplified among the projects in the PY2024 evaluation: 1) sites with other large, planned changes; 2) sites with process load-driven consumption; and 3) sites with likely increases in energy usage. Each is further described later in this section. All three demonstrate how the simple, meter-based comparison of pre- and post-implementation consumption can fail to provide a reasonable estimate of the savings that occurred at the site. Where this simple pre-post comparison fails, there are generally only two solutions: Find a way to avoid the failure, or revert to a different program approach that can handle those factors more effectively.

Basic NMEC methods cannot distinguish between program and non-program-related changes to consumption at the site. If not avoided or otherwise accounted for, the consumption effects of those non-program changes will be conflated with savings. This conflation can shift savings results either up or down, and may introduce invisible, unquantified error into the savings estimate. Unreliable estimates of savings, always problematic for ratepayers, create additional risk for participants and implementers when a program rewards performance-based savings. Furthermore, gaming this shortcoming of NMEC would be relatively straightforward with easy plausible deniability. These factors point to a need for close guardrails when considering known non-program changes occurring at the site.

Significant construction projects

Six sites undertook significant construction projects at the same time as the SLNMEC program-funded energy efficiency projects. Planned non-program changes, such as new construction or renovations, will affect site meter consumption and need to be addressed when assessing NMEC eligibility. In these situations, the implementer should either have maintained meter consumption consistency by segregating the new load with metering or applied a different savings calculation approach.

The PAs labelled and addressed these construction projects as engineering-based NREs. Strictly speaking, these sites should not be deemed eligible and could be zeroed out. This time, the evaluation assessed the adjustments made to address the NREs for reasonableness. DNV found that the adjustments did not meet standard CIAC criteria for engineering estimates but were otherwise sufficiently reasonable to stand. Recognizing the lack of clarity on this issue, none of these sites was penalized for treating these known project plans as NREs. In the future, engineering adjustments of this kind will need to meet a significantly higher level of rigor and will only be considered in circumstances where a reasonable argument can be made that the other plans could not be foreseen.

Non-commercial or commercial-like sites

Multiple sites in this evaluation did not meet the basic eligibility requirements of representing commercial or commercial-like load as specified in the NMEC rulebook and subsequent CPUC guidance. Manufacturing and industrial site energy use is often driven by production levels, which can change over time and directly affect energy consumption. Multiple evaluated sites, including a food processing facility and an advanced aerospace electronics manufacturing facility, indicated the presence of process load. These sites included production variables in their site-level regressions and, as a result, could meet statistical requirements for NMEC.

Complex process-based loads are not included in SLNMEC. This is because it is difficult to establish that pre- and post-period industrial loads are consistent over time, apart from program-related changes. For example, the food processing site assessed for this evaluation rotates processing equipment to a second location to take advantage of two harvest seasons. It is impossible to ensure that the same machinery was in place during the performance period. Furthermore, in the consumption regressions, production was tracked by weekly production data in pounds of product. It is not possible to verify whether, across the two seasons, the production data reflect the same products. Finally, even if better-defined, production data are not independently verifiable for evaluation. Unlike utility meter data and weather data, production data are proprietary. SEM programs can work with these kinds of sites by developing multi-year, embedded relationships with customers. This help manage the conceptual and meter-based modeling challenges and mitigate the risks that are harder to manage in the SLNMEC context.

Increase in energy usage

Finally, the evaluation included multiple sites with energy use increases for reasons beyond the potential energy savings of the installations. Five schools with HVAC retrofits experienced increased energy usage following project implementation. Prior to the retrofit, occupants could open windows to bypass mechanical ventilation. The new systems delivered the code-required minimum ventilation, increasing HVAC operation and meter-level energy usage, rather than producing measurable savings. For these sites, NMEC methods cannot provide an appropriate baseline to assess efficiency savings under code-compliant ventilation conditions. These projects illustrate another way that other changes in consumption can undermine the potential for accurately estimating savings.

These three sets of projects collectively demonstrate the importance of confirming site suitability for meter-based methods before the project specifics are even developed. These issues undermine NMEC's core assumption that the impact of energy efficiency projects can be isolated using whole-facility metered data. When the customer and PA identify or foresee these conditions during the project planning phase, they should consider savings pathways other than NMEC, such as custom programs.

4.2.3 Monitoring NREs

The NMEC rulebook[40] requires ongoing monitoring of SLNMEC projects. One of the identified advantages of meter-based methods is that early feedback can support adjustments that make positive energy efficiency outcomes more consistent. In addition, it is inevitable that, despite all reasonable efforts, unforeseen conditions will occur at some NMEC sites that challenge meter-based methods. These are the real NREs that must be identified early so they can be properly addressed.

Multiple projects experienced NREs that significantly undermined the reliability of NMEC savings estimates. As already discussed, some NREs could have been avoided if eligibility requirements regarding planned non-program changes in consumption had been followed. Other NREs may not have been foreseeable at the time of planning, but could have been identified earlier. For example, a solar array was added during the performance period. The installation was metered, but the meter was faulty. The lack of generation data was not identified until a substantial portion of the performance period had been affected. It is likely that the addition of the solar array was a foreseen activity but only became an NRE when the meter failed. If the meter failure had been identified and fixed earlier, affecting less than 25% of the performance period, this would have been a tractable NRE. With unmetered solar generation data affecting the majority of the performance period, savings estimates require engineering estimates of generation that make the ultimate savings estimates non-meter-based.

Late identification of NREs can reduce the effectiveness of corrective measures such as fixing a solar meter, submetering other changes to a facility, or targeted data collection. Like discussed in the eligibility section, using non-meter-based NRE adjustments undermines NMEC's core assumption that the impact of energy efficiency impacts can be isolated using whole-facility metered data.

4.2.4 Accurate and up-to-date documentation

If a site meets the full range of eligibility criteria, it becomes feasible that meter-based methods can reflect the actual savings occurring at the site. However, if the details of the project are not carefully documented and updated through the end of the performance period, then the performance-based savings are difficult to validate. Documenting NMEC savings may seem

[40] CPUC, *Rulebook for Programs and Projects Based on Normalized Metered Energy Consumption*, January 7, 2020, https://www.cpuc.ca.gov/-/media/cpuc-website/files/legacyfiles/n/6442463694-nmec-rulebook2-0.pdf

less important given the meter-based nature of the claims, but the opposite is the case. One of the clearest signals of interference from non-program-related changes is savings that differ greatly from forecast savings. Without updated documentation regarding the scope of the installed measures, this process is undermined. Updated documentation will also clarify the impacts of changes in scope on project eligibility. Finally, the meter-based estimate of savings reflects only the first year of savings, which is translated into lifetime savings and TSB using the lifetimes of project measures.

Fewer measures installed than planned, saving less energy. Five schools installed fewer measures than planned, leading to a significant drop in the metered savings results compared to the savings forecasted during the planning stage. A refrigerated warehouse also installed fewer measures than planned, amounting to a 20% reduction in the site's forecasted savings. When a project's expected savings drop substantially, savings may be too small for the SLNMEC meter-based approach to reliably identify. Consequently, when project scopes decrease, it is important to reassess whether the project is still eligible for SLNMEC.

Project-level lifecycle impacts. Programs report how long they expect savings to last (EUL) and use EULs to calculate lifecycle savings and, going forward, TSB. Projects discussed in this section were partially reviewed in the PY2023 Additional Research Report,[41] which identified EUL discrepancies for most projects between documented and evaluated values. In most cases, these discrepancies resulted from the use of EULs developed during project planning rather than EULs reflecting the measure mix actually installed.

4.2.5 Project adjustments

There are a variety of non-routine adjustments (NRA) methods for addressing NREs. Many of these methods maintain the meter-based core of the NMEC approach. More extreme NREs require engineering estimates that effectively move the savings estimates out of the meter-based realm. The overarching goal is to avoid these kinds of engineering-based adjustments altogether. To that end, a primary finding is the enhanced focus on the eligibility requirements related to foreseen changes in site conditions (See Section 4.2.2). Similarly, careful ongoing monitoring will catch some unforeseeable NREs early enough for meter-based solutions to be applied, avoiding reliance on engineering-based NRAs (See Section 4.2.3). Ultimately, some NREs will be unavoidable and will require engineering-based solutions.

In prior evaluations, NREs were typically addressed using meter-based or regression-based NRAs. In this evaluation cycle, however, engineering-based NRAs were applied in a substantial share of projects (7 of 24). The magnitude of these adjustments varied widely, both increasing and decreasing savings—ranging from −69% to 394% of forecasted savings (see Table 4-5). Given the limited supporting documentation and the lower level of rigor relative to custom project standards, DNV was only able to assess the adjustments for general reasonableness rather than independently verify the direction or magnitude of impacts.

Construction activities. Three projects involved construction activities—two adding construction trailers to the site and one adding a new construction building to the same meter. To remove the impacts of the construction activities, whole-building energy modeling was applied to estimate the energy consumption of the construction trailers and the newly constructed building. The estimated impacts of the construction trailers were relatively small compared to the forecasted savings at the planning stage. However, the adjustment for the new construction was significant and converted the negative metered savings up to final positive savings.

[41] DNV, *Site-Level Normalized Metered Energy Consumption (NMEC) Impact Additional Research Report*, pda.energydataweb.com, October 30, 2025, https://pda.energydataweb.com/api/view/4239/Site-Level%20NMEC%20Additional%20Research%20PY2023%20Final.pdf.

Operational change/new load. One refrigerated warehouse switched part of the cooler space to a freezer to accommodate the new ice cream account added during the performance period. This change would lead to increased energy usage at the meter. Therefore, an engineering adjustment was applied to estimate the impact.

Faulty equipment unrelated to project scope. One university lab building identified a faulty chilled water valve during the project implementation stage. In addition to the project-scope measures, fixing the valve would lower the metered usage significantly. Therefore, an engineering adjustment was applied to remove the savings at the meter from fixing the valve, which led to a significant drop in savings.

Measures installed outside the 18-month installation window. Two schools installed lighting measures outside the 18-month installation window limit due to the impact of COVID-19. Therefore, the savings of lighting measures were estimated using an engineering-based approach and were removed from the baseline period.

Overall, engineering-based NRAs were adopted when NREs overlapped materially with the implementation and performance periods and timely isolation methods (e.g., submetering) were not in place. For the three construction-activity projects, the NREs were arguably foreseeable; with earlier identification and targeted metering, reliance on engineering-based NRAs could have been avoided. For the remaining sites, the NREs were less foreseeable and difficult to isolate using available metered data. In addition, none of the engineering-based adjustments reviewed met the rigor typically required under a custom project.

NMEC methods are designed to produce meter-based savings estimates. Reliance on engineering-based adjustments—particularly when the magnitude of the adjustment is comparable to or exceeds the metered savings—introduces substantial uncertainty and challenges the interpretability and credibility of the final claimed savings. Looking forward, applying savings adjustments outside the metered time series also complicates the development of reliable savings profiles for TSB, because these engineered adjustments are not reflected in the interval meter data used to shape time-dependent impacts.

Given the limited supporting documentation and the lower level of rigor relative to custom project standards, the evaluation team was only able to assess the adjustments for general reasonableness rather than independently verify the direction or magnitude of impacts. Clearer guidance is needed on acceptable documentation, analytical rigor, and thresholds (e.g., direction, magnitude, and credibility) for engineering-based NRAs applied within SLNMEC.

Table 4-5. Summary of projects with engineering-based adjustments

ID	Participant type	NRE	Units	Planned savings	Metered savings	NRA	Reported savings	NRA as of % planned savings
DNV74	School	Construction trailer	kWh	280,254	218,861	9,787	228,648	3%
DNV75	School	Construction trailer	kWh	159,621	-15,492	9,787	-5,705	6%
DNV77	School	New construction	kWh	30,738	-79,870	120,966	41,096	394%
DNV98	Cold Storage	New ice cream account	kWh	910,000	523,063	300,929	823,992	33%
DNV63	University laboratory	Faulty chilled water valve fixed during installation period	ton-hrs.	45,652	79,109	-65,056	14,053	-143%
			lbs	1,376,263	1,193,869	-678,843	515,026	-49%
DNV103[1]	School	Lighting installation	kWh	119,531	-108,114	-82,291	-108,114	-69%

ID	Participant type	NRE	Units	Planned savings	Metered savings	NRA	Reported savings	NRA as of % planned savings
		outside of 18 month gap						
DNV109[2]	School	Lighting installation outside of 18 month gap	kWh	120,046	-44,491	-46,409	-44,491	-39%

[1] The NRA for DNV103 reduced baseline period consumption by 82,291 kWh, indirectly reducing the savings. Since the adjustment is within the context of the baseline period model, the metered savings already reflect the NRA and are equal to the reported savings.
[2] The NRA for DNV109 reduced baseline period consumption by 46,409 kWh, indirectly reducing the savings. Since the adjustment is within the context of the baseline period model, the metered savings already reflect the NRA and are equal to the reported savings.

4.2.6 Claiming projects that do not save energy

One of the more unexpected findings in this year's evaluation was claims of negative overall savings. Seven school projects with HVAC retrofit measures resulted in increased energy usage rather than energy savings and claimed the project impacts as negative total savings. These projects also occurred during a period when COVID was still affecting NMEC methods.

Project files did not clearly document: 1) when the program identified an increase in energy usage and what investigative steps it took to identify non-routine events, problems with the installed equipment, or other causes; 2) any steps the programs or PAs will take to reduce the likelihood of recurrence. The significant decline in energy savings from the forecasted estimates to the metered results led to a sharp drop in the incentives paid to the customers. This outcome raises concerns regarding customer risk, as significant capital investments and implementation efforts may not have yielded the expected energy performance or financial benefits.

Customer interviews provided additional context for five of the seven schools that were in the same school district. Interviewees explained that, prior to the retrofit, occupants could open windows to bypass mechanical ventilation. After the retrofit, the new systems delivered code-required minimum ventilation, increasing HVAC runtime and whole-facility energy use, which is consistent with the observed increase in metered consumption rather than savings. For the remaining two schools in a different district, the reasons for increased energy usage were less clear due to customer staff turnover. Interviews suggested that pre-existing ventilation may have faced similar operational conditions and that the newly installed central energy management system experienced frequent breakdowns, leading to repeated maintenance and reversion to manual control, factors that could plausibly contribute to higher energy use.

Despite the clear negative implications of this experience for the customer, DNV did not maintain the negative savings claims, instead setting them to zero. While there are valid statistical reasons for maintaining negative savings claims, they unnecessarily penalize the wider portfolio of NMEC claims. The negative savings were an unfortunate failure of the process. They may have been negatively affected by COVID. The magnitude of the negative savings were well within the range of uncertainty observed for other projects including cases using engineering-based adjustments. Proper application of eligibility requirements and better ongoing monitoring will mitigate situations like this in the future.

4.2.7 Population to site-level NMEC transition

Beginning with the PY2023 evaluation, we noticed that some on-bill financing (OBF) projects were redirected from population NMEC to SLNMEC. In the current evaluation, the OBF program redirected two projects from population NMEC to SLNMEC. Further review showed that one redirected project was an aggregation of three distinct projects; however the PA could not disaggregate the program information to a sufficient level to enable evaluation. DNV also could not verify the other redirected project due to failed NMEC models and additional eligibility concerns.

Information provided by the PA indicates that these projects were retroactively converted to site-level NMEC late in the project lifecycle. Such late pathway transitions introduced documentation gaps and data inconsistencies that further complicated the evaluation and limited the ability to verify meter-based savings.

At present, there is limited transparency regarding the criteria and process used to redirect projects from population NMEC to SLNMEC or other evaluation pathways. For projects that ultimately move to the SLNMEC pathway, adherence to NMEC Rulebook requirements—including appropriate documentation and evaluability criteria—is necessary to support reliable meter-based savings estimation.

4.2.8 Model interval change

With the transition to TSB goals, SLNMEC projects should incorporate hourly models whenever possible. Frequently, projects claim annual kWh using a daily model while using an hourly model for kW claims. In addition to supporting TSB claims, well-fit hourly models reduce the number of models needed for each site. To support this transition, the evaluation team switched from daily to hourly models when the hourly models met FSU requirements. Of the 24 sampled projects, DNV used hourly models as the basis for first-year kWh savings for two projects. We validated savings for another six projects using hourly models, rather than the daily models used as the basis for the final claimed kWh savings. We discuss the potential for transitioning a greater share of projects to hourly models in Section 4.5 within the context of TSB and the projects without final savings claims included in the early review.

4.2.9 Project documentation clarity

Efficient and thorough project evaluation relies on clear and concise project documentation. Establishing clear documentation expectations may help reduce administrative burden and duplicated efforts identified by participants during the interviews. While Section 4.2.4 focuses on keeping documentation up to date, this section focuses on documentation clarity.

Across the portfolio of SLNMEC projects reviewed this year, project documentation continues to be one of the most significant barriers to efficient evaluation, replication, and verification. While many implementers produce voluminous documents, the level of detail does not always translate into clarity, traceability, or reproducibility. In several cases, the evaluation team reached the 12-month milestone without a clear understanding of what occurred on-site or how models were constructed. It was also unclear whether changes from the M&V plan were intentional and justified. A new project feasibility study (PFS) template will be released in 2026, which will hopefully improve documentation consistency and clarity.

The project files typically included raw, unmodified consumption data and other model inputs, the processed data used in the model, and the tools used to run it. While a few PY2024 projects offered visibility into data preparation, rarely did they provide fully transparent or complete documentation of how raw data was transformed into model-ready datasets. Although evaluators can replicate models using the prepared data and the provided modeling tools, they cannot verify the methods and assumptions used to prepare the raw data if they do not know what those methods and assumptions are. Across the PY2020–2022, PY2023, and PY2024 evaluations, we have seen the data preparation approach in only a handful of cases, and in one of those (from PY2020–2022), we identified a key problematic assumption. While we were unable to directly see the data preparation approach, we identified an issue in how the raw consumption data were prepared for one PY2024 project, which affected demand savings. In this case, the final M&V report identified an issue, and we were able to use the raw data to both confirm how the data were prepared and correct the issue. In contrast, many projects provided relatively greater transparency into normal weather data preparation, where we identified an aggregation issue that affected savings for four PY2024 projects.

Similarly, projects with complicated, multi-stage approaches rarely provide fully transparent or complete documentation of intermediate models and data transformations. In these instances, the lack of transparency extends beyond typical procedures used to prepare raw data (e.g., aggregating 30-minute AMI data to the hourly or daily level, merging model input datasets) and into critical methods and assumptions used to model savings. Again, while evaluators can replicate the final model and savings, they cannot verify the underlying methods and assumptions.

While we were able to replicate the model specification and savings for the majority of projects, three projects had substantial documentation gaps. In two cases where we found savings discrepancies, the data and modeling documentation were provided in Excel workbooks that were difficult to follow. One of these two cases resulted in the only substantial discrepancy between claimed and documented savings for the sampled projects. In this case, it was unclear what the documented savings were, and none of the documentation provided matched the final claimed savings. In another case where we found a savings discrepancy, we needed to request additional data because the data provided initially prevented replication. The updated data provided allowed us to attempt replication but still resulted in a savings discrepancy. The evidence in this case suggests version control may be an issue, as models are understandably updated as the project progresses.

Project documentation typically listed model variables and whether NREs are addressed. However, it rarely explained modeling decisions or provided interpretation of the results. When projects use anything other than the most basic models, a discussion of specific modeling decisions increases analytical transparency and clarity.

4.3 Net savings results and ratios

This section presents the findings for the net savings analysis for projects with initial claims in PY2024. As discussed in Section 3.3, the evaluation used the same NTG methodology as the PY2023 SLNMEC evaluation, which is based on interviews with participants before their projects submitted final savings claims. For this reason, next year’s PY2025 evaluation will use the results of this NTG evaluation to adjust the final savings claims submitted in PY2025. This report presents the results of this year’s NTG evaluation to provide insight into the current influence of programs on participant decision-making. We attempted to complete a census of participants. Ultimately, DNV interviewed participants representing 47 sites (94% of the population).

Table 4-6 shows the net-to-gross ratios (NTGRs) for each PA for projects with initial claims in PY2024. It shows the project and customer counts, the NTGR, and the relative precision (RP%). Since we interviewed 94% of the population and applied a finite population correction, assuming these results will be applied to the evaluated population, most of the relative precisions are zero. Results are split into electric (kWh), demand (kW), and natural gas (therm).

As shown in Table 4-6, the statewide NTGR is 71.9% for electric savings, 58.4% for demand savings, and 67.1% for natural gas savings. Each statewide NTGR is above 50%, representing a substantial amount of program influence. One respondent who provided a high NTGR cited the following as strengths of the program: “the program gave the ability to come up with a reasonable energy efficiency project that is viable to the company keeping in mind all the things that are important to us such as cost outlays and capital expenditures.” Another said that they appreciated “the flexibility of the measures you can install, and that the measures are performance based. It's not just engineering calculations but it's showing the actual performance and savings for your specific facility.”

Table 4-6. Net savings results by PA

Program administrator	Projects	Customers	First-year NTGR	First-year RP%*	Lifecycle NTGR	Lifecycle RP%*
Electric (kWh)						
PG&E	34	6	79.3%	±0.0%	81.6%	±0.0%
IREN	1	1	90.0%	±0.0%	90.0%	±0.0%
SoCalREN	12	4	41.0%	±78.0%	43.2%	±76.0%
Statewide	**47**	**11**	**71.9%**	**±15.0%**	**69.7%**	**±23.0%**
Demand (kW)						
PG&E	32	4	82.6%	±0.0%	N/A	
IREN	1	1	90.0%	±0.0%		
SoCalREN	12	4	45.1%	±80.0%		
Statewide	**45**	**9**	**58.4%**	**±45.0%**		
Natural gas (therm)						
PG&E	11	6	67.2%	±0.0%	62.0%	±0.0%
IREN	1	1	90.0%	±0.0%	90.0%	±0.0%
SoCalREN	1	1	69.2%	±0.0%	69.2%	±0.0%
Statewide	**13**	**8**	**67.1%**	**±0.0%**	**69.2%**	**±27.0%**

* DNV used tracked savings in the ratio estimation.
** Relative precision is at the 90% confidence level. Since we interviewed all but a couple of participants, relative precisions are often zero, since the population is finite.

4.3.1 Program attribution indexes

Table 4-7 describes the three program attribution indexes (PAI_1, PAI_2, and PAI_3) and shows the average score for each indicator for PY2024 and includes the PY2023 evaluation for comparison purposes. The NTGR is calculated by averaging the three PAIs. The average PY2024 value is lower than the average PY2023 value for PAI_1 and PAI_3, with PAI_1 showing the biggest change across indexes from PY2023 to PY2024. The reduction in PAI_1 is driven by PY2024 respondents giving higher ratings for the importance of non-program influences than respondents gave in previous years.[42]

Table 4-7. Program attribution index (PAI) results

Program attribution index	Basis	PY2023	PY2024
PAI_1	Respondents' ratings on the importance of individual program and non-program influences in their decision to implement a project	7.5	6.4
PAI_2	Respondents' rating of the timing of project implementation relative to program interaction	7.6	8.3
PAI_3	Respondents' rating for the likelihood they would have implemented a similar project scope on a similar timeline in the absence of the program	7.9	7.5

4.3.2 Cross-year NTGR comparisons

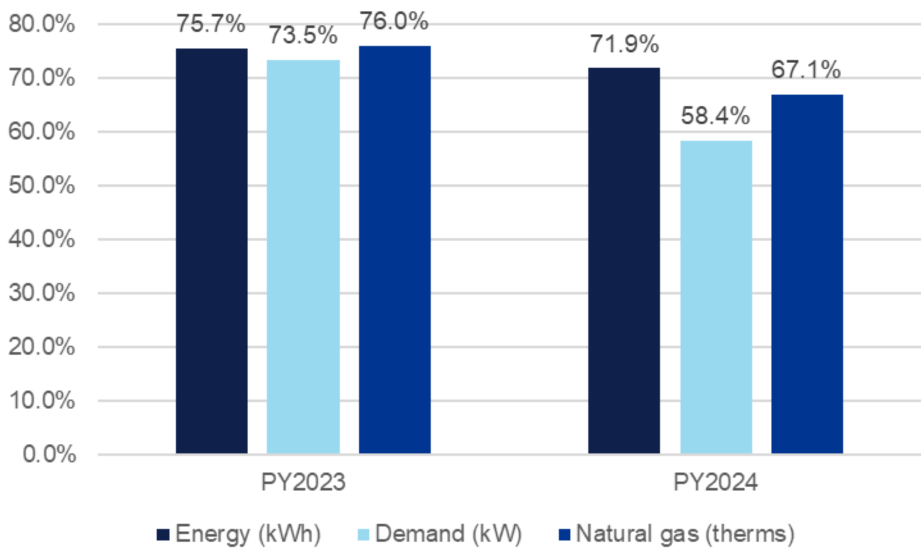
Figure 4-8 shows the statewide NTGRs for energy, demand, and natural gas for PY2023 and PY2024. The statewide NTGRs show a small decrease from PY2023 to PY2024. The difference is not statistically significant for electric or demand savings but it is for natural gas savings. The decrease is driven mainly by respondents indicating a lower importance for program influences in their decision to implement projects at the time that they did relative to non-program influences than did respondents from PY2023. Additionally, one respondent who represented nine sites in PY2024 indicated that their

[42] PY2020-PY2022 values are not shown since that evaluation used a different methodology.

organization had planned the projects before engaging the program. This respondent referred to the program as a "cherry on top."

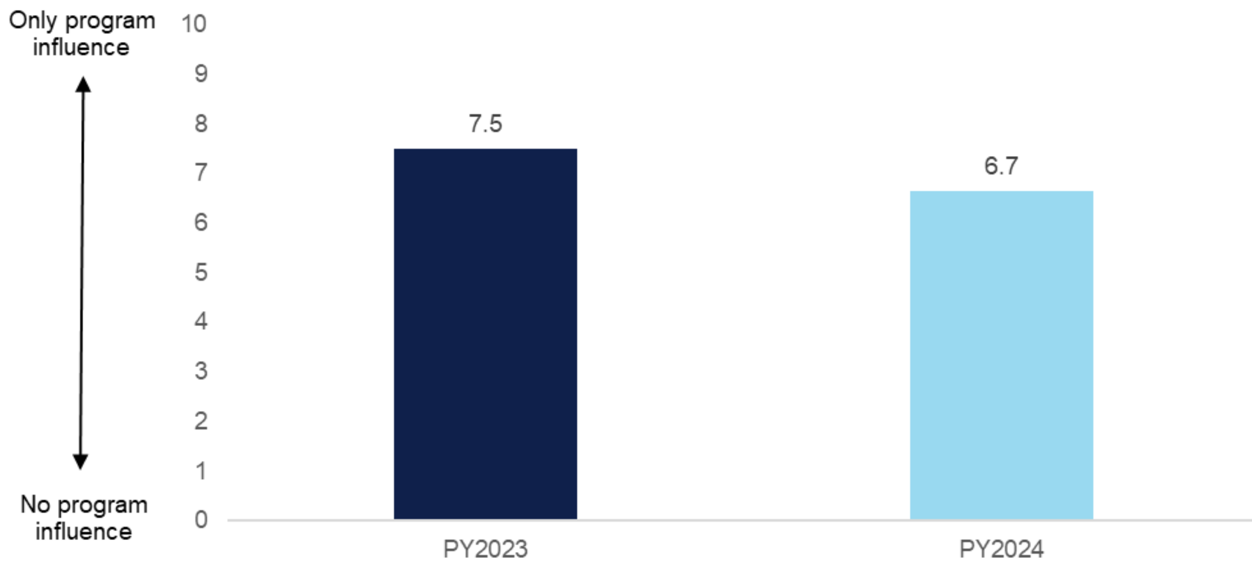
Year-to-year comparisons are limited by changes in the population of programs and PAs. For example, only PY2024 had projects from IREN, and only PY2023 had projects from SCE and SDGE.

Figure 4-8. NTG ratios over time



Decreases in reported program influence: As mentioned above, a decrease in the reported importance of program factors on participants' decision-making drove the decrease in NTGRs from PY2023 to PY2024. To indicate the importance of all program influences relative to all non-program influences in their decisions to implement projects, we asked respondents to divide a total of 10 points across the two types of influences. In PY2023's evaluation, respondents gave an average of 7.5 points to program influences, indicating that program influences were more important than non-program influences on their organizations' decisions to do the EE projects. For PY2024, respondents gave an average of 6.7 points to the program influences, indicating that program influences were more important than non-program influences (Figure 4-9). This results in lower NTGRs for PY2024 because the responses to these questions are used to weight the portion of PAI_1 attributable to the programs. A lower value for program influences, reduces PAI_1. See APPENDIX H for a full NTG calculation methodology.

Figure 4-9. PAI$_1$ component (not full PAI$_1$): respondent rating for collective importance of program influences on decision to do project at the time they did



Decision timing: Additionally, the PY2024 decrease relative to PY2023 is the result of one respondent, representing nine sites, indicating that their organization made the decision to implement the projects *before* interacting with the program. In PY2023, no respondent indicated that their organization had decided to do the project before interacting with the program.

Indication of stranded savings: Two timing questions provided indications that the NMEC programs succeeded in targeting stranded savings in PY2024. Table 4-8 shows respondents' answers to the question asking about the likelihood that they would have conducted the project at the same time as they did without the program. When asked about project timing, 82% of respondents, representing 77% of sites, said it was "very unlikely" that they would have implemented their projects when they did without the program. Nine percent of respondents, representing 19% of sites, said it was "very likely" they would have implemented their project at the same time. In PY2023, respondents representing 90% of sites said it was "very unlikely."

Table 4-8. Likelihood of implementing project at the same time without the program

If the program had not been available, what is the likelihood that you would have conducted the project at the same time as you did?	Percent of PY2024 respondents	Percent of PY2024 sites	Percent of PY2023 respondents	Percent of PY2023 sites
Very likely	9%	19%	0%	0%
Somewhat likely	0%	0%	10%	3%
Neither likely or unlikely	0%	0%	0%	0%
Somewhat unlikely	9%	4%	20%	7%
Very unlikely	82%	77%	70%	90%

When asked how much later they would have implemented their projects without the program, 45% of PY2024 respondents, representing 70% of sites, said they would never have implemented the project; this is a larger share than in PY2023 (20% of respondents representing 17% of sites). However, when looking collectively at the percentage who said their organizations would have completed the projects "at least 3 years later" or "never," the change from PY2023 to PY2024 is not as stark (70% of PY2023 respondents to 63% of PY2024 respondents). Another 27% of respondents, representing 8%

of sites, said they would have implemented their projects two or three years later than they did. Eighteen percent of respondents, representing 19% of sites, said they would have done the project at the same time or earlier. These responses, summarized in Table 4-9, were not part of the PAI_3 score.

Table 4-9. Whole project timing (NOT INCLUDED IN PAI3 SCORE)

Without the assistance received from the [program] (including any incentive funds, program information, energy audits, technical assistance, and any other support) would your organization have completed the whole project…	Percent of PY2024 respondents	Percent of PY2024 sites	Percent of PY2023 respondents	Percent of PY2023 sites
About the same time or earlier than you did	18%	19%	10%	2%
At least a year later than you did	9%	2%	10%	2%
At least two years later than you did	9%	2%	10%	20%
At least 3 years later than you did	18%	6%	50%	59%
Never	45%	70%	20%	17%

4.4 Total savings

Table 4-10 presents the evaluated electricity, peak demand, and natural gas savings. The table shows the savings for projects trued up in PY2024, GRRs from Section 4.1, and the NTGRs calculated in the last evaluation[43] for the same group of projects. The net savings in the table below reflect the verified savings for the projects trued up in PY2024.

[43] DNV, *Site-Level NMEC Evaluation, PY2023*, June 10, 2025, https://www.calmac.org/publications/Site-level_NMEC_Evaluation_PY2023.pdf.

Table 4-10. Gross and net evaluated savings for SLNMEC projects trued up in PY2024

PA	Sample size	Claimed*	Verified†	GRR††	NTGR	Net
First-year electricity savings (kWh)						
PG&E	9	10,282,490	9,221,337	89.7%	75.4%	6,950,122
SCE**	8	909,733	1,210,301	133.0%	99.4%	1,203,281
SoCalREN	5	367,753	348,502	94.8%	63.9%	222,693
SDGE	2	969,133	968,843	100.0%	50.7%	491,009
Statewide	**24**	**12,529,110**	**11,748,983**	**93.8%**	**75.5%**	**8,867,106**
Lifecycle electricity savings (kWh)						
PG&E	9	80,105,966	61,825,784	77.2%	75.4%	46,598,094
SCE**	8	10,445,791	12,041,538	115.3%	99.4%	11,971,697
SoCalREN	5	3,351,615	5,227,308	156.0%	63.9%	3,340,250
SDGE	2	11,629,600	11,626,111	100.0%	50.7%	5,892,113
Statewide	**24**	**105,532,971**	**90,720,741**	**86.0%**	**74.7%**	**67,802,153**
Peak demand savings (kW)						
PG&E	9	1,573.7	1,379.5	87.7%	76.9%	1,060.8
SCE	2	185.7	214.1	115.3%	100.0%	214.1
SoCalREN	3	13.7	17.4	126.7%	86.1%	15.0
SDGE	2	128.1	125.2	97.7%	50.7%	63.5
Statewide	**16**	**1,901.2**	**1,736.1**	**91.3%**	**78.0%**	**1,353.3**
First-year energy savings (therm)						
PG&E	2	102,418	90,681	88.5%	76.1%	69,045
SCE	1	-68	-68	100.0%		-52
Statewide	**3**	**102,350**	**90,613**	**88.5%**	**76.1%**	**68,993**
Lifecycle energy savings (therm)						
PG&E	2	497,997	385,002	77.3%	76.0%	292,601
SCE	1	-799	-799	100.0%		-607
Statewide	**3**	**497,198**	**384,203**	**77.3%**	**76.0%**	**291,994**

* Claimed savings are the final claimed project savings in the tracking data.
† Verified savings are the evaluated project savings.
†† Gross realization rate (GRR) compares verified savings with the final claimed savings.
** The relative precisions for the SCE first-year and lifecycle electricity savings GRRs are 88% and 118%, respectively. All other GRRs shown in the table have relative precisions less than 30%.

4.5 Total System Benefit

Total system benefit (TSB) is a new metric that is the primary goal for energy efficiency portfolios. It is a dollar-based metric intended to incentivize the PAs to emphasize measures and projects that save energy during high-value hours when energy is scarcer and associated with higher levels of GHG emissions. While the PAs have been calculating TSB in the Cost-Effectiveness Tool (CET) database for many years, TSB did not become the official primary goal for the programs until PY2024. Given that NMEC claims span two years and that the projects currently under evaluation made initial claims between PY2021 and PY2023, this first TSB evaluation covers a transition period.

The TSB metric is intended to encourage projects that deliver energy savings when they are most valuable to the electric grid. It does so by explicitly accounting for the time-varying costs of generation, transmission, distribution, and other system resources. In practice, this means placing greater emphasis on savings that occur during periods of higher demand. Currently, these occur in the late afternoon and evening, when cooling loads drive demand and grid conditions are most stressed. In future years, the predicted value of winter hours increases somewhat due to expected increased electrification. Measures that reduce load during predicted hours of high system stress or high avoided costs therefore generate greater system benefits than measures with identical annual savings that occur during lower-value hours.

4.5.1 Total system benefit results

Table 4-11 presents the TSB results for the SLNMEC projects with final savings claims. The TSB realization rates generally align with the GRR and NTGR for these projects. For the evaluated TSB results, we updated GRR, NTGR, EUL, verified savings—including both initial and true-up savings—using the initial avoided cost year and impact profile avoided cost combination. We further discuss the savings shapes and the avoided cost year considerations below the table.

Table 4-11. Total system benefit ratios

Program administrator	Projects	Customers	Claimed	TSB RR	Verified
Total system benefit					
PG&E*	9	6	3,771,980	70.7%	2,665,658
SCE	8	3	1,703,867	63.6%	1,083,584
SoCalREN	5	2	358,283	17.4%	62,471
SDGE	2	1	455,324	53.3%	242,687
Statewide	**24**	**12**	**6,289,454**	**64.5%**	**4,054,401**

* PG&E claimed negative TSB for a single project with a final claimed TSB of -4,684,078 in the tracking data. This project did not include a TSB value in its initial claim, but reported a negative TSB at true-up. With the initial claim setting a TSB baseline of 0, the negative true-up drove the aggregated TSB value deep into the red. We removed this outlier from the results shown in the table. The statewide TSB realization rate (RR) is 46.4% when this outlier is included.

Impact shapes

Projects completed in future years will be able use the CEDARS new impact profile library[44] to store project-specific, meter-based, hourly impact shapes to represent the actual savings in each hour of the year when calculating TSB. Of the projects the evaluation team reviewed, the majority (20 out of 24) had data to support custom impact shapes, which could be used for calculating the TSB of the project. Additionally, most projects (16 out of 20) for which the evaluation team completed an early review had hourly models, indicating there is sufficient data to produce custom impact shapes to determine TSB of the final savings claims.

We compare TSB results calculated using the meter-based, hourly impact shapes versus the claimed impact shapes for 9 of the 24 evaluated projects in Section Overall TSB impacts, following a detailed examination of two case studies, in Section 4.5.2.

Year

Each site-level NMEC project makes at least two claims: an initial forecast claim in the year of installation and a positive or negative true-up claim in the following year. This is unlike traditional custom projects, which submit only one claim. The dual submission process for SLNMEC poses challenges for the calculation of TSB when the ACC database of hourly avoided costs changes between the initial and true-up claims. When replicating the claimed TSB values in the CET database, it became evident that the PAs applied different avoided cost years and different avoided cost calculator (ACC) versions to initial and true-up claims. As a result, even when a true-up energy savings claim is intended to fully offset the initial claim, the corresponding TSB values do not net to zero. This occurs because the benefits are calculated using different avoided cost versions over misaligned benefit years. To address this issue for the evaluation, we used the initial year as the basis of the verified TSB.

The PAs will have to adjust how they claim TSB. There is no way to reconcile additive claims across avoided cost years and different ACC versions. To maintain the consistency and interpretability of TSB, both initial and true-up TSB claims should

[44] The CEDARS Impact Profile Library is an online repository within the CEDARS platform that stores and manages impact profiles. The library includes standardized impact profiles (e.g., DEER profiles) and allows PAs to upload and manage custom impact profiles. These profiles are used to perform cost effectiveness calculations such as TSB. Impact Profiles Library - CEDARS

be calculated using a single starting avoided cost year and ACC version—namely the ACC version corresponding to the initial claim year. Furthermore, different GRRs applied during initial and true-up claims further complicate the interpretation and replication of the final TSB claim. DNV recognizes that the PAs are aware of these issues and are currently developing solutions.

4.5.2 Case studies

The PAs only used existing California Database for Energy Efficiency Resources (DEER) impact shapes for the claims we evaluated. However, the evaluation team expects the PAs will transition to meter-based impact shapes in future program years with the introduction of the CEDARS new impact profile library. As PAs transition to TSB goals and program incentives, understanding how different measures, building types, and avoided costs impact the project-level final TSB become increasingly important. This section presents two lighting upgrade case studies—a courthouse and a port of entry—to illustrate how assumptions about savings impact profiles materially affect TSB. For both sites, we compare hourly TSB results derived using the DEER shapes (claimed in CEDARs) versus the project-specific, meter-based impact shape. This comparison highlights how differences in the timing of energy savings interact with time-varying avoided costs to influence monetized benefits. These case studies illustrate how TSB may change as the PAs transition to using meter-based impact shapes in future program years.

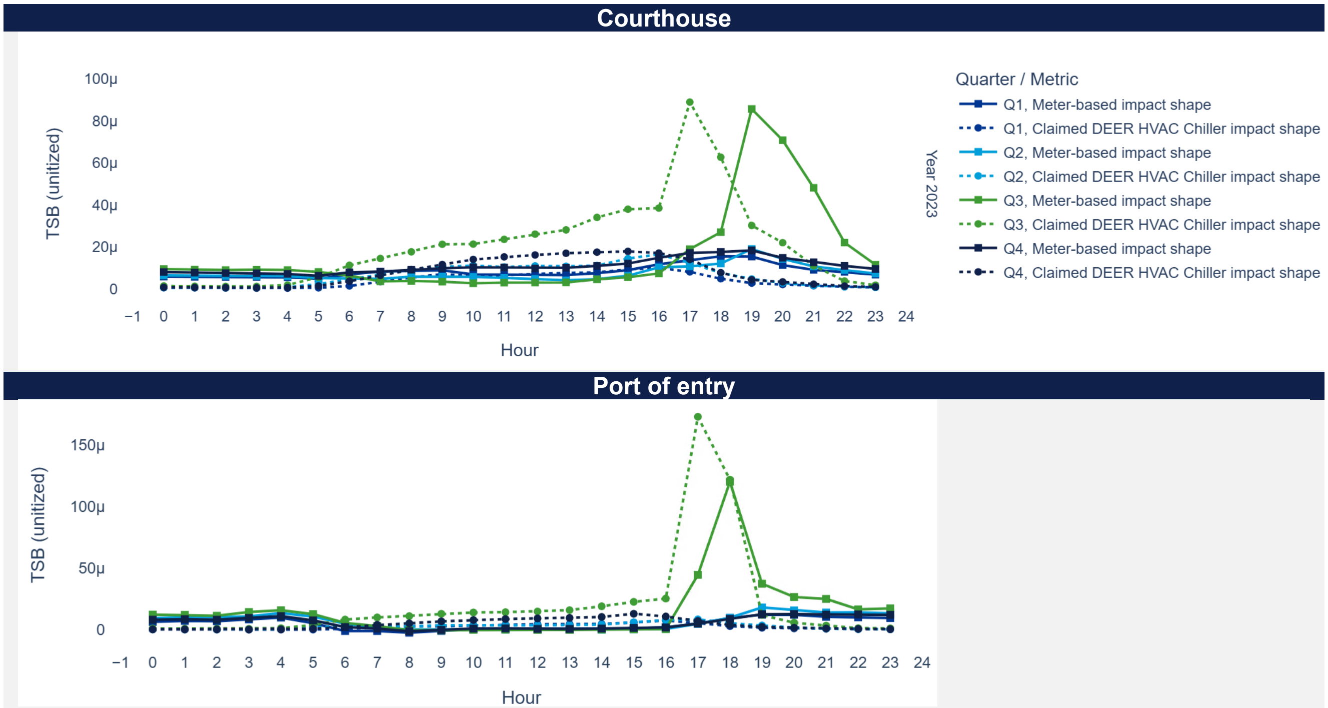
The following sections start by comparing the TSB results calculated using the DEER impact shapes and the meter-based impact shapes. They then examine two components of TSB: impact shapes and the avoided costs.

Total system benefit comparison

As shown in Figure 4-10, which presents first-year (2023), hourly TSB results for both sites stacked vertically for comparison. The courthouse and port of entry exhibit distinct temporal benefit profiles driven by their underlying savings impact shapes. The figure plots hour of day (0–23) on the x-axis and unitized hourly TSB on the y-axis, with separate lines shown for each quarter. Solid lines represent results based on meter-based impact shapes, while dashed lines reflect results using the claimed HVAC Chiller impact shape from the DEER library. The courthouse lighting upgrade displays a relatively flat savings profile across the day, consistent with regular daytime occupancy and operating hours. As a result, its TSB is distributed broadly across daytime and early evening hours, with moderate sensitivity to peak avoided-cost periods.

In contrast, the port of entry lighting project exhibits a savings shape that is more heavily concentrated during nighttime hours, reflecting extended overnight operations and security-driven lighting needs. This concentration shifts a larger share of savings into late-evening and overnight periods. As a result, the port of entry's TSB profile is more sensitive to evening avoided-cost peaks than the courthouse.

Figure 4-10. Hourly TSB by quarter, illustrating differences driven by site-specific savings impact shapes

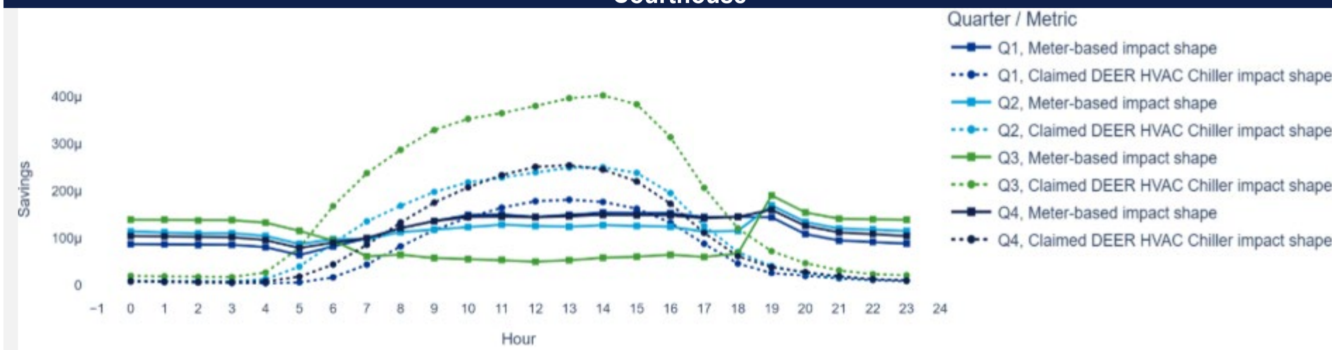


Savings shape comparison

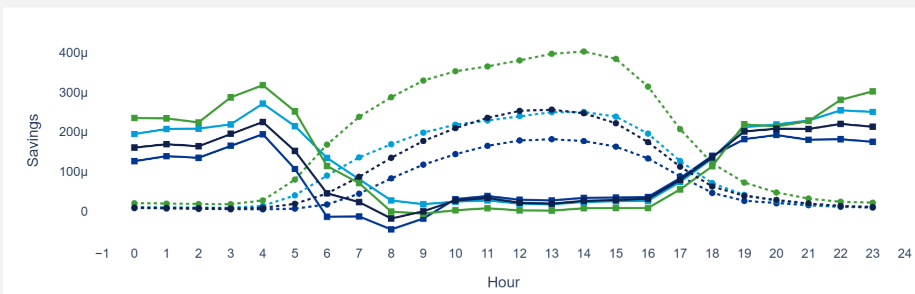
The differences in hourly TSB outcomes are driven by the underlying savings profiles shown in Figure 4-11. The figure compares the DEER shapes the PA used with the meter-based impact profile by quarter for both sites. Both sites used an HVAC Chiller impact shape from the DEER library to calculate the TSB values that the PAs claimed. The meter-based profiles capture site-specific operating behavior, while the DEER HVAC Chiller profile assigns a large share of savings to midday hours and little to no savings overnight. The courthouse demonstrates relatively uniform savings across occupied hours under the meter-based profile. In contrast, the port of entry shows pronounced nighttime savings that are largely absent under the DEER HVAC Chiller impact shape. When combined with time-varying avoided costs (Figure 4-12), these distinct savings patterns make the timing of savings a key determinant of relative TSB performance.

Figure 4-11. 2023 Hourly impact shape comparison by quarter

Courthouse



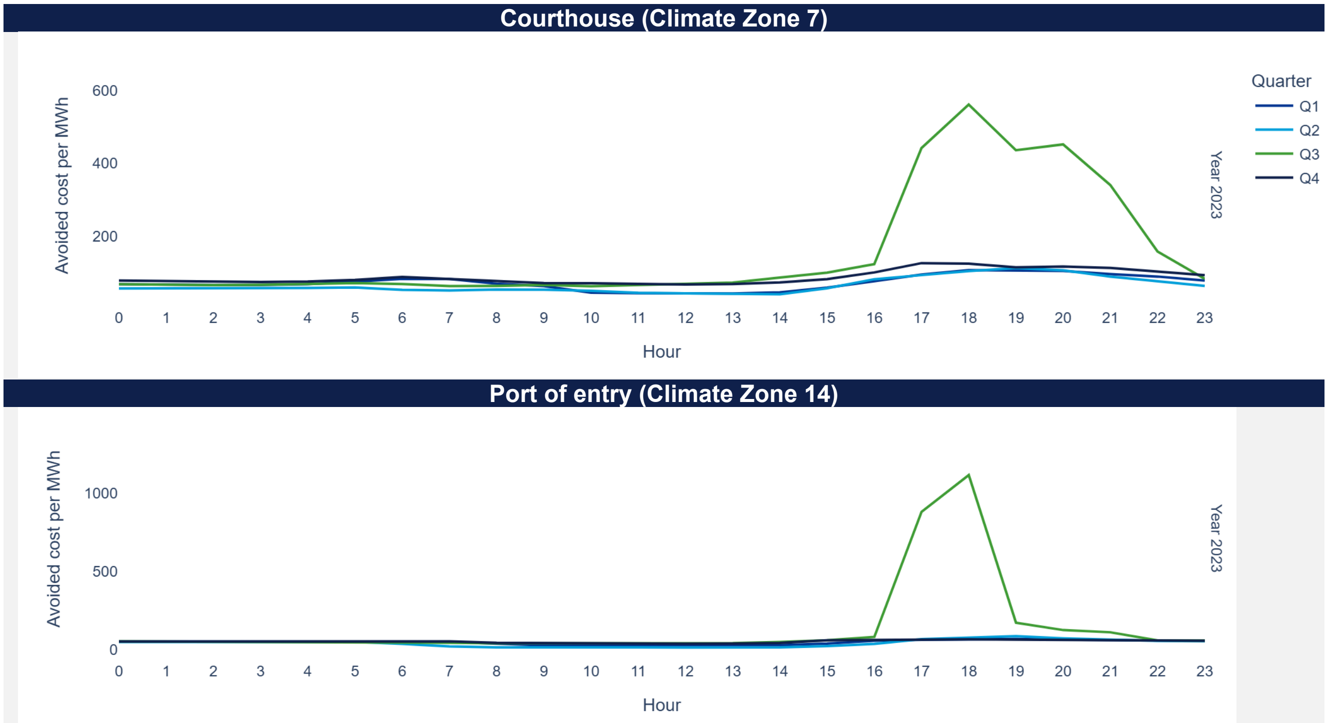
Port of entry



Avoided costs

Figure 4-12 presents the hourly electric avoided cost per MWh by quarter in 2023 for the two case study sites. This figure illustrates that avoided costs are elevated during peak cooling hours, particularly in Q3. Achieving savings during these Q3 peak hours will generate a higher TSB than in other times of the day or year.

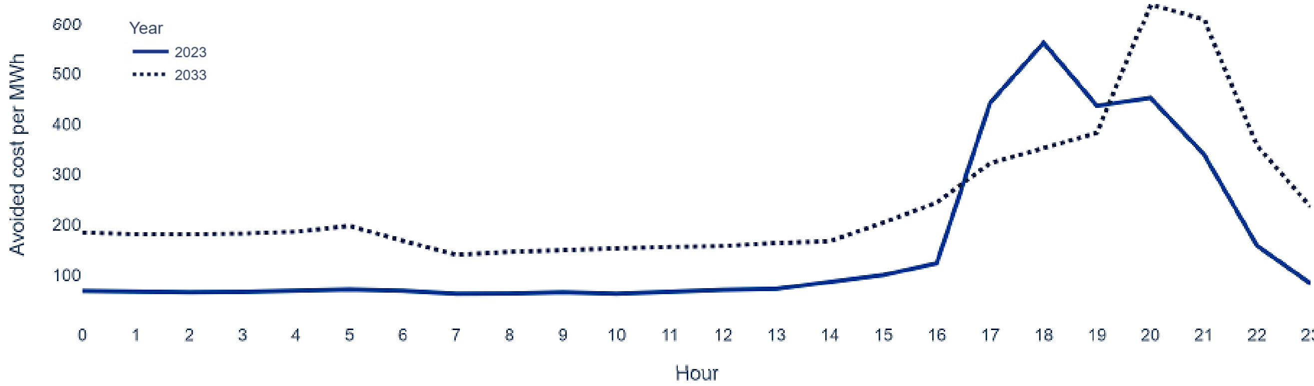
Figure 4-12. Hourly electric avoided cost per MWh by quarter, 2023



Avoided cost patterns also vary by climate zone, reflecting differences in cooling intensity and the resulting timing and magnitude of system stress. Hotter inland climate zones tend to experience larger and sharper cooling-driven demand peaks in the late afternoon and evening. These peaks translate into more extreme avoided cost spikes during those hours. Consistent with this dynamic, the port of entry—located in a hotter inland climate—exhibits a more pronounced avoided-cost spike during peak cooling hours in Q3. These spikes exceed $1,000/MWh and are substantially larger than those for the courthouse, which is located in a milder, coastal climate zone. These climate-driven differences amplify the value of savings that occur during peak cooling periods at the port of entry relative to the courthouse. This further reinforces the importance of aligning savings timing with local avoided costs and grid conditions.

Beyond intra-day patterns, the avoided cost shapes themselves evolve over time as assumptions change about future electricity demand and the generation and grid resources change. In later model years, higher electrification, shifting load profiles, and changes in the resource mix affect when the system experiences its highest marginal costs. This evolution is evident in the Q3 avoided cost profiles, where the evening peak shifts later in the day. Figure 4-13, which compares Q3 hourly avoided cost shapes for the courthouse site across these two model years, shows this shifting peak from approximately 6:00 PM in 2023 to roughly 8:00 PM in 2033. The later peak modeled for 2033 increases the value of savings that occur in the early evening and nighttime hours. This effectively rewards lighting projects—such as the port of entry—that maintain substantial savings after traditional business hours.

Figure 4-13. Comparison of Q3 hourly electric avoided cost per MWh for the courthouse site, 2023 vs. 2033



Taken together, these two case studies demonstrate that even when total annual savings are similar, differences in the assumed or observed savings impact profile can materially change the hourly allocation of benefits and therefore the calculated TSB. More broadly, they underscore the value of using meter-based, empirical savings profiles to reflect actual site operations, particularly for measures whose impacts extend into evening or nighttime hours. When empirical profiles are not available and generic profiles from the DEER library are used, carefully selecting an impact profile that aligns with the underlying measure is critical to avoid mischaracterizing the timing (and value) of savings under the TSB framework. Focusing on these projects, lighting measures with flatter daytime savings profiles and those with concentrated nighttime savings respond differently to evolving avoided-cost structures. This further underscores the importance of accurately representing site-specific operating patterns when estimating TSB.

Overall TSB impacts

The evaluation team calculated TSB using the replicated PA meter-based impact shapes for 9 of the 24 projects reviewed, including both of the cases studies described above. Since the PAs could not use meter-based impact shapes for their claims, we did not use these results for the official evaluation, but we did compare the TSB values based on meter-based impact shapes and TSB values based on the DEER shapes.[45] The meter-based impact shapes resulted in greater TSB than the DEER shapes for each of the 9 projects (9% greater on average). At the project level, TSB increased between 4% to 42% when using the meter-based impact shapes instead of the DEER shapes.

4.6 Early review results

This section presents findings from the early review of projects with initial savings claims in PY2024. These projects have implemented the proposed measures but have not yet finalized savings claims. The early review primarily focuses on documentation review, customer interviews, and baseline model review. The objective of the early review is to provide timely feedback that allows PAs to make improvements to projects prior to making final savings claims.

This section is organized by key review topics, with subsections most closely aligned with findings highlighted in the Executive Summary presented first (Section 4.5.1 – 4.5.3), followed by additional supporting findings (Section 4.5.4 – 4.5.6) that inform future program improvements but are not elevated to the Executive Summary.

4.6.1 Eligibility

A core requirement for NMEC project eligibility is the ability to reliably quantify meter-based savings. This requires relatively stable energy consumption between the pre- and post-implementation periods, aside from changes attributable to

[45] The evaluation team used the evaluated savings, and the initial claim year avoided cost calculator version when calculating TSB with both the meter-based impact shapes and DEER shapes. The only difference in these two TSB results is the underlying shapes.

program-supported measures. This section examines two scenarios in which non-program activities affected the ability to accurately quantify meter-based savings. These scenarios reflect the same types of issues we saw in the projects trued up in PY2024, as discussed in Section 4.2.2.

Sites with other large, planned changes. Six school projects implementing lighting retrofits concurrently made substantial out-of-scope capital improvements, including HVAC replacements and building envelope upgrades. These overlapping activities affected both total site energy use and the distribution of that use across end uses, impeding the use of whole-facility meter data to distinguish the impacts of the SLNMEC measures from other changes.

Sites with process load driven consumption. The NMEC rulebook specifies that SLNMEC is intended for commercial or commercial-like facilities with relatively stable energy consumption patterns over time. Manufacturing and industrial sites, where energy use is closely tied to production activity, often do not meet this criterion. The presence of process-driven load variability limits the suitability of a meter-based NMEC approach. With appropriate upfront screening, such projects could be redirected to more suitable pathways with savings estimation methods that better align with site conditions.

4.6.2 Monitoring NREs

This section discusses project NREs as identified by the evaluation team for projects with initial claims in PY2024, mirroring the approach used in Section 4.2.3 for projects with final savings claims. In this context, the term NRE refers to any non-program-related change that must be accounted for outside a simple comparison of pre- and post-implementation consumption models specified prior to program implementation. From an evaluation perspective, many of these NREs were either foreseeable or avoidable and, as a result, do not actually qualify as true NREs. DNV's approach to addressing these NREs in this evaluation considers this important distinction.

Table 4-12 summarizes the main types of NREs identified in the early gross evaluation. In many cases, these NREs could have likely been addressed through meter-based or regression-based non-routine adjustments (NRAs) if they had been identified early and documented in the M&V plan. However, DNV identified most NREs through customer interviews rather than project documentation. This indicats that NRE detection and documentation are not occurring consistently during the project lifecycle as required by the NMEC rulebook.

For example, seven grocery stores added refrigerated cases during the performance period, which would predictably increase metered energy use and confound the savings signal. With timely identification, targeted data collection, and/or submetering, the NMEC meter-based approach could still have isolated measure impacts and supported a reliable savings estimate. Similarly, the addition of onsite solar PV during the performance period can often be addressed through early identification and appropriate submetering.

On the other hand, six schools within the same school district undertook substantial concurrent facility improvements alongside NMEC lighting upgrades, including major projects outside the NMEC project scope. These overlapping changes introduce significant confounding factors that are difficult to disentangle using whole-facility meter data, making it challenging to isolate savings attributable to the NMEC measures. These issues should be identified and addressed through PA or implementer screening and technical review early in the project lifecycle (e.g., requiring additional documentation, submetering, or redirecting to a more appropriate pathway). As a result, these projects appear poorly suited for NMEC's regression-based, meter-based savings approach.

At the time of this early review, the projects did not have final performance period models or non-routine adjustments, so we do not know how the programs are planning to address the identified NREs . While many NREs may be addressable through meter-based or regression-based NRAs, delayed identification and limited documentation reduce the feasibility and effectiveness of corrective actions such as submetering or targeted data collection. Consequently, savings estimates for projects with undocumented or late-identified NREs may carry elevated uncertainty and may not reflect actual measure impacts.

Table 4-12. Non-routine event summary

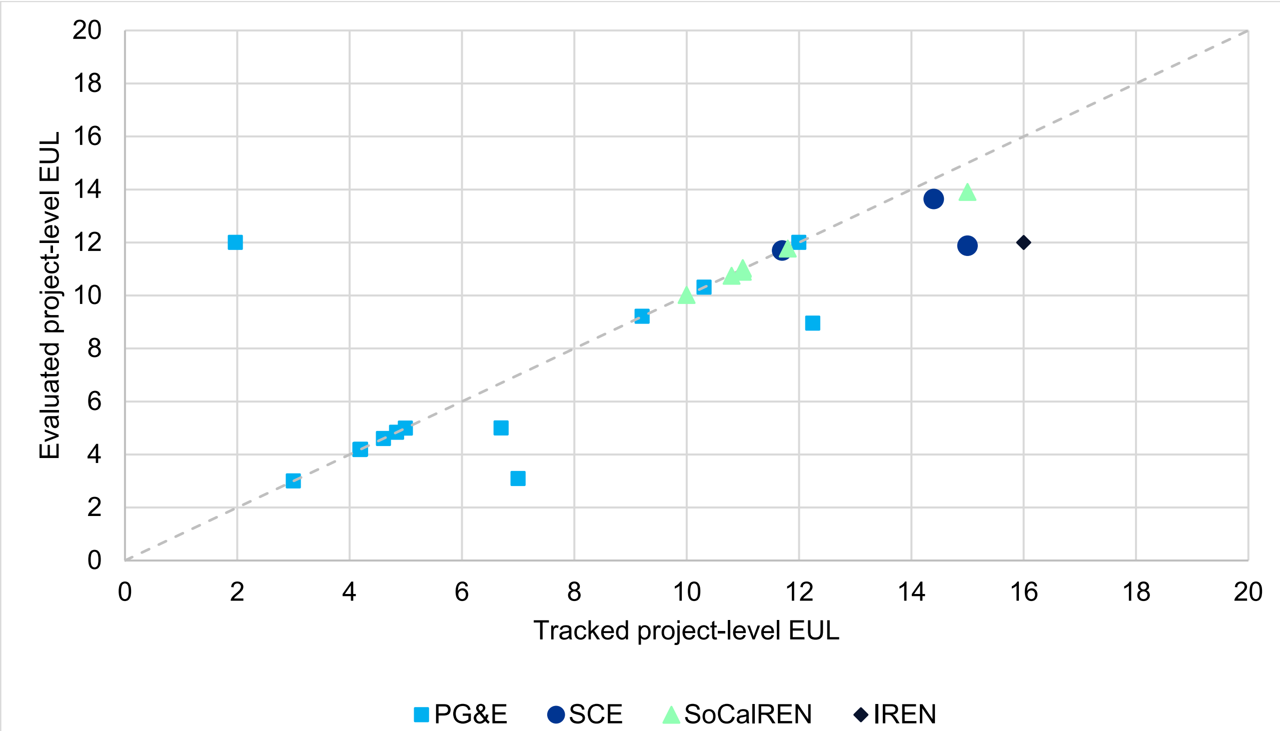
NRE group	Description	Projects
Added or lost load	Change in meter load due to events like added refrigerated cases at grocery stores	7
Concurrent facility improvements	Concurrent substantial facility improvements not within the SLNMEC project scope	6
Addition of solar array	Addition of solar array during the post-installation period	7
Overlapping implementation and performance periods	Measure implementation occurring during the performance period	1
Maintenance shutdown	Routine maintenance events causing consumption outliers	1

4.6.3 Effective useful life (EUL)

Site-level NMEC project-level EULs are used to calculate project lifecycle savings and are not meter-based. We included EUL in the early review because the EUL should be finalized after installation when the initial claim is made. As TSB becomes the new goal metric representing lifecycle monetized impacts, accurate documentation and claiming of project-level EULs becomes increasingly important and remains an area for continued improvement. A portion of PY2024 projects (33%, 8 projects) had EUL discrepancies, which is lower than what DNV found in the PY2023 Additional Research Report (71%). Figure 4-14 compares the tracked and evaluated project-level EULs, with the gray dashed line representing equivalent tracked and evaluated EULs. Markers above the dashed line represent projects for which the evaluation adjusted the EUL upward, while markers below the dashed line represent projects for which the evaluation adjusted the EUL downward.

The majority of the EUL discrepancies (3 projects) arose from a tracked EUL that the program calculated during the project planning stage, rather than calculating an EUL based on the measure mix actually installed. Three other projects involved add-on equipment to existing HVAC systems, involving the partial replacement of individual rooftop units. Since the EUL for add-on equipment considers the remaining useful life of the host system, DNV recalculated the EUL as a weighted average of the pre-existing and new units. Another EUL discrepancy arose due to data entry errors: while both the savings calculation and project feasibility study indicated an EUL of 12 years, the tracking EUL is around 2 years. Another project claimed an incorrect EUL for an interior lighting retrofit measure.

Figure 4-14. Project-level EUL scatterplot



4.6.4 Measure application types

Measure application types (MATs)[46] are an energy efficiency categorization related to the project type and context. They are used to determine the appropriate approach for calculating the EUL and baseline for custom project measures. MAT designations are required for all custom projects and for site-level NMEC projects. For site-level NMEC projects, MATs are primarily used to determine the appropriate measure life.[47] Individual measures within site-level NMEC projects are assigned MATs that determine the appropriate measure-level EUL. Measure-level EULs are then averaged, on a weighted basis using measure-level engineering savings forecasts, to calculate the expected project EUL. The following custom project MATs are allowable in site-level NMEC projects:

- **Accelerated Replacement (AR):** AR means "the replacement of existing equipment that could and would remain operational without program intervention."[48] Replacement of "'operating equipment that when broken, non-functional, or unable to provide the intended service is typically repaired' can be classified as AR."[49] AR measures are assigned a measure-specific EUL.
- **Add-on Equipment (AOE):** AOE measures install "new equipment onto existing host equipment, improving the nominal efficiency of the host system."[50] AOE measures are assigned an EUL equal to the lesser of the host equipment's remaining useful life or the EUL of the measure.
- **Behavioral, Retro-commissioning, and Operational (BRO):** This group includes information or education programs that influence energy-related practices (behavioral), activities and installations that restore equipment performance

[46] See Measure Application Types in Statewide Custom Project Guidance Document v1.4 at page 5, https://file.ac/OEr-2p-bk3A/
[47] Savings for all site-level NMEC projects are estimated using an existing condition baseline due to the performance-based approach, unlike custom projects, which use different baselines depending on the MAT.
[48] See Measure Application Types in Statewide Custom Project Guidance Document v1.4 at page 6, https://file.ac/OEr-2p-bk3A/
[49] See Measure Application Types in Statewide Custom Project Guidance Document v1.4 at page 6, https://file.ac/OEr-2p-bk3A/
[50] See Measure Application Types in Statewide Custom Project Guidance Document v1.4 at page 6, https://file.ac/OEr-2p-bk3A/

(retro-commissioning), and measures that improve the efficient operation of installed equipment (operational). BRO measures are assigned a three-year EUL.

- **Building Weatherization (BW):** BW is involved in "non-mechanical building efficiency improvements such as windows, insulation, air sealing, and duct sealing."[51] BW measures are assigned a measure-specific EUL.
- **Normal Replacement (NR):** This group involves replacing existing equipment that has failed or no longer meets needs, or is planned to be replaced for reasons unrelated to the program. NR measures are assigned a measure-specific EUL.

4.6.4.1 MAT assessment

Table 4-13 presents the documented and evaluated MATs for the sampled early gross projects. The original claimed MATs are shown in the leftmost column, and the verified, evaluated MATs are shown in the second column from the left, followed by total measure counts and associated measure-level electric and gas savings. Overall, the evaluation team reclassified 9 of 53 measures (17%), a higher rate than observed in last year's Additional Research Report. Rows highlighted in light blue indicate instances where the evaluated MAT differed from the originally documented MAT.

The majority of reclassifications involved replacement measures (AR and NR), which are inherently more complex to classify and continue to present challenges for the SLNMEC projects. This remains a recurring issue in NMEC evaluations. The updated NMEC rulebook 2.1 specifies that for measures claiming NR, "an estimate of the below-code portion of savings must be provided, documented, and debited from preliminary and final trued-up performance-based savings estimates." Consistent with this requirement, for the two measures evaluated as NR, the evaluation team calculated and separated below-code and above-code savings components. We found zero below-code savings and, therefore, did not adjust any evaluated savings values.

Additional reclassifications involved AOE measures, including cases where AOE measures were reclassified as AR, as well as cases where measures initially documented as NR were reclassified as AOE. The primary implication of these reclassifications is their effect on measure EUL. For AR and NR measures, the full measure EUL is typically applied. In contrast, for AOE measures installed on pre-existing host equipment, the applicable EUL typically reflects the remaining useful life (RUL) of the host equipment rather than the full measure EUL.

Table 4-13. Documented and evaluated measure application types

Documented MAT	Evaluated MAT	# of Measures	Documented electric savings (kWh)	Documented gas savings (therm)
AOE	**AOE**	10	535,399	62,733
AOE*	**AR**	1	762	87
AR	**AR**	18	1,204,122	-781
BRO-RCx	**BRO-RCx**	14	3,884,228	391,729
NR*	**AOE**	2	41,126	1,644
NR*	**AR**	6	199,708	1,800
NR	**NR**	2	689,516	-4,561

* Discrepancies between documented and evaluated MATs are highlighted in blue.

4.6.4.2 Normal replacement below-code savings

Only two of the 10 measures originally claimed as NR were evaluated as NR. For the remaining NR measures, the available documentation did not provide sufficient evidence to support NR eligibility, such as documentation of "equipment failure, routine replacement for occupant comfort or safety, or replacement to accommodate changes in space use or service needs," as required under the new NMEC rulebook 2.1.

[51] See Measure Application Types in Statewide Custom Project Guidance Document v1.4 at page 7, https://file.ac/OEr-2p-bk3A/

The two measures ultimately evaluated as NR were lighting retrofit projects in which the existing fixtures were outdated, replacement components were difficult to procure, and the fixtures could no longer provide adequate lighting levels. Based on these conditions, the evaluation team determined that these two measures met the NR criteria. Consistent with NMEC requirements, the evaluation calculated and separated the below-code and above-code portions of savings for these measures. Based on the available documentation, the pre-existing lighting efficiency exceeded applicable code requirements; therefore, no below-code savings adjustment was applied.

Below-code savings adjustment matters for NR because the replacement measures are assumed to occur in the absence of the program. When equipment is replaced due to failure or end-of-life conditions, the replacement is expected to meet applicable code requirements. As a result, any efficiency improvement required to bring a site from below code up to code is not attributable to program influence and should not be claimed as program savings. Therefore, only the incremental savings above code represent savings that can be attributed to the program.

None of the measures originally claimed as NR included documentation of below-code savings calculations or corresponding adjustments. While this was permissible under the previous NMEC rulebook, which applies to the projects we reviewed here, the updated NMEC rulebook 2.1 now requires that below-code savings be explicitly calculated, documented, and deducted from both preliminary and final trued-up performance-based savings estimates. Going forward, for projects that fall under NMEC Rulebook v2.1, NR claims are expected to include complete below-code and above-code savings documentation to support compliance with current program requirements.

4.6.5 Gas savings

Gas claims continue to be relatively uncommon among site-level NMEC projects, and DNV continues to closely review projects with potential gas savings to understand why there are fewer gas claims than electricity claims. The Evaluability Study[52] found that several projects initially forecasted gas savings and fit gas models at the initial claims stage, but abandoned the gas model after the performance period. In most of those cases, the gas models did not meet minimum goodness-of-fit (GOF) requirements. In some cases, PAs provided no reason for abandoning the gas model. The PY2020-2022 Site-level NMEC Evaluation[53] included only three projects with gas savings, and the PY2023 Site-level NMEC Evaluation[54] did not include any projects with gas savings. The Site-level NMEC Additional Research Report[55] assessed projects with initial claims in PY2024 and found five projects with gas claims. Two additional projects installed gas measures but did not claim gas savings because gas models failed to meet the NMEC modeling requirements (e.g., not meeting GOF criteria or producing savings below the 10% savings threshold).

DNV observed a higher proportion of PY2024 projects with gas savings claims (8 of 24) compared to the projects reviewed in the Additional Research Report. This represents a continued improvement relative to prior program years. However, we also identified several additional projects that either could have claimed gas savings or should have reported negative gas impacts but did not do so.

Installed and claimed

Ten projects involved measures with direct gas impacts, primarily ventilation optimization or HVAC control improvements. Of these 10 projects, six claimed gas savings impacts. Three projects (all with positive gas impacts) included both gas

52 DNV, *NMEC Evaluability Study*, December 7, 2023, https://www.calmac.org/publications/Site-Specific_NMEC_Evaluability_Study_Report_-_Final.pdf

53 DNV, *NMEC Evaluation, PY2020–2022*, May 23, 2024, https://www.calmac.org/publications/Site-level_NMEC_Evaluation_Final_Report_PY2020-2022.pdf

54 DNV, *Site-Level Normalized Metered Energy Consumption (NMEC) Impact and Net-to-Gross Evaluation, Program Year 2023*, calmac.org, June 10, 2025, https://www.calmac.org/publications/Site-level_NMEC_Evaluation_PY2023.pdf.

55 DNV, *Site-Level Normalized Metered Energy Consumption (NMEC) Impact Additional Research Report*, pda.energydataweb.com, October 30, 2025, https://pda.energydataweb.com/api/view/4239/Site-Level%20NMEC%20Additional%20Research%20PY2023%20Final.pdf.

regression models and engineering-based savings calculations, while the remaining three projects relied solely on engineering-based estimates and exhibited gas penalties (i.e., increased gas usage).

Installed but not claimed

Among the eight projects with gas savings claims, six were with PG&E and two were with IREN or SCE. For remaining projects administered by SoCalREN and SCE, gas savings were not claimed. During the evaluation, one SoCalREN project was identified in which direct gas-saving measures were planned and installed, and six additional projects included measures with indirect gas impacts; however, no corresponding gas savings were claimed. In addition, two SCE projects involved fuel substitution, switching from gas to electric heating. These projects increased electric consumption but did not claim the associated gas savings. By not accounting for gas impacts from fuel substitution, the projects only reflect negative electric savings, understating total cross-fuel project impacts and associated TSB. Gas impacts should be evaluated and reported where applicable, particularly for fuel substitution measures, which warrant assessment of impacts across both fuels.

Interactive effects

Some measures result in interactive effects on gas usage. Interior lighting upgrades, for example, reduce electricity consumption but increase heating energy consumption, resulting in a gas penalty at buildings heated with gas. We identified nine projects with measures expected to produce indirect gas impacts, yet only two of these projects claimed gas impacts, while the remaining projects did not account for these effects. The remaining seven projects did not account for these interactive effects in their initial claims. If gas interactive effects are claimed at true-up for these projects, they will be subject to verification as part of the future evaluation.

4.6.6 Custom project review

The CPUC's custom project review (CPR) process selects projects for review with the goal of identifying any potential problems or concerns prior to project implementation. For NMEC projects, CPRs are advisory, meaning that project installation may proceed before the CPR is completed and a project-specific disposition is issued. However, the NMEC Rulebook specifies that the "[final] project M&V Report should reflect Commission staff review recommendations, if the project was selected for review." As part of this study, we reviewed the dispositions for five projects that underwent CPR to determine if the PA addressed or resolved the disposition issues.

Table 4-14 summarizes the types of issues raised in CPR dispositions, their frequency, and resolution status. Disposition issues were classified as resolved if the issue was no longer applicable or was adequately addressed; unresolved if there was no response to the disposition, no discussion in the savings documentation, and no evidence of resolution in supporting materials; and partially resolved if partial responses were provided. A single project may appear multiple times in Table 4-14 if its CPR disposition included more than one issue.

Overall, most CPR issues (80%) identified for NMEC projects were resolved, representing a continued improvement compared to the Additional Research Report (60%). For issues classified as unresolved, several are expected to be addressed or clarified during the performance review stage as additional documentation becomes available.

Five out of 48 projects (10%) included in the early gross total population were selected for NMEC CPR, similar to the overall average CPR selection rate in 2024 (11%). Given that NMEC is a relatively new program pathway and that related policies and implementation practices continue to evolve, broader CPR coverage for NMEC projects may support earlier identification of evaluability risks and provide additional insight to inform ongoing program development.

Table 4-14. SLNMEC custom project review summary

Disposition Issues	Projects

	Total	Resolved	Unresolved	Partially Resolved
Missing documentation	8	3	4	1
MAT	2	2		
Measure cost	2	2		
Title 24/ISP compliance	2	1		1
On-site generation	2	2		
NREs	2	2		
Model independent variable selection	2	2		
Maintenance plan	1	1		
COVID-19 impacts	1	1		
Interactive effects	1	1		
Project scope	1	1		
Incentive calculation	1	1		

4.7 Participant satisfaction and program feedback

In addition to net-to-gross questions, the survey asked questions about program satisfaction, program strengths, and suggested areas for improvement.

Respondents were asked, “Who first brought this project to your organization for consideration?” Table 4-15 summarizes respondents’ answers to this question. Thirty-six percent of respondents and only 9% of sites indicated that program staff brought the project to the organization for consideration. This is a notable shift from the PY2023 evaluation, when 60% of respondents and 78% of sites indicated that program staff first introduced the project to them. Larger organizations may have dedicated staff who can better identify energy efficiency opportunities than smaller organizations. For example, 45% of respondents who represented 87% of sites, and are thus larger customers, indicated that internal staff, rather program or utility staff, first made the organization aware of the opportunities included in the project. Another 45% of respondents, who were smaller customers and only represented 11% of sites, indicated that either program or utility staff first made them aware of the project opportunities. Respondents mentioned learning about projects from audits, presentations by program staff, and being approached by program vendors with recommendations.

Table 4-15. Who first brought project to respondents’ organizations’ consideration

	Percent of respondents	Percent of sites
Program staff	36%	9%
Utility staff	9%	2%
Internal staff	45%	87%
Non-program vendor	9%	2%

Respondents indicated a high level of satisfaction with the programs, driven by the programs’ technical support and incentives. When asked, “on a scale of 0 - 10, where 0 is ‘completely dissatisfied’ and 10 is ‘completely satisfied’, how would you rate your overall satisfaction with the [program],” respondents gave an average rating above 8 (Table 4-16). Eighty-two percent of respondents, representing 98% of sites, were “promoters” providing a rating of 8 or above. Respondents indicated in an open-ended question about the strengths of the program that their satisfaction was driven by the program’s technical support and incentives. These results are nearly identical to the previous two evaluations. No respondents provided a satisfaction rating lower than 7; thus, there were no detractors.

Respondents said the following about the strengths of the program:

- "A strength was receiving funds back for the program we initiated. Program staff and process were great. They answered the questions before they were asked. You can tell they had a passion for helping out. Overall knowledge is very good."
- "[A strength was] how flexible and how easy it is to apply. [PA representatives] are easy to work with and provided good competent technical analysis."
- "I was impressed with the free flow team and their technical expertise. They helped our EH&S team learn something new every time we met with them and provided value beyond what we expected."
- "Clarity of the marketing is very clear. Project managers provide very clear communication. Engineering calculations and savings estimates were very accurate. The process was very effortless and streamlined compared to other programs. Paperwork is minimal and easy to follow. Follow up has been good, email is timely."

Table 4-16. Program satisfaction

Metric	By participants	By sites
Average satisfaction	8.7	8.8
% promoters (≥8)	82%	98%
% detractors (≤3)	0%	0%

When asked about the strengths of the program, respondents most frequently mentioned the program staff and the PA, praising their expertise and communication. In addition to the quotes list above, another respondent said, "Our rep at [PA] is really good. She is very helpful and helps us identify programs that are available. We also have a good energy rep down at our other location. We recognize our program vendors as partners because they are looking out for us."

Respondents also frequently cited the technical support and incentives provided by the program as strengths. One said, "[The program] offers insight, education, payback and they are a partner in the project. It helps us financially forecast the project collaboratively with us and the outside party. It feels like a comprehensive look at what is available across the landscape." Another said, "The program gave us the ability to come up with a reasonable energy efficiency program that is viable to the company keeping in mind all the things that are important to us: cost outlays, capital expenditures etc."

Table 4-17. Program strengths

Metric	Percent of respondents	Percent of sites
Program and PA staff	55%	30%
Technical Support	45%	72%
Incentives	36%	83%
Flexibility	18%	6%
Easy application	18%	6%
Communication	18%	4%

About one-half of respondents had no suggestions for program improvements; those that did each gave unique suggestions that were not mirrored by any other respondent. We list the verbatim suggestions below:

- "Be a little more upfront on incentives. We were supposed to receive more funding but maybe due to installing a slightly different equipment, we didn't get that funding. Be more transparent on the exact specs needed to receive the incentives."

- “Communication levels could be improved. There are also long timespans between when we sign documents and when we hear back.”
- “There should be multiple vendors. We would want the assessment to be done across 2-3 vendors so we can compare different vendors and our choices if the cost was covered by the program. Vendor evaluation wasn't included in the program which would help significantly.”
- “Our only concern is that if there will be continued funding in future years. We're in a disadvantaged community and we hope the CPUC can continue to focus on these measures especially for disadvantaged communities like ours.”
- “There was not much flexibility to add measures to the project. We figured out other things that needed to be improved as we were implementing the project but couldn't include them because they weren't part of the initial project application.”

4.8 PIP reviews and PA interviews

The evaluation included additional research to assess 1) program implementation plan alignment with NMEC rulebook requirements, and 2) how ratepayer funds flow through programs. To examine these topics, DNV reviewed program implementation plans and interviewed PAs. This section details the findings from those two efforts.

4.8.1 PIP reviews

Program implementation plans (PIPs) lay out how the PAs plan to run their programs. While actual implementation may diverge from the plans, they provide some insight into how the PAs intended to implement the NMEC rulebook requirements. The NMEC rulebook was updated in the fall of 2025 to version 2.1,[56] but the projects included in this evaluation all began prior to the release of the new rulebook and are therefore subject to the prior NMEC rulebook, version 2.0,[57] released in early 2020. Consequently, we primarily reviewed PIPs for compliance with the version 2.0 rulebook.

PIP update frequency

Certain program or policy changes necessitate implementation plan updates.[58] We interpret this to mean that the program PIPs should likely have been updated at a minimum after the NMEC rulebook updates in 2020 and 2025, after the change to TSB as the primary metric for energy efficiency programs in 2024, as well as when the programs have made other substantive changes. Of the 14 active site-level NMEC programs, only four had updated PIPs in 2025. Another PIP had an update in 2024. The remaining nine had most recent PIPs ranging from 2018 to 2023. Additionally, it was unclear who at the PAs are responsible for reviewing and approving PIPs and to what extent that review is conducted. The current PIP guidance document indicates that the PAs may update PIPs without the CPUC’s review or approval but that the PIPs must be up to date and publicly available on CEDARs.

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[56] CPUC, *Rulebook for Programs and Projects Based on Normalized Metered Energy Consumption version 2.1*, September 10, 2025, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/energy-efficiency/rolling-portfolio-program-guidance/nmec-rulebook-21-march-2025.pdf

[57] CPUC, *Rulebook for Programs and Projects Based on Normalized Metered Energy Consumption*, January 7, 2020, https://www.cpuc.ca.gov/-/media/cpuc-website/files/legacyfiles/n/6442463694-nmec-rulebook2-0.pdf.

[58] CPUC, Implementation Plan Template Guidance, version 3.0, March 2025. https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/energy-efficiency/rolling-portfolio-program-guidance/energy-efficiency-implementation-plan-template-ver-31-dec-2025.docx

Table 4-18. PIP review most recent publication year

Codebook policy	Count of PIPs (n=14)
2025	4
2024	1
2023	1
2022	2
2021	3
2020	1
2019	1
2018	1

General PIP compliance with the NMEC rulebook

The NMEC rulebook lays out a number of requirements for program-level measurement and verification (M&V) plans, which must be detailed in PIPs. As shown in Table 4-19, DNV found documentation in almost every reviewed PIP demonstrating planned adherence to almost every reviewed policy. This included statements demonstrating that programs would follow cost-effectiveness, transparency and replicability, and minimum savings requirements policies. Almost every PIP included descriptions of the program's target population and eligibility criteria and incentive structures. PIPs most frequently lacked descriptions of what data would be collected to show program influence and verify to-code savings.[59] Plans that discussed program influence typically called for a narrative with supporting documentation to demonstrate program influence. As described in the PY2023 evaluation, the supporting documentation identified in PIPs typically included marketing materials, audit reports, energy and financial savings calculations, correspondence with customers, internal customer communications about project decision-making, descriptions of customer decision-making processes, customer budgets, and timelines of program participation. Another PIP called for a free-ridership questionnaire as part of its influence documentation.

Similarly, DNV identified language demonstrating adherence to the to-code savings documentation policy. Plans that had language about documenting to-code savings typically either included a statement that they would follow Decision 17-11-006 or included a narrative that answered the following questions put forth by Decision 17-11-006:[60]

- Where does the to-code savings potential reside?
- What equipment types, building types, geographical locations, and/or customer segments promise cost-effective to-code savings?
- What kinds of barriers are preventing code-compliant equipment replacements?
- Why is natural turnover not occurring within certain markets or for certain technologies?
- What program interventions would effectively accelerate equipment turnover?

Table 4-19. NMEC PIP review

Rulebook policy	Description	PIPs with documentation (n=14)
Follow cost-effectiveness policies	Statement that program will follow cost-effectiveness using CPUC-approved methods	14

[59] NMEC programs are designed to help customers replace old equipment that, in the absence of the program, they would have kept repairing and using. To-code savings refers to the savings generated from replacing old, below-code equipment with new equipment that meets code. Demonstrating to-code savings could include assessments of the old equipment's ability to keep operating with repairs or a customer attestation that they would have kept using the old equipment without the program support.

[60] See page 13 at https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M199/K076/199076456.PDF

Rulebook policy	Description	PIPs with documentation (n=14)
Define target population and eligibility	Describe the program target population, and participant eligibility criteria.	14
Describe incentive structure	A description of the incentive structure, including a) a description of which entity receives compensation at each stage of the project; and b) method(s) and tools utilized in the calculation of incentives and/or compensation	14
Ensure transparency and replicability	Methodology, analytical methods and software employed for calculating Normalized Metered Energy Consumption, as well as both gross and net savings, resulting from the energy efficiency measures installed and not influenced by unrelated changes in energy consumption. Approach to ensure adequate monitoring and documentation of energy savings for each project over the reporting period.	14
10% minimum savings requirement or explain how small savings are distinguishable	Programs targeting savings that comprise less than 10% of annual consumption must provide a rationale and explanation of how savings will be distinguishable from normal variations in consumption.	14
Document feasibility, application, implementation, reporting	Description of processes for a Baseline Period (including project feasibility study), Implementation Period, and Performance Period (including noting how savings will be monitored or documented).	14
Program influence	Method of determining program influence, either through a detailed data collection and analysis plan provided in the M&V Plan or adoption of Commission approved default NTG values.	12
To-code savings documentation	Statement declaring program will adhere to Decision 17-11-006 Ordering Paragraph 2 for programs targeting to-code savings or narrative that addresses the questions put forth by Decision 17-11-006 described above this table.	9

4.8.2 PA interviews

DNV interviewed all six PAs with SLNMEC programs to understand current practices relating to compensation and the incentive frameworks of ratepayer funds to program vendors and participants. The interviews aimed to identify all entities that receive rate-payer funds through the program and characterize the nature of the compensation frameworks. DNV found that compensation frameworks generally fell into one of four different categories described below in Figure 4-15.

Figure 4-15. Common compensation frameworks

Third-party implemented, Performance-based

(e.g. PG&E's CoolSave)

- **Participant incentive:** Partial payment after installation, remaining performance-based payment after 12-month performance period
- **Implementer:** Third-party implementer paid for performance (e.g., $/TSB, $/kWh)
- **Participant recruitment:** Implementer or vendor paid by Implementer budget, or PA account representatives
- **Installer:** Trade professional hired by participant
- **QA/QC:** PA staff or third-party M&V contractor paid fixed fee per project or time and materials
- **Statistical modeler:** Different third-party M&V contractor paid fixed fee per project or time and materials

PA implemented, Performance-based

(e.g. SCE's Commercial Calculated Program)

- **Participant incentive:** Partial payment after installation, remaining performance-based payment after 12-month performance period
- **Implementer:** PA implementer
- **Participant recruitment:** PA account representatives or participants themselves.
- **Installer:** Trade professional hired by participant
- **QA/QC:** PA staff or third-party M&V contractor paid fixed fee per project or time and materials
- **Statistical modeler:** Different third-party M&V contractor paid fixed fee per project or time and materials

Third-party & government implemented, performance-based

(e.g., IREN's Public Building NMEC Program)

- **Participant incentive:** Partial payment after installation, remaining performance-based payment after 12-month performance period
- **Implementer:** Third-party and government representative implementer paid on a time and materials using ratepayer funded grants
- **Participant recruitment:** Implementer or vendor paid by implementer budget, or PA account representatives
- **Installer:** Participant or trade professional hired by participant
- **QA/QC:** Implementer or third-party M&V contractor paid on a time and materials basis
- **Statistical modeler:** Different third-party M&V contractor paid fixed fee per project or time and materials

PA implemented, non-performance-based

(e.g., PGE's and On-Bill Financing)

- **Participant incentive:** 0% interest financing paid by the opportunity cost of ratepayer funds, some incentives may be offered through other programs in conjunction with the financing
- **Implementer:** PA implementer
- **Participant recruitment:** PA account representatives or trade professionals hired by participant
- **Installer:** Trade professional hired by participant
- **QA/QC:** PA staff or third-party M&V contractor paid fixed fee per project or time and materials
- **Statistical modeler:** Different third-party M&V contractor paid fixed fee per project or time and materials

For a more detailed review see APPENDIX C.

- **Third-party-implemented, performance-based (e.g., PGE's CoolSave):** The PA contracts with a third-party implementer to run the program. The implementer is paid based on overall program performance in terms of $/kwh or $/therm (for older contracts) and $/TSB for newer contracts. The PA schedules payments to implementer based on project milestones or monthly for the projects that are in their performance period at the time. The PA holds back a portion of each project's associated payment until each project is completed to reduce the need for clawbacks. The implementer is responsible for recruitment and statistical modeling, though they may get some support from the PA account representatives for recruitment and may hire a sub-contractor for any program role (e.g., statistical modeling) which they pay using either fixed fees per project or a time and material basis using funds they receive as part of their performance payment from the PA. Installations are typically paid for by the customer, who may hire a contractor on their own. The implementer designs and pays out the incentives to participants out of their payments from the PAs. Incentives are typically based on performance, with an initial portion of the estimated payment disbursed shortly after project completion and the remaining portion of the incentive distributed following a 12-month performance period based on actual savings achieved.

- **PA-implemented, performance-based (e.g., SCE's Commercial Calculated Program):** The PA implements the program and relies on PA account representatives for referrals or for customers to approach the program themselves. The customer pays for installation. The PA conducts QA/QC review and contracts with a third-party modeler to conduct statistical modeling on either a fixed-fee-per-project or a time-and-materials basis. The PA administers incentive payments to participants based on performance, with an initial portion of the estimated payment disbursed shortly after project completion and the remaining portion distributed following a 12-month performance period based on actual savings achieved.
- **PA-implemented, non-performance-based (e.g., PGE's On-Bill Financing):** The PA implements a program to help customers pursue energy efficiency upgrades by providing 0% financing. The participants are required to payback the loan regardless of energy saved; therefore, the cost to ratepayers is the opportunity cost of providing 0% loan. Recruitment is done by PA account representatives making referrals or by trade professionals hired by customers. The customer pays for installation. The PA contracts with separate M&V reviewers to support QA/QC and statistical modeling who are paid a fixed rate per project using ratepayer funds. No compensation frameworks or incentive payouts are based on performance; however, loan terms are structured based on the preliminary estimate of savings to make the monthly bill payment schedule known before participation.
- **Third-party and government representative-implemented, performance-based (e.g., IREN's Public Building NMEC Program):** Governmental entities contract with a third-party implementer to implement the program using ratepayer funded grants. The third-party implementer is paid time and materials. The participant installs project themselves or hires their own contractor to install equipment. The program hires separate third-party reviewers and statistical modelers who are paid on a time and materials basis. The third-party implementer may hire subcontractors to fulfil specific roles, and negotiates contract terms with those subcontractors. Participants are paid incentives based on performance, with an initial portion of the estimated payment disbursed shortly after project completion and the remaining portion of the incentive distributed following a 12-month performance period based on actual savings achieved.

4.8.2.1 Clawback provisions and bonus payments

DNV asked the PAs if clawback provisions existed in the compensation frameworks with implementer or in the incentive frameworks for customers. Most PAs indicated that ratepayer fund payouts to both implementers and participants are staggered to avoid the need for clawbacks. PAs make a partial initial payment and then smaller payments throughout the performance period. The subsequent payments are determined based on the difference between the initial payment and performance to date.

Participant clawbacks

If a participant's meter-based savings are less than the total forecasted savings by the end of the performance period, they receive a smaller final payment than originally estimated. PAs indicated that due to the final payment happening after the true-up, they have not needed to claw back money. The OBF projects do not have clawback provisions, but participants are required to pay back their loan amount regardless of energy saved.

Third-party implementer clawbacks and bonuses

Following a similar strategy, some PAs said they hold back a portion of their monthly payments to third-party implementers and only release the full payment once they verify project savings. Two PAs cited specific clawback provisions that could be triggered if the third-party implementers do not meet their planned goals. One PA said, "the implementer sets the goals so we expect the implementer to meet them." While most PAs stated they do not offer any type of bonus payment, two cited provisions that allow for payment for overperformance towards goals on an annual basis for non-OBF programs. These bonuses are capped at a certain percentage of the goal. One PA described these payments as “Excess Delivery payments.”

4.8.2.2 Documentation of payments

DNV asked the PAs about how they document the payment of ratepayer funds to third-party implementers and participants. Every PA indicated that they have access to documents that track ratepayer funds all the way through to participant payments. This documentation exists in both PA-implemented programs and third-party programs. In cases where the third-party implementers design incentive structures, they still provide proof of incentive payments to the PAs through documents such as invoices, check numbers and dates, and monthly updates to incentive databases and trackers. While PA interviewees struggled to state the specific number of years they store the data, they all indicated that they store the data for multiple years. One said, “We store data in compliance with record keeping requirements,” and another said, “We still have all the records from every program participant to date.”

5 CONCLUSIONS AND RECOMMENDATIONS

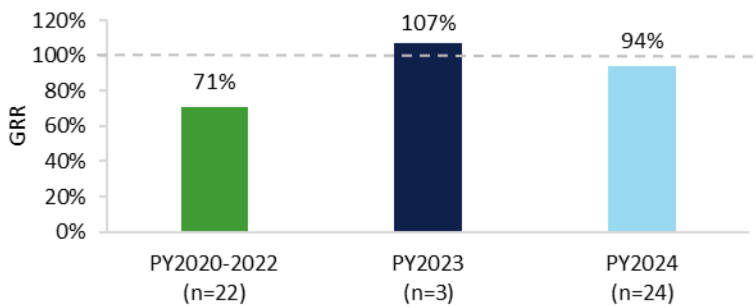
5.1 Energy savings findings and recommendations

This section presents the findings and recommendations regarding the savings impacts and program influence over the last three evaluations.

SLNMEC programs continued to achieve high savings realization rates.

Figure 5-1 shows the statewide SLNMEC GRRs for first-year electricity (kWh) savings over the last three evaluations. The GRR of 94% indicates both that verified savings are close to the program normalized savings and that the tracking data claims have substantially improved since PY2020 – 2022, when tracking data errors drove the largest savings discrepancy.

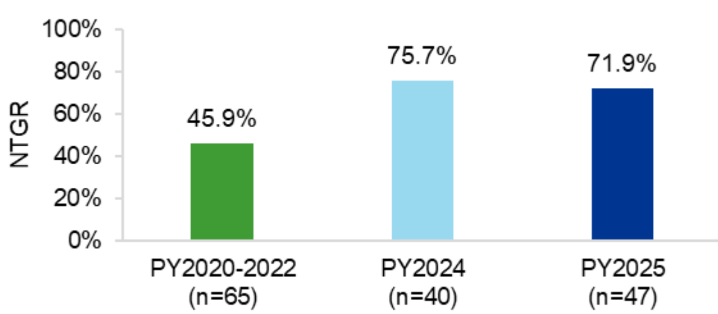
Figure 5-1. Statewide electricity GRRs over time



Participants continued to indicate that the SLNMEC programs were highly influential in their decision to complete energy efficiency projects.

Figure 5-2 shows the statewide SLNMEC NTGRs for electricity over the last three evaluations. The program year listed is the year in which the evaluation team will apply the ratio, once the project savings are finalized. SLNMEC programs continued to demonstrate strong program influence, despite one respondent indicating that they were already planning to do the projects at nine sites without the program, reducing the NTGR from 84.4% to a still-strong 71.9%. The SLNMEC electricity NTGRs are higher than the NTGRs for population NMEC programs (53%) and Commercial, Industrial, and Agricultural programs (56%) and reflect strong program motivation for claimed savings.

Figure 5-2. Statewide electricity NTGR over time



5.2 Findings and recommendations for reducing SLNMEC savings risks

In the planning stages, the NMEC rulebook requires that a project be appropriate for meter-based methods. The programs pursued multiple projects despite issues evident during project planning that foretold conflicts with a meter-based savings approach.

Sites with other large, planned changes. Six sites undertook significant construction projects at the same time as the SLNMEC program-funded energy efficiency projects. These activities impacted both the total energy consumption at the site and the distribution of that consumption, obscuring the impact of the ratepayer-funded energy efficiency project.

Sites with process load driven consumption. The NMEC rulebook makes clear that SLNMEC is designed for commercial loads that are stable over time. Manufacturing and industrial site energy use is often driven by production levels, which can change over time and directly affect energy consumption. Multiple evaluated sites, including a food processing facility and an advanced aerospace electronics manufacturing facility, indicated the presence of process load.

Sites likely to increase in energy usage. Five schools with HVAC retrofits experienced increased energy usage following project implementation. Prior to the retrofit, occupants could open windows to bypass mechanical ventilation. The new systems delivered the code-required minimum ventilation, increasing HVAC operation and meter-level energy usage, rather than producing measurable savings.

These issues undermine NMEC's core assumption that the impact of energy efficiency projects can be isolated using whole-facility metered data. When the customer and PA identify or foresee conditions like the above during the project planning phase, they should consider savings pathways other than NMEC, such as custom programs.

Recommendations 1 – 3 | **Project planning: assessing eligibility**

- Sites with large planned changes not related to their NMEC program project should only participate in NMEC programs if they can isolate the SLNMEC energy efficiency impacts from the other changes through either submetering or another suitable approach. When not feasible, PAs should redirect projects to a methodology that can more accurately estimate savings, such as calculated savings through the custom pathway.
- PAs should review site-level energy consumption data over multiple years to assess whether it can support a reliable modeled savings approach. They should also follow the commercial and commercial-like eligibility requirements outlined in NMEC rulebooks 2.0 and 2.1 to reduce the likelihood of selecting sites for which NMEC approaches cannot create effective models.
- PAs should document the condition and efficiency of replaced equipment (e.g., operational viability and nameplate/rated efficiency) and the code-minimum baseline assumptions.

Implementation of these recommendations should result in fewer model failures
and zero-savings determinations in future evaluations leading to higher program realization rates.

Documentation of the full planning and implementation process of each project is essential. While programs have improved documentation dramatically since the last evaluation,[61] updating documentation as projects evolve is equally critical and remains an area for improvement. Unforeseen scope changes within several projects led to inaccurate claims of savings and the duration of project savings (i.e., a project's effective useful life or EUL).

Fewer measures installed than planned, saving less energy. Five schools installed fewer measures than planned, leading to a significant drop in the metered savings results compared to the savings forecasted during the planning stage. A refrigerated warehouse also installed fewer measures than planned, amounting to a 20% reduction in the site's forecasted savings. When a project's expected savings drop substantially, savings may be too small for the SLNMEC meter-based approach to reliably identify. Consequently, when project scopes decrease, reassessing whether the project is still eligible for SLNMEC is important.

Project-level lifecycle impacts. Programs report how long they expect savings to last (EUL) and use EULs to calculate lifecycle savings and, going forward, the new metric that incorporates the hourly value of savings (TSB). In this evaluation cycle, the share of projects with EUL discrepancies declined substantially compared to the PY2023 Additional Research Report, indicating improved documentation and reporting of project EULs. Remaining discrepancies mostly resulted from the use of planning-stage EULs rather than EULs updated post-installation to reflect the project's final measures.

Recommendations 4 – 6	Project implementation: tracking scope change

- PAs should continue successful efforts to improve documentation of project processes and savings claims, including (1) ensuring final claimed savings align with final report documentation, (2) submitting true-up claims in a timely manner consistent with program expectations, and (3) clearly documenting measures actually installed and any changes to scope since the planning stage.
- PAs should develop processes to facilitate timely updates to documentation with post-installation information, including scope changes, subsequent EUL updates, and other unexpected project changes. Such processes—of which the new NMEC project feasibility study (PFS) template is one example—should span planning, installation, and post-installation phases.
- When project changes affect project eligibility considerations, PAs should carefully document those changes and engage CPUC staff for support.

Implementation of these recommendations should lead to streamlined evaluation, more accurate model performance metrics and estimated savings, and higher lifecycle realization rates.

Even with proper planning and vetting, sites may experience changes that challenge the capabilities of NMEC meter-based methods. In some cases, participating sites had unexpected added or removed load that the programs did not identify until after the full 12-month performance period.

Multiple projects experienced non-project-related changes in energy consumption (non-routine events or NREs) that significantly undermined the reliability of NMEC savings estimates. Among evaluated projects, common NREs included added or removed loads, concurrent facility improvements outside the project scope, and the installation of on-site solar generation. High-impact NREs identified in this evaluation created several risks: Major operational shifts introduced confounding effects that prevented NMEC models from isolating project-related savings, and late NRE detection reduced the effectiveness of corrective measures such as submetering or targeted data collection, potentially removing a substantial amount of data. As a result, many modeled savings carried high uncertainty and did not reflect actual project impacts.

[61] DNV, *Additional Research Report*, October 30, 2025, https://pda.energydataweb.com/api/view/4239/Site-Level%20NMEC%20Additional%20Research%20PY2023%20Final.pdf.

Recommendations 7 & 8	Project performance: monitoring energy use

- Implementers should incorporate routine NRE monitoring such as periodic review of meter data, regular check-ins with customers, and timely updates to project documentation during the performance period. If they identify potential NREs, they should investigate and document the NREs in a timely manner and be prepared to sub-meter to capture added loads and/or generation.
- NREs without meter-based solutions may not affect more than 25% of performance period data.[62]

Implementation of these recommendations should result in fewer large engineering-based NRAs and fewer model failures, improving the reliability of savings estimates and associated hourly impact shapes for TSB.

PAs used engineering-based predictions of savings to adjust savings for projects experiencing extensive NREs rather than taking a fully meter-based approach, posing challenges to the credibility of reported savings.

Five projects required engineering-based non-routine adjustments, with the impact of the adjustments varying significantly, both positively and negatively, ranging from −69% to 394% of forecasted savings. Three of the five projects involved construction activities that the evaluation team considers foreseeable. The remaining two underwent unexpected changes that no one could have foreseen.

NMEC methods seek to produce meter-based savings estimates. Using engineering-based adjustments, particularly when the magnitude of the adjustments is comparable to or even exceeds the metered savings, introduces significant uncertainties and challenges the accuracy and credibility of the savings estimates. Looking forward, applying savings adjustments after the metering period also complicates the development of reliable savings profiles for TSB calculation as those adjustments will not be captured in time-series meter data.

Recommendations 9 – 11	Project adjustments: maintaining credibility

- Engineering adjustments, when necessary, should meet custom project rigor requirements. Incorporating sub-metering data may allow for a less stringent rigor requirement.
- If engineering adjustments increase savings, the adjustment should be less than the forecasted project savings. DNV recommends a maximum adjustment size based on the difference between a project's fractional savings uncertainty (FSU)[63] and 100%. For a project just meeting the updated NMEC rulebook's 90/50 FSU requirement, the maximum adjustment size would be 50% of forecasted savings. For a stronger FSU, the percentage of forecasted savings could grow toward but not reach 100%. For example, an FSU of 90/25 would allow a maximum adjustment of 75% of forecasted savings. Conceptually, this magnitude represents the buffer beyond which a project's forecasted savings estimate would no longer be statistically different than zero, the lowest possible bar for statistical validity.
- Projects with complex NREs or those that programs cannot adjust may not be suitable for the NMEC pathway. Instead, programs should transition such projects to the custom pathway, which determines savings through measure-specific analysis.

Implementation of these recommendations should improve the rigor and credibility of engineering-based adjustments and increase timely redirection of unsuitable projects to alternative pathways such as CIAC or SEM.

[62] American Society of Heating, Refrigerating and Air-Conditioning Engineers, *ASHRAE Guideline 14-2014 – Measurement of Energy, Demand, and Water Savings*, December 18, 2014, section 4.3.2.2, bullet b. https://store.accuristech.com/standards/guideline-14-2014-measurement-of-energy-demand-and-water-savings?product_id=1888937

[63] FSU is similar to relative precision in that it measures the uncertainty around the expected savings. As the value FSU decreases, confidence in the estimated savings level increases.

For the first time in the history of SLNMEC evaluations, multiple projects showed an increase in energy usage relative to historical usage and claimed negative energy savings.

Seven school projects with HVAC retrofit measures resulted in increased energy usage rather than energy savings and claimed the project impacts as negative total savings. Likely due to non-energy-related code requirements, the NMEC baseline did not capture savings associated with the more efficient measures installed. These projects' files did not clearly document multiple key actions: 1) when the program identified an increase in energy usage and the investigative steps it took to identify non-routine events, problems with the installed equipment, or other causes; 2) any steps the programs or PAs will take in the future to reduce the likelihood of the same issue occurring in other projects. Project documentation includes no discussion of the underlying causes. The significant decline in energy savings from the forecasted estimates to the metered results led to a sharp drop in the incentives paid to the customers. This outcome raises concerns regarding customer risk, as significant capital investments and implementation efforts may not have yielded the expected energy performance or financial benefits. The evaluation team zeroed out the negative savings for these projects.

Recommendations 12 & 13	Claiming projects that do not save energy

- When projects do not result in savings, PAs should still claim the project with zero final savings instead of claiming the project with negative savings or dropping the records. The tracking database does not require negative savings, but documenting that the project occurred is still important.
- PAs should strengthen upfront project screening by more closely reviewing baseline operating conditions during project planning, consistent with NMEC rulebook 2.1 viability requirements for existing equipment. Projects with elevated risk, such as multi-site implementations or sites where retrofits are expected to increase energy usage, should be flagged for custom project review to reassess eligibility, savings expectations, or pathway selection before entering NMEC.

5.3 Assessing the SLNMEC program process

This section presents key findings regarding how PAs and implementers deliver SLNMEC programs.

Participants continued to indicate high levels of satisfaction with SLNMEC programs, placing particular emphasis on the programs' technical support and incentives.

On a scale of zero to 10, respondents reported an average satisfaction rating of 8.7, up from 8.4 in PY2023 and 8.1 in PY2020 – PY2022. No respondents reported satisfaction ratings below 7, and qualitative feedback consistently highlighted clear communication, strong technical expertise, and a streamlined program process.

Redirecting projects from population NMEC to SLNMEC created traceability and documentation gaps that limited project evaluability.

The OBF program redirected two projects in this evaluation from pop NMEC to SLNMEC. Upon further investigation, one of these claimed projects was actually an aggregation of three distinct projects, but the PA could no longer disaggregate the program information to a sufficient level to enable evaluation. The evaluation team could not verify another project due to failed NMEC models. These factors reduced transparency and constrained the evaluation's ability to verify the savings.

Recommendation 14	Pop-to-site NMEC transition mechanism

The PAs should establish a transparent and documented process for transitioning projects from population NMEC to site-level NMEC and ensure that all converted projects meet site-level documentation and evaluability requirements.

APPENDIX A. DETAILED GROSS REALIZATION RATES

Table A-1. Electricity GRR by PA and claim sign

Group				First-year		Lifecycle	
PA	Claim sign	Projects	Customers	GRR	Relative precision	GRR	Relative precision
PG&E	**Positive**	9	6	89.7%	±4.0%	77.2%	±29.0%
SCE	**Positive**	3	2	87.3%	±1.0%	69.2%	±4.0%
SCE	**Negative**	5	1	0.0%	±0.0%	0.0%	±0.0%
SoCalRen	**Positive**	3	1	70.8%	±0.0%	121.6%	±0.0%
SoCalRen	**Negative**	2	1	0.0%	±0.0%	0.0%	±0.0%
SDGE	**Positive**	2	1	100.0%	±0.0%	100.0%	±0.0%
Statewide		**24**	**12**	**93.8%**	**±5.0%**	**86.0%**	**±22.0%**

Table A-2. Electricity GRR by PA

			First-year		Lifecycle	
PA	Projects	Customers	GRR	Relative precision	GRR	Relative precision
PG&E	9	6	89.7%	±4.0%	77.2%	±29.0%
SCE	8	3	133.0%	±88.0%	115.3%	±118.0%
SoCalRen	5	2	94.8%	±0.0%	156.0%	±0.0%
SDGE	2	1	100.0%	±0.0%	100.0%	±0.0%
Statewide	**24**	**12**	**93.8%**	**±5.0%**	**86.0%**	**±22.0%**

Table A-3. Electricity GRR by claim sign

			First-year		Lifecycle	
Claim sign	Projects	Customers	GRR	Relative precision	GRR	Relative precision
Positive	17	10	89.5%	±4.0%	80.0%	±20.0%
Negative	7	2	0.0%	±0.0%	0.0%	±0.0%
Statewide	**24**	**12**	**93.8%**	**±5.0%**	**86.0%**	**±22.0%**

Table A-4. Demand GRR by PA and claim sign

Group				First-year	
PA	Claim sign	Projects	Customers	GRR	Relative precision
PG&E	**Positive**	9	6	87.7%	±6.0%
SCE	**Positive**	2	1	115.3%	±0.0%
SoCalRen	**Positive**	1	1	36.9%	±0.0%
SoCalRen	**Negative**	2	1	0.0%	±0.0%
SDGE	**Positive**	2	1	97.7%	±0.0%
Statewide		**16**	**10**	**91.3%**	**±4.0%**

Table A-5. Demand GRR by PA

PA	Projects	Customers	First-year	
			GRR	Relative precision
PG&E	9	6	87.7%	±6.0%
SCE	2	1	115.3%	±0.0%
SoCalRen	3	2	126.7%	±0.0%
SDGE	2	1	97.7%	±0.0%
Statewide	**16**	**10**	**91.3%**	**±4.0%**

Table A-6. Demand GRR by claim sign

Claim sign	Projects	Customers	First-year	
			GRR	Relative precision
Positive	14	9	89.7%	±4.0%
Negative	2	1	0.0%	±0.0%
Statewide	**16**	**10**	**91.3%**	**±4.0%**

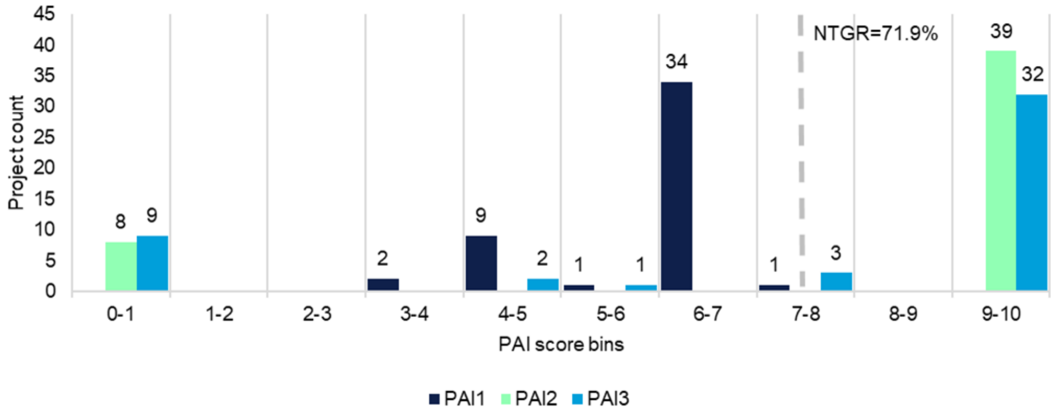
Table A-7. Gas GRR by PA

PA	Projects	Customers	First-year		Lifecycle	
			GRR	Relative precision	GRR	Relative precision
PG&E	2	1	88.5%	±0.0%	77.3%	±0.0%
SCE	1	1	100.0%	±0.0%	100.0%	±0.0%
Statewide	**3**	**2**	**88.5%**	**±0.0%**	**77.3%**	**±0.0%**

APPENDIX B. DETAILED NET-TO-GROSS RATIO RESULTS

Figure B-1 shows the distribution of the three PAI scores. While the majority of PAI_2 and PAI_3 sites are 7 or greater, the majority of PAI_1 sites fall below 7. PAI_1, which is based on respondents' ratings of importance of program and non-program factors on their decision making, drives the NTGRs lower in PY2024 than in PY2023.

Figure B-1. Program attribution score distribution for PY2024



Program attribution index score 1 (PAI_1) individual influence ratings

PAI_1 captures the importance of program and non-program influences. DNV asked respondents to rate how important various potential influences were on their decision to implement their project when they did. Respondents provided a rating on a 0 – 10 scale, where 0 means "Not at all important" and 10 means "Extremely important." We also asked respondents to divide ten "points" between the collective program influences they identified as material and the collective non-program influences they identified as material. We calculated PAI_1 using both of these influence ratings, as shown in Table H-1.

Table B-1 shows the average rating provided by respondents for each potential influence weighted by the number of projects per respondent. [64] PY2024 respondents gave higher ratings for non-program influences than did PY2023 respondents. PY2024 respondents also gave slightly lower ratings for the importance of individual program influences.

Table B-1. Influence ratings for program and non-program influences

Type	Influence	PY2023	PY2024
Program	Incentives, financing, or performance payments	8.9	8.1
Program	Information provided by the program	8.1	7.9
Non-program	Payback without incentives	6.8	9.4
Non-program	Company practices	6.4	7.4
Program weight	Overall importance of program influences	7.5	6.7
Non-program weight	Overall importance of non-program influences	2.5	3.3

Figure B-2 and Figure B-3 show the distribution of respondents' ratings of program and non-program influences, respectively. The figures show counts by number of sites per respondent. Respondents provided mixed responses for the

[64] If respondents said an influence was "not applicable" their response rate treated as a rating of 0.

program influences, with the majority providing ratings of eight or above, but others providing ratings of five or below. The non-program ratings are less mixed with almost all respondents providing a rating of seven or above.

Figure B-2. Program influence distribution.

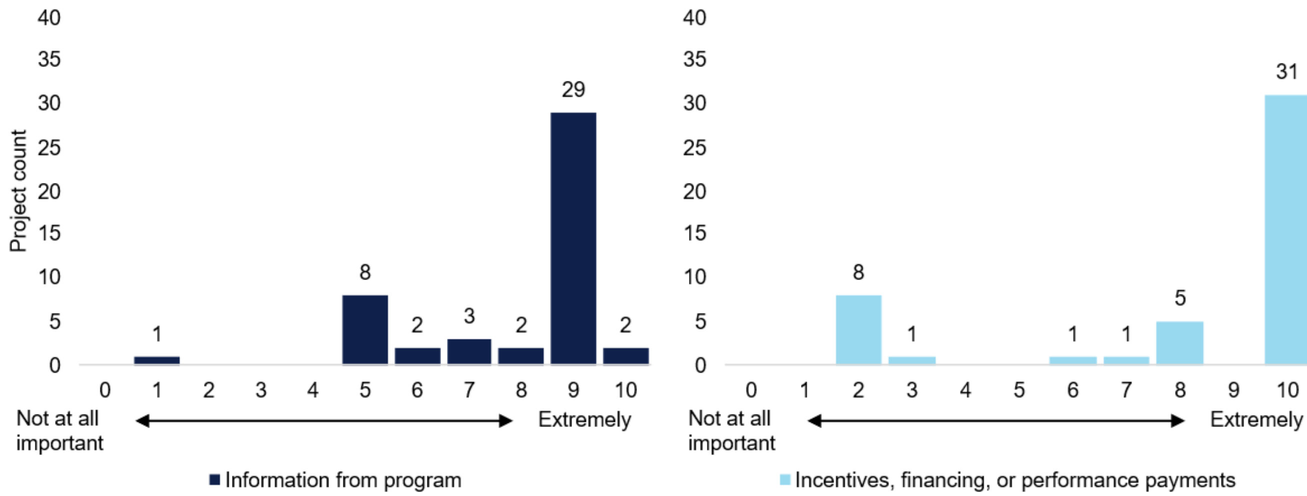


Figure B-3. Non-program influence distribution.

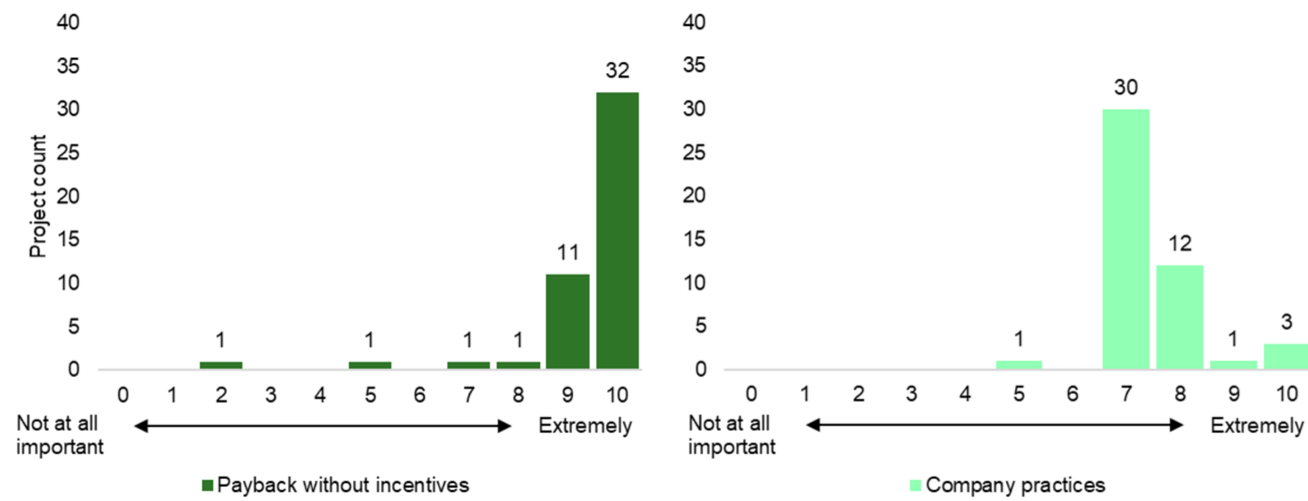
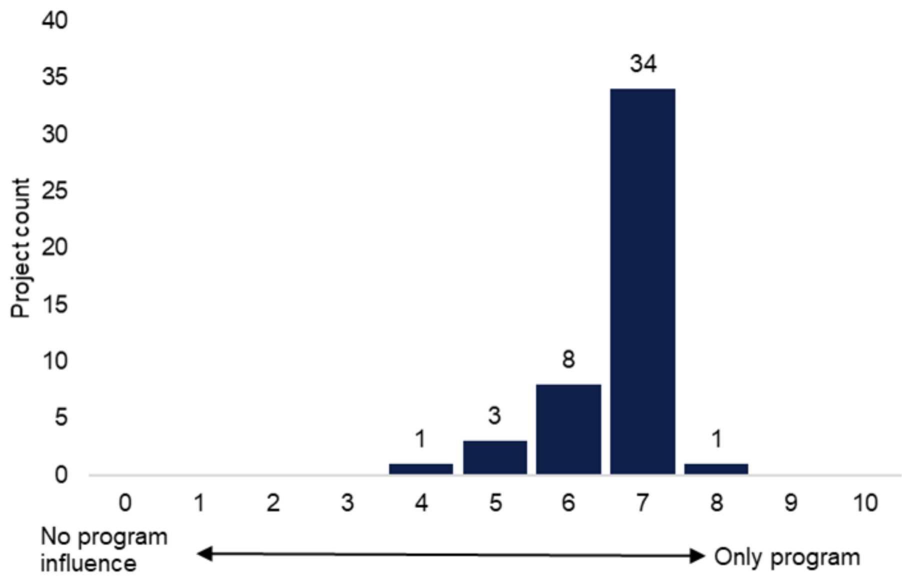


Figure B-4 shows the points awarded to program influences collectively when respondents were asked to divide ten “points” between the collective program influences and the collective non-program influences. Respondent could give 10 points to the collective program influences, indicating that the program influences were the only influences that mattered in their decision making; zero points to the collective program influences indicating that the program influences had no impact on their decision making; or some amount of points between zero and 10. Values are identical across sites for a single participant if that participant indicated that their organization used one decision-making process across sites. Respondents representing a majority of the sites provided ratings of 7 or above, indicating that the collective program influences were more important in their decision making than the collective non-program influences. Respondents representing 2% of sites provided a rating less than 5, indicating that the non-program influences were more important than the program influences in their decision making.

Figure B-4. Collective program influence relative to collective non-program influence.



Program attribution index score 2 (PAI_2) individual influence ratings

PAI_2 reflects the prior plans of a participant, namely if a site had plans in place and budget set aside for the project prior to interacting with the NMEC program.

If the respondent reported that they made the decision to do a project **after** interacting with the program, PAI_2 was set to 10.

If they reported that they made the decision **before** interacting with the program, PAI_2 was set to 0.

If they reported that they made the decision to implement some but not all of the measures included in a project **before** interacting with the program (i.e., "Mixed"), PAI_2 was set to 5.

Table B-2 details how respondents' answered the survey question underlying PAI_2. Ninety-one percent of PY2024 respondents, representing 83% of sites, said the decision to do a project was made after interacting with the program. One respondent, representing 17% of sites said their organization made the decision to do the project before beginning discussions with the program. In PY2023, no respondent indicated making the decision to do a project before beginning discussions with the implementer.

Table B-2. Decision-making timing compared with incentive and technical assistance timing

Was the decision to do this project made before or after you began discussions with [implementer] regarding the availability of incentives or technical assistance for this measure?	PY2023		PY2024	
	Percentage of respondents	Percentage of sites	Percentage of respondents	Percentage of sites
Before	0%	0%	9%	17%
After	90%	95%	91%	83%
Mixed	10%	5%	0%	0%

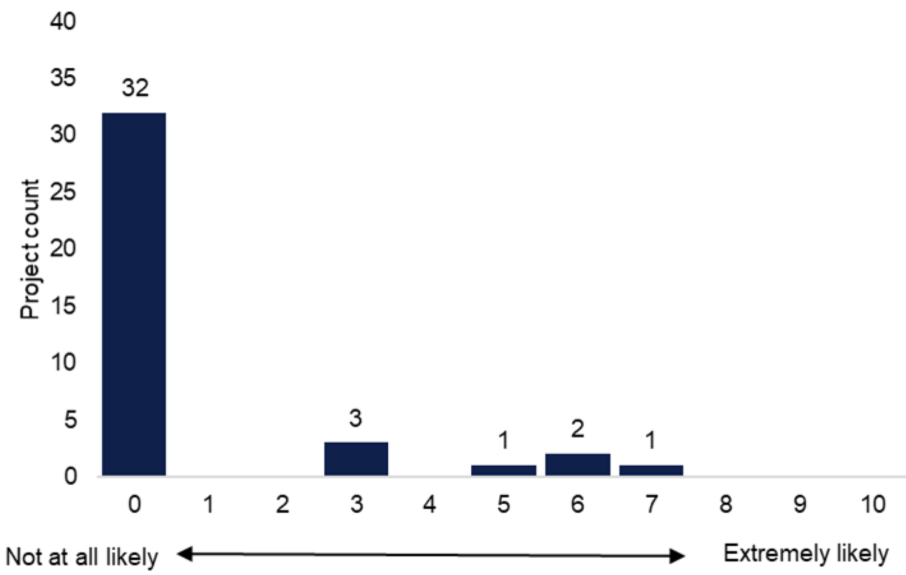
Program attribution index score 3 (PAI_3) individual influence ratings

PAI_3 captures respondents' estimates of the program's influence on project scope and timing by focusing on what would have happened in the absence of the program. (Again, see Table H-1 for more details on NTG methodology.)

Interviewers asked respondents to rate the likelihood their project would have taken the same scope without the NMEC program, using a scale of 0 – 10, where 0 is “Not at all likely” and 10 is “Extremely likely.” Using the same scale, interviewers also asked respondents to rate the likelihood that, even without the NMEC program, they would have implemented their project at the same time.

Figure B-5 shows by site respondents’ ratings of the likelihood their projects would have taken the same scope in the absence of the program.[65] In response to the scope question, respondents representing 74% of projects provided a rating of 3 or below—their project scope would have been different without the program. Respondents were not specifically asked to elaborate on how the scope would have differed, but those who did provide an explanation indicated the scope of their project would have been smaller, involving less extensive energy efficiency improvements. In PY2023 (not shown), respondents representing 71% of projects providing a rating of 3 or less.

Figure B-5. Likelihood project would have had the same scope without the program



Note: 0 = “Not at all likely” and 10 = “Extremely likely”

Table B-3 shows respondent’s responses to the question asking what the likelihood was that they would have conducted the project at the same time as they did without the program. When asked about project timing, 82% of respondents, representing 77% of sites, said it was “very unlikely” that they would have implemented their projects when they did without the program. Nine percent of respondents, representing 19% of sites, said it was “very likely” they would have implemented their project at the same time. In PY2023, respondents representing 90% of sites responded “very unlikely.”

[65] One respondent, representing eight sites, provided an answer of “Don’t know” to this question.

Table B-3. Likelihood of implementing project at the same time without the program

If the program had not been available, what is the likelihood that you would have conducted the project at the same time as you did?	PY2023		PY2024	
	Percent of respondents	Percent of sites	Percent of respondents	Percent of sites
Very likely	0%	0%	9%	19%
Somewhat likely	10%	3%	0%	0%
Neither likely or unlikely	0%	0%	0%	0%
Somewhat unlikely	20%	7%	9%	4%
Very unlikely	70%	90%	82%	77%

When asked how much later they would have implemented their projects without the program, 45% of PY2024 respondents, representing 70% of sites, said they would never implemented the project which is a larger share than provided the same response in PY2023 (20% of respondents representing 17% of sites). Another 27% of respondents, representing 8% of sites, said they would have implemented their projects two or three years later than they did. Eighteen percent of respondents, representing 19% of sites, said they would have done that project at the same time or earlier. These responses, summarized in Table B-4, were not part of the PAI_3 score.

Table B-4. Whole project timing (NOT INCLUDED IN PAI3 SCORE)

Without the assistance received from the [program] (including any incentive funds, program information, energy audits, technical assistance, and any other support) would your organization have completed the whole project…	PY2023		PY2024	
	Percent of respondents	Percent of sites	Percent of respondents	Percent of sites
About the same time or earlier than you did	10%	2%	18%	19%
At least a year later than you did	10%	2%	9%	2%
At least two years later than you did	10%	20%	9%	2%
At least 3 years later than you did	50%	59%	18%	6%
Or never	20%	17%	45%	70%

DNV

APPENDIX C. DETAILED PA INTERVIEW FINDINGS

Table C-1 below summarizes the different program frameworks for each PA.

Table C-1. NMEC Program Compensation Framework summary

PA	Implementer	Recruiter	Installer	QA/QC Reviewer	Statistical Modeler	Participant
PGE	Third-party hired by PA. Performance based payments based on either $/kWh saved or based on $/TSB for newer contracts. Portion of estimated payment paid at project completion, final payment paid after performance period. An additional post-M&V payment possible for overperformance capped at a certain amount.	Conducted in-house by the implementer or by a sub hired by the implementer. Contract terms set by the implementer. Additional support available from referrals to the program by PA account representatives.	Hired and paid by the customer.	Conducted by PA staff.	Third-party modeler hired by the implementer. Paid a fixed rate per project.	Paid for performance based on $kWh saved. Portion of the estimated payment paid at project completion and a remaining payment paid based on performance at the end of performance period.
PGE	PA staff	Referrals by PA account representatives or referrals by trade professionals who hired by customers.	Hired and paid by the customer.	Conducted by PA staff or separate M&V contactor hired by the PA and paid fixed rate per project using ratepayer funds.	A separate M&V contractor from the QA/QC reviewer hired by PA and paid a fixed rate per project.	Receives 0% on-bill financing for amount estimated to have minimal impact on total bill amount if estimated energy cost says compensate for fixed loan repayment amount. Customer must make schedule loan payments regardless of savings.

PA	Implementer	Recruiter	Installer	QA/QC Reviewer	Statistical Modeler	Participant
SCE	PA staff	PA account managers	Hired and paid by the customer	Conducted by PA staff.	Third-party modeler paid by PA on time and materials basis.	Paid for performance with certain percentage of estimated incentive paid three months after project completion, an additional percentage paid 12 months after project completion and the remaining balance paid 24 months at project completion.
SCE	PA staff	PA account managers	Hired and paid by the customer.	Conducted by PA staff.	Third-party modeler paid by PA on time and materials basis.	Paid for performance once 12 months after project completion.
SCG	Third-party implementer paid for performance based $/therm saved. Each month, a percentage of performance payments are paid to vendor for each project being monitored. The remaining percentage for each project is held back until the final true-up for the project and is only paid if warranted by achieved savings.	Conducted by the implementer. The implementer also pays the PA account managers for support.	Hired and paid by customer or conducted by the implementer.	Third-party modeler paid by PA on time and materials basis separate from the statistical modeler	Third-party modeler paid by PA on time and materials basis separate from the QA/QC reviewer	No incentives provided.

PA	Implementer	Recruiter	Installer	QA/QC Reviewer	Statistical Modeler	Participant
SDGE	Third-party implementer paid for performance based on first year net savings (PY2021-2023) or TSB (PY2024) of approved measures, with a portion retained, pending achievement of associated program indicators and cost effectiveness targets that are evaluated on a quarterly basis.	Conducted by implementer or vendor hired by implementer under terms negotiated between implementer and vendor.	Conducted by implementer or another contractor hired and paid by customer.	Conducted by PA.	Conducted by implementer or vendor hired by implementer under terms negotiated between implementer and vendor.	Approved program measures and installations are eligible for an incentive. Incentives are flexible and determined by measure and project type. The third-party implementer is responsible for administering participant incentives and determines the timing of such payments.
IREN	Third-party implementer paid by grants and contracts with government representatives. Payments staged based on project milestones.	The implementer and government representatives.	The customer themselves or a contractor hired by the customer.	The implementer and third-party reviewers paid for time and materials.	Third-party modelers contracted by the customer representatives and paid for time and materials.	Receives a portion of the estimated incentive three months after project completion and the remaining incentive 12 months after project completion based on actual savings achieved.
SoCalREN	Third-party implementer paid by grants and contracts with government representatives. Payments staged based on project milestones.	Third-party implement paid time and materials.	Hired and paid by the customer.	Third-party modeler paid by PA on time and materials basis separate from the statistical modeler	Third-party modeler paid by PA on time and materials basis separate from the QA/QC reviewer	Receives a portion of the estimated incentive three months after project completion and the remaining incentive 12 months after project completion based on actual savings achieved.

APPENDIX D. PROJECT DISCREPANCIES

Table D-1 through Table D-3 present project-level results, including the project sample weight, claimed, documented, and verified first-year savings, GRR, DRR, and discrepancy descriptions. The tables provide a complete list of discrepancies ordered by the size of the impact. Some of the listed discrepancies may be sizeable and others may be very small.

Table D-1. Project discrepancies resulting in adjusted first-year gross electricity savings

PA	DNV ID	Initial claim ID	Weight	Claimed	Documented	Verified	GRR	DRR	Discrepancy descriptions
PG&E	DNV125	PGE-2023-OBFAP-003	1.0	134,630	134,630	0	0%	0%	**Zero savings:** Zeroed out final claimed savings
PG&E	DNV56	PGE-2022-SAVINGS ESTIMATE SITE SPECIFIC COMPREHENSIVE - 38413 13 = INDUSTRIAL REFRIGERATION	2.0	2,124,047	2,124,047	1,810,321	85%	85%	**Normal operating conditions:** Normalized to performance period operating conditions **Replication differences:** Savings calculated using the provided tools and data
PG&E	DNV98	PGE-2023-Savings Estimate Site Specific Comprehensive - 52331 4 = Commercial Refrigeration	3.0	823,992	823,992	753,967	92%	92%	**Normal operating conditions:** Normalized to performance period operating conditions
PG&E	DNV65	PGE-2022-SAVINGS ESTIMATE SITE SPECIFIC COMPREHENSIVE - 43665 4 = COMMERCIAL REFRIGERATION	4.0	436,168	436,168	411,253	94%	94%	**NRE adjustments:** Excluded ~2 months of performance period data affected by NRE identified during evaluation **Replication differences:** Savings calculated using the provided tools and data

PA	DNV ID	Initial claim ID	Weight	Claimed	Documented	Verified	GRR	DRR	Discrepancy descriptions
PG&E	DNV87	PGE-2023-Savings Estimate Site Specific Comprehensive - 40390 1 = Commercial Indoor Lighting, PGE-2023-Savings Estimate Site Specific Comprehensive - 40390 3 = Commercial HVAC	1.0	779,827	739,827	748,601	96%	101%	**Tracking data:** Reported results **Replication differences:** Savings calculated using the provided tools and data
PG&E	DNV70	PGE-2022-SAVINGS ESTIMATE SITE SPECIFIC COMPREHENSIVE - 41909 3 = COMMERCIAL HVAC, PGE-2022-SAVINGS ESTIMATE SITE SPECIFIC COMPREHENSIVE - 41909 4 = COMMERCIAL REFRIGERATION	3.3	26,843	26,842	26,842	100%	100%	**Tracking data:** Reported results
PG&E	DNV63	PGE-2022-SAVINGS ESTIMATE SITE SPECIFIC COMPREHENSIVE - 35583 3 = COMMERCIAL HVAC	1.0	173,940	173,940	173,986	100%	100%	**Replication differences:** Savings calculated using the provided tools and data

PA	DNV ID	Initial claim ID	Weight	Claimed	Documented	Verified	GRR	DRR	Discrepancy descriptions
PG&E	DNV61	PGE-2022-SAVINGS ESTIMATE SITE SPECIFIC COMPREHENSIVE - 41910 3 = COMMERCIAL HVAC, PGE-2022-SAVINGS ESTIMATE SITE SPECIFIC COMPREHENSIVE - 41910 4 = COMMERCIAL REFRIGERATION	3.3	173,907	173,907	174,926	101%	101%	**Model interval change:** Used hourly model rather than daily model
PG&E	DNV60	PGE-2022-SAVINGS ESTIMATE SITE SPECIFIC COMPREHENSIVE - 41912 4 = COMMERCIAL REFRIGERATION	3.3	118,054	118,054	119,179	101%	101%	**Model interval change:** Used hourly model rather than daily model **NRE adjustments:** Excluded 4 days of performance period data affected by demand response events
SCE	DNV101	SCE-2023-Q5_15768572, SCE-2023-Q5_15768573, SCE-2023-Q5_15768574	1.4	−40,554	−40,554	0	0%	0%	**Zero savings:** Zeroed out final claimed savings
SCE	DNV103	SCE-2023-Q5_15768561	1.4	−108,114	−108,114	0	0%	0%	**Zero savings:** Zeroed out final claimed savings
SCE	DNV109	SCE-2023-Q5_15768569	1.4	−44,491	−44,491	0	0%	0%	**Zero savings:** Zeroed out final claimed savings
SCE	DNV136	SCE-2023-Q5_15768564	1.4	−39,316	−39,316	0	0%	0%	**Zero savings:** Zeroed out final claimed savings
SCE	DNV189	SCE-2023-Q5_15768570	1.4	−71,852	−71,852	0	0%	0%	**Zero savings:** Zeroed out final claimed savings

PA	DNV ID	Initial claim ID	Weight	Claimed	Documented	Verified	GRR	DRR	Discrepancy descriptions
SCE	DNV106	SCE-2023-Q5_15787332, SCE-2023-Q5_15787333, SCE-2023-Q5_15787334, SCE-2023-Q5_15787335, SCE-2023-Q5_15787336, SCE-2023-Q5_15787337, SCE-2023-Q5_15787338	4.0	196,684	196,683	161,913	82%	82%	**Model interval change:** Used hourly model rather than daily model **Normal weather data prep:** Corrected preparation of normal weather data that resulted in 365 days of normalized savings, rather than 377 **Replication differences:** Savings calculated using the provided tools and data **Tracking data:** Reported results
SCE	DNV105	SCE-2023-Q5_15787328, SCE-2023-Q5_15787329, SCE-2023-Q5_15787330, SCE-2023-Q5_15787331	1.0	421,704	421,704	403,995	96%	96%	**Normal weather data prep:** Corrected preparation of normal weather data that resulted in 365 days of normalized savings, rather than 377 **Model interval change:** Used hourly model rather than daily model **Replication differences:** Savings calculated using the provided tools and data

PA	DNV ID	Initial claim ID	Weight	Claimed	Documented	Verified	GRR	DRR	Discrepancy descriptions
SCE	DNV124	SCE-2023-Q5_15855545	1.0	29,578	29,578	29,390	99%	99%	**Normal weather data:** Updated normal weather data to the appropriate weather station **Normal weather data prep:** Corrected preparation of normal weather data that resulted in 365 days of normalized savings, rather than 366
SoCalREN	DNV75	SCR-2022-A0B0W00002SWVNQ UAE	1.0	−5,706	−5,705	0	0%	0%	**Zero savings:** Zeroed out final claimed savings **Tracking data:** Reported results
SoCalREN	DNV76	SCR-2022-A0B0W00002SWVNV UAE	1.0	−118,567	−118,567	0	0%	0%	**Zero savings:** Zeroed out final claimed savings
SoCalREN	DNV73	SCR-2022-A0B0W00002SWVNL UAE	1.0	222,282	222,282	69,166	31%	31%	**NRE adjustments:** Fit baseline period model using original baseline period load, rather than adjusted baseline load. Removed high usage indicator variable from model specification.
SoCalREN	DNV74	SCR-2022-A0B0W00002SWVOP UAU	1.0	228,648	228,648	217,660	95%	95%	**NRE adjustments:** Removed mask mandate indicator variable from model specification

PA	DNV ID	Initial claim ID	Weight	Claimed	Documented	Verified	GRR	DRR	Discrepancy descriptions
SoCalREN	DNV77	SCR-2022-A0B0W00002SWV9KUAU	1.0	41,096	41,096	61,667	150%	150%	**NRE adjustments:** Removed high usage indicator variable from model specification. **Normal weather data prep:** Corrected preparation of normal weather data that resulted in 365 days of normalized savings, rather than 366.

PA	DNV ID	Initial claim ID	Weight	Claimed	Documented	Verified	GRR	DRR	Discrepancy descriptions
SDGE	DNV85	SDGE-2023-SDGE4012-11165401-14164209	1.0	105,668	105,668	86,698	82%	82%	**NRE adjustments:** Solar generation was installed during the performance period but the generation output data was not available. To account for the solar installation, calculated savings using two different performance period models. The first performance period model leveraged data prior to the solar generation installation to calculate savings for the corresponding months, March through July. The second performance period model leveraged data during overnight hours following the solar generation installation to calculate savings for the corresponding months and hours of the day (9pm to 5am). **Model interval change:** Used hourly model rather than daily model **Replication differences:** Savings calculated using the provided tools and data
SDGE	DNV82	SDGE-2023-SDGE4012-11165396-14164192	1.0	863,465	863,465	882,120	102%	102%	**Model interval change:** Used hourly model rather than daily model

Table D-2. Project discrepancies resulting in adjusted first-year gross demand savings

PA	DNV ID	Initial claim ID	Weight	Claimed	Documented	Verified	GRR	DRR	Discrepancy descriptions
PG&E	DNV125	PGE-2023-OBFAP-003	1.0	13	13	0	0%	0%	**Zero savings:** Zeroed out final claimed savings
PG&E	DNV65	PGE-2022-SAVINGS ESTIMATE SITE SPECIFIC COMPREHENSIVE - 43665 4 = COMMERCIAL REFRIGERATION	4.0	72	72	56	78%	78%	**Interval data:** Aggregated 15-minute AMI data to the hourly level as the sum of usage (kWh) readings within each hour rather than the maximum of peak demand (kW) readings **NRE adjustments:** Excluded ~2 months of performance period data affected by NRE identified during evaluation **Replication differences:** Savings calculated using the provided tools and data
PG&E	DNV56	PGE-2022-SAVINGS ESTIMATE SITE SPECIFIC COMPREHENSIVE - 38413 13 = INDUSTRIAL REFRIGERATION	2.0	378	378	322	85%	85%	**Normal operating conditions:** Normalized to performance period operating conditions **Replication differences:** Savings calculated using the provided tools and data
PG&E	DNV98	PGE-2023-Savings Estimate Site Specific Comprehensive - 52331 4 = Commercial Refrigeration	3.0	147	147	134	91%	91%	**Normal operating conditions:** Normalized to performance period operating conditions
PG&E	DNV61	PGE-2022-SAVINGS ESTIMATE SITE SPECIFIC COMPREHENSIVE - 41910 3 = COMMERCIAL HVAC, PGE-2022-SAVINGS ESTIMATE SITE SPECIFIC COMPREHENSIVE - 41910 4 = COMMERCIAL REFRIGERATION	3.3	19	18	18	99%	100%	**Tracking data:** Reported results

PA	DNV ID	Initial claim ID	Weight	Claimed	Documented	Verified	GRR	DRR	Discrepancy descriptions
PG&E	DNV70	PGE-2022-SAVINGS ESTIMATE SITE SPECIFIC COMPREHENSIVE - 41909 3 = COMMERCIAL HVAC, PGE-2022-SAVINGS ESTIMATE SITE SPECIFIC COMPREHENSIVE - 41909 4 = COMMERCIAL REFRIGERATION	3.3	8	8	8	100%	100%	N/A
PG&E	DNV63	PGE-2022-SAVINGS ESTIMATE SITE SPECIFIC COMPREHENSIVE - 35583 3 = COMMERCIAL HVAC	1.0	7	7	7	100%	100%	N/A
PG&E	DNV60	PGE-2022-SAVINGS ESTIMATE SITE SPECIFIC COMPREHENSIVE - 41912 4 = COMMERCIAL REFRIGERATION	3.3	20	20	23	115%	115%	**NRE adjustments:** Excluded 4 days of performance period data affected by demand response events
PG&E	DNV87	PGE-2023-Savings Estimate Site Specific Comprehensive - 40390 1 = Commercial Indoor Lighting, PGE-2023-Savings Estimate Site Specific Comprehensive - 40390 3 = Commercial HVAC	1.0	21	21	31	146%	146%	**Replication differences:** Savings calculated using the provided tools and data
SCE	DNV106	SCE-2023-Q5_15787332, SCE-2023-Q5_15787333, SCE-2023-Q5_15787334, SCE-2023-Q5_15787335, SCE-2023-Q5_15787336, SCE-2023-Q5_15787337, SCE-2023-Q5_15787338	4.0	19	19	22	114%	114%	**DEER peak period:** Corrected the days and hours used to calculate demand savings

PA	DNV ID	Initial claim ID	Weight	Claimed	Documented	Verified	GRR	DRR	Discrepancy descriptions
SCE	DNV105	SCE-2023-Q5_15787328, SCE-2023-Q5_15787329, SCE-2023-Q5_15787330, SCE-2023-Q5_15787331	1.0	54	54	63	117%	117%	**DEER peak period:** Corrected the days and hours used to calculate demand savings
SoCalREN	DNV75	SCR-2022-A0B0W00002SWVNQUAE	1.0	12	12	0	0%	0%	**Zero savings:** Zeroed out final claimed savings **Replication differences:** Savings calculated using the provided tools and data
SoCalREN	DNV76	SCR-2022-A0B0W00002SWVNVUAE	1.0	−46	−46	0	0%	0%	**Zero savings:** Zeroed out final claimed savings **Replication differences:** Savings calculated using the provided tools and data
SoCalREN	DNV73	SCR-2022-A0B0W00002SWVNLUAE	1.0	47	47	17	37%	37%	**NRE adjustments:** Fit baseline period model using original baseline period load, rather than adjusted baseline load. Removed high usage indicator variable from model specification. **DEER peak period:** Corrected the days and hours used to calculate demand savings

PA	DNV ID	Initial claim ID	Weight	Claimed	Documented	Verified	GRR	DRR	Discrepancy descriptions
SDGE	DNV85	SDGE-2023-SDGE4012-11165401-14164209	1.0	16	16	13	82%	82%	**DEER peak period:** Corrected the days and hours used to calculate demand savings **NRE adjustments:** Solar generation was installed during the performance period but the generation output data was not available. To account for the solar installation, calculated savings using two different performance period models, both leveraging data unaffected by solar generation. The first performance period model leveraged data prior to the solar generation installation (March through July), while the second leveraged data during overnight hours (9pm to 5am) following the solar generation installation. Calculated savings by applying the kWh gross realization rate to the claimed demand savings since the DEER peak period coincides with days and hours affected by the solar generation. **Replication differences:** Savings calculated using the provided tools and data
SDGE	DNV82	SDGE-2023-SDGE4012-11165396-14164192	1.0	112	112	112	100%	100%	N/A

Table D-3. Project discrepancies resulting in adjusted first-year gross gas savings

PA	DNV ID	Initial claim ID	Weight	Claimed	Documented	Verified	GRR	DRR	Discrepancy descriptions
PG&E	DNV87	PGE-2023-Savings Estimate Site Specific Comprehensive - 40390 1 = Commercial Indoor Lighting, PGE-2023-Savings Estimate Site Specific Comprehensive - 40390 3 = Commercial HVAC	1.0	5,852	5,853	4,525	77%	77%	**Normal operating conditions:** Normalized to performance period operating conditions **Replication differences:** Savings calculated using the provided tools and data **Tracking data:** Reported results
PG&E	DNV63	PGE-2022-SAVINGS ESTIMATE SITE SPECIFIC COMPREHENSIVE - 35583 3 = COMMERCIAL HVAC	1.0	6,131	6,131	6,086	99%	99%	**Normalized consumption:** Removed a rule that set negative predicted consumption values to zero
SCE	DNV124	SCE-2023-Q5_15855545	1.0	−68	−68	−68	100%	100%	N/A

APPENDIX E. SAMPLE DESIGN

Table E-1 and Table E-2 show the achieved sample for each stratum in the gross and early gross evaluation sample designs, respectively. We sampled at the project-level. The tables show the categorical stratification (i.e., grouping) and size strata. (The greater the size stratum, the greater the combined first-year electricity and gas savings of each project within the grouping). The target projects column shows the number of projects we attempted to complete. The completed columns show the number of randomly selected projects we completed and their combined first-year electricity and gas savings (MMBtu). The population columns show the total number of projects and combined first-year electricity and gas savings. In all cases, savings columns represent final claimed savings.

The gross evaluation sample design shown in Table E-1 is composed of projects with true-up claims in PY2024. While we attempted to complete interviews with all targeted projects, we were unable to do so for some gross evaluation projects. When we were unable to complete interviews, we attempted to interview backup projects within the respective strata, where available.

Table E-1. Gross evaluation sample design

Strata					Target projects	Completed		Population	
PA	Program	Fuel	Claim sign	Stratum		Projects	MMBtu	Projects	MMBtu
PG&E	PGE21011	Electric	Positive	1	1	0	0	2	641
PG&E	PGE21011	Gas	Positive	1	1	0	0	1	5,897
PG&E	PGE210911/ PGE_OBFAP	Dual	Positive	1	1	0	0	1	1,350
PG&E	PGE210911/ PGE_OBFAP	Dual	Positive	2	1	0	0	1	13,468
PG&E	PGE2110012	Dual	Positive	1	1	1	3,246	1	3,246
PG&E	PGE_Ag_001	Electric	Positive	1	1	1	459	1	459
PG&E	PGE_Com_001	Dual	Positive	1	1	0	0	1	1,615
PG&E	PGE_Com_001	Electric	Positive	1	3	3	1,088	9	4,543
PG&E	PGE_Com_002	Dual	Positive	1	1	1	1,207	1	1,207
PG&E	PGE_Com_003	Electric	Positive	1	1	1	1,488	1	1,488
PG&E	PGE_Ind_003	Electric	Positive	1	1	1	2,811	2	4,165
PG&E	PGE_Ind_003	Electric	Positive	2	1	1	7,247	1	7,247
SCE	SCE-13-L-003I	Electric	Positive	1	1	1	94	1	94
SCE	SCE-13-L-003I	Electric	Negative	1	5	5	−1,038	7	−1,625
SCE	SCE-13-SW-002B	Electric	Positive	1	3	1	671	4	3,189
SCE	SCE-13-SW-002B	Electric	Positive	2	1	1	1,439	1	1,439
SoCalREN	SCR-PUBL-B3	Electric	Positive	1	1	1	140	1	140
SoCalREN	SCR-PUBL-B3	Electric	Positive	2	2	2	1,539	2	1,539
SoCalREN	SCR-PUBL-B3	Electric	Negative	1	1	2	−424	2	−424
SDG&E	SDGE4012	Electric	Positive	1	1	1	361	1	361
SDG&E	SDGE4012	Electric	Positive	2	1	1	2,946	1	2,946
Statewide					**30**	**24**	**23,274**	**42**	**52,984**

The early gross evaluation sample design shown in Table E-2 is composed of projects with initial claims in PY2024. We completed all targeted projects for the early gross evaluation.

Table E-2. Early gross evaluation sample design

Strata				Target projects	Completed		Population	
PA	Program	Fuel	Stratum		Projects	MMBtu	Projects	MMBtu
IREN	**IREN-PUBL-002**	**Electric**	**1**	1	1	519	1	519
PG&E	**PGE21011**	**Electric**	**1**	1	1	831	1	831
PG&E	**PGE2110012**	**Dual**	**1**	1	1	6,338	1	6,338
PG&E	**PGE_Com_001**	**Electric**	**1**	7	7	1,325	29	7,286
PG&E	**PGE_Com_002**	**Dual**	**1**	1	1	40,317	1	40,317
PG&E	**PGE_Com_005**	**Dual**	**1**	1	1	9,787	1	9,787
PG&E	**PGE_OBFAP**	**Electric**	**1**	1	1	1,454	1	1,454
SoCalREN	**SCR-PUBL-B3**	**Electric**	**1**	6	6	2,178	12	4,765
SoCalREN	**SCR-PUBL-B3**	**Electric**	**2**	1	1	975	1	975
Statewide				**20**	**20**	**63,725**	**48**	**72,273**

APPENDIX F. STANDARD HIGH-LEVEL SAVINGS TABLES

Table F-1. Gross lifecycle savings (MWh)

Report name	PA	Standard report group	Ex ante gross	Ex post gross	GRR	% Ex ante gross pass through	Eval GRR
Site NMEC	PGE	PGE - Positive	80,106	61,826	0.77	0.0%	0.77
Site NMEC	**PGE**	**Total**	**80,106**	**61,826**	**0.77**	**0.0%**	**0.77**
Site NMEC	SCE	SCE - Negative	-6,958	0	0.00	0.0%	0.00
Site NMEC	SCE	SCE - Positive	17,404	12,042	0.69	0.0%	0.69
Site NMEC	**SCE**	**Total**	**10,446**	**12,042**	**1.15**	**0.0%**	**1.15**
Site NMEC	SCR	SCR - Negative	-946	0	0.00	0.0%	0.00
Site NMEC	SCR	SCR - Positive	4,298	5,227	1.22	0.0%	1.22
Site NMEC	**SCR**	**Total**	**3,352**	**5,227**	**1.56**	**0.0%**	**1.56**
Site NMEC	SDGE	SDGE - Positive	11,630	11,626	1.00	0.0%	1.00
Site NMEC	**SDGE**	**Total**	**11,630**	**11,626**	**1.00**	**0.0%**	**1.00**
Site NMEC		***Statewide***	***105,533***	***90,721***	***0.86***	***0.0%***	***0.86***

Table F-2. Net lifecycle savings (MWh)

Report name	PA	Standard report group	Ex ante net	Ex post net	NRR	% Ex ante net pass through	Ex ante NTG	Ex post NTG	Eval ex ante NTG	Eval ex post NTG
Site NMEC	PGE	PGE - Positive	63,290	46,598	0.74	0.0%	0.79	0.75	0.79	0.75
Site NMEC	**PGE**	**Total**	**63,290**	**46,598**	**0.74**	**0.0%**	**0.79**	**0.75**	**0.79**	**0.75**
Site NMEC	SCE	SCE - Negative	-6,547	0	0.00	0.0%	0.94		0.94	
Site NMEC	SCE	SCE - Positive	16,501	11,972	0.73	0.0%	0.95	0.99	0.95	0.99
Site NMEC	**SCE**	**Total**	**9,954**	**11,972**	**1.20**	**0.0%**	**0.95**	**0.99**	**0.95**	**0.99**
Site NMEC	SCR	SCR - Negative	-1,102	0	0.00	0.0%	1.17		1.17	
Site NMEC	SCR	SCR - Positive	3,636	3,340	0.92	0.0%	0.85	0.64	0.85	0.64
Site NMEC	**SCR**	**Total**	**2,534**	**3,340**	**1.32**	**0.0%**	**0.76**	**0.64**	**0.76**	**0.64**
Site NMEC	SDGE	SDGE - Positive	4,603	5,892	1.28	0.0%	0.40	0.51	0.40	0.51
Site NMEC	**SDGE**	**Total**	**4,603**	**5,892**	**1.28**	**0.0%**	**0.40**	**0.51**	**0.40**	**0.51**
Site NMEC		***Statewide***	***80,381***	***67,802***	***0.84***	***0.0%***	***0.76***	***0.75***	***0.76***	***0.75***

Table F-3. Gross lifecycle savings (MW)

Report name	PA	Standard report group	Ex ante gross	Ex post gross	GRR	% Ex ante gross pass through	Eval GRR
Site NMEC	PGE	PGE - Positive	12.7	8.1	0.64	0.0%	0.64
Site NMEC	**PGE**	**Total**	**12.7**	**8.1**	**0.64**	**0.0%**	**0.64**
Site NMEC	SCE	SCE - Negative	0.0	0.0			
Site NMEC	SCE	SCE - Positive	2.3	2.1	0.91	0.0%	0.91
Site NMEC	**SCE**	**Total**	**2.3**	**2.1**	**0.91**	**0.0%**	**0.91**
Site NMEC	SCR	SCR - Negative	-0.2	0.0	0.00	0.0%	0.00
Site NMEC	SCR	SCR - Positive	0.3	0.0	0.00	0.0%	0.00
Site NMEC	**SCR**	**Total**	**0.1**	**0.0**	**0.00**	**0.0%**	**0.00**
Site NMEC	SDGE	SDGE - Positive	1.5	1.5	0.98	0.0%	0.98
Site NMEC	**SDGE**	**Total**	**1.5**	**1.5**	**0.98**	**0.0%**	**0.98**
Site NMEC		***Statewide***	***16.6***	***11.8***	***0.71***	***0.0%***	***0.71***

Table F-4. Net lifecycle savings (MW)

Report name	PA	Standard report group	Ex ante net	Ex post net	NRR	% Ex ante net pass through	Ex ante NTG	Ex post NTG	Eval ex ante NTG	Eval ex post NTG
Site NMEC	PGE	PGE - Positive	10.6	6.2	0.59	0.0%	0.84	0.77	0.84	0.77
Site NMEC	**PGE**	**Total**	**10.6**	**6.2**	**0.59**	**0.0%**	**0.84**	**0.77**	**0.84**	**0.77**
Site NMEC	SCE	SCE - Negative	0.0	0.0						
Site NMEC	SCE	SCE - Positive	2.2	2.1	0.96	0.0%	0.95	1.00	0.95	1.00
Site NMEC	**SCE**	**Total**	**2.2**	**2.1**	**0.96**	**0.0%**	**0.95**	**1.00**	**0.95**	**1.00**
Site NMEC	SCR	SCR - Negative	-0.3	0.0	0.00	0.0%	1.31		1.31	
Site NMEC	SCR	SCR - Positive	0.1	0.0	0.00	0.0%	0.39	0.86	0.39	0.86
Site NMEC	**SCR**	**Total**	**-0.2**	**0.0**	**0.00**	**0.0%**	**-2.30**	**0.86**	**-2.30**	**0.86**
Site NMEC	SDGE	SDGE - Positive	0.6	0.8	1.25	0.0%	0.40	0.51	0.40	0.51
Site NMEC	**SDGE**	**Total**	**0.6**	**0.8**	**1.25**	**0.0%**	**0.40**	**0.51**	**0.40**	**0.51**
Site NMEC		***Statewide***	***13.2***	***9.1***	***0.69***	***0.0%***	***0.80***	***0.78***	***0.80***	***0.78***

Table F-5. Gross lifecycle savings (MTherms)

Report name	PA	Standard report group	Ex ante gross	Ex post gross	GRR	% Ex ante gross pass through	Eval GRR
Site NMEC	PGE	PGE - Positive	498	385	0.77	0.0%	0.77
Site NMEC	**PGE**	**Total**	**498**	**385**	**0.77**	**0.0%**	**0.77**
Site NMEC	SCE	SCE - Negative	0	0			
Site NMEC	SCE	SCE - Positive	-1	-1	1.00	0.0%	1.00
Site NMEC	**SCE**	**Total**	**-1**	**-1**	**1.00**	**0.0%**	**1.00**
Site NMEC	SCR	SCR - Negative	0	0			
Site NMEC	SCR	SCR - Positive	0	0			
Site NMEC	**SCR**	**Total**	**0**	**0**			
Site NMEC	SDGE	SDGE - Positive	0	0			
Site NMEC	**SDGE**	**Total**	**0**	**0**			
Site NMEC		***Statewide***	***497***	***384***	***0.77***	***0.0%***	***0.77***

Table F-6. Net lifecycle savings (MTherms)

Report name	PA	Standard report group	Ex ante net	Ex post net	NRR	% Ex ante net pass through	Ex ante NTG	Ex post NTG	Eval ex ante NTG	Eval ex post NTG
Site NMEC	PGE	PGE - Positive	270	293	1.08	0.0%	0.54	0.76	0.54	0.76
Site NMEC	**PGE**	**Total**	**270**	**293**	**1.08**	**0.0%**	**0.54**	**0.76**	**0.54**	**0.76**
Site NMEC	SCE	SCE - Negative	0	0						
Site NMEC	SCE	SCE - Positive	-1	-1	0.89	0.0%	0.86	0.76	0.86	0.76
Site NMEC	**SCE**	**Total**	**-1**	**-1**	**0.89**	**0.0%**	**0.86**	**0.76**	**0.86**	**0.76**
Site NMEC	SCR	SCR - Negative	0	0						
Site NMEC	SCR	SCR - Positive	0	0						
Site NMEC	**SCR**	**Total**	**0**	**0**						
Site NMEC	SDGE	SDGE - Positive	0	0						
Site NMEC	**SDGE**	**Total**	**0**	**0**						
Site NMEC		***Statewide***	***269***	***292***	***1.08***	***0.0%***	***0.54***	***0.76***	***0.54***	***0.76***

Table F-7. Gross first-year savings (MWh)

Report name	PA	Standard report group	Ex ante gross	Ex post gross	GRR	% Ex ante gross pass through	Eval GRR
Site NMEC	PGE	PGE - Positive	10,282	9,221	0.90	0.0%	0.90
Site NMEC	**PGE**	**Total**	**10,282**	**9,221**	**0.90**	**0.0%**	**0.90**
Site NMEC	SCE	SCE - Negative	-476	0	0.00	0.0%	0.00
Site NMEC	SCE	SCE - Positive	1,386	1,210	0.87	0.0%	0.87
Site NMEC	**SCE**	**Total**	**910**	**1,210**	**1.33**	**0.0%**	**1.33**
Site NMEC	SCR	SCR - Negative	-124	0	0.00	0.0%	0.00
Site NMEC	SCR	SCR - Positive	492	349	0.71	0.0%	0.71
Site NMEC	**SCR**	**Total**	**368**	**349**	**0.95**	**0.0%**	**0.95**
Site NMEC	SDGE	SDGE - Positive	969	969	1.00	0.0%	1.00
Site NMEC	**SDGE**	**Total**	**969**	**969**	**1.00**	**0.0%**	**1.00**
Site NMEC		***Statewide***	***12,529***	***11,749***	***0.94***	***0.0%***	***0.94***

Table F-8. Net first-year savings (MWh)

Report name	PA	Standard report group	Ex ante net	Ex post net	NRR	% Ex ante net pass through	Ex ante NTG	Ex post NTG	Eval ex ante NTG	Eval ex post NTG
Site NMEC	PGE	PGE - Positive	8,218	6,950	0.85	0.0%	0.80	0.75	0.80	0.75
Site NMEC	**PGE**	**Total**	**8,218**	**6,950**	**0.85**	**0.0%**	**0.80**	**0.75**	**0.80**	**0.75**
Site NMEC	SCE	SCE - Negative	-448	0	0.00	0.0%	0.94		0.94	
Site NMEC	SCE	SCE - Positive	1,314	1,203	0.92	0.0%	0.95	0.99	0.95	0.99
Site NMEC	**SCE**	**Total**	**866**	**1,203**	**1.39**	**0.0%**	**0.95**	**0.99**	**0.95**	**0.99**
Site NMEC	SCR	SCR - Negative	-145	0	0.00	0.0%	1.17		1.17	
Site NMEC	SCR	SCR - Positive	415	223	0.54	0.0%	0.84	0.64	0.84	0.64
Site NMEC	**SCR**	**Total**	**270**	**223**	**0.82**	**0.0%**	**0.73**	**0.64**	**0.73**	**0.64**
Site NMEC	SDGE	SDGE - Positive	921	491	0.53	0.0%	0.95	0.51	0.95	0.51
Site NMEC	**SDGE**	**Total**	**921**	**491**	**0.53**	**0.0%**	**0.95**	**0.51**	**0.95**	**0.51**
Site NMEC		***Statewide***	***10,274***	***8,867***	***0.86***	***0.0%***	***0.82***	***0.75***	***0.82***	***0.75***

Table F-9. Gross first-year savings (MW)

Report name	PA	Standard report group	Ex ante gross	Ex post gross	GRR	% Ex ante gross pass through	Eval GRR
Site NMEC	PGE	PGE - Positive	1.6	1.4	0.88	0.0%	0.88
Site NMEC	**PGE**	**Total**	**1.6**	**1.4**	**0.88**	**0.0%**	**0.88**
Site NMEC	SCE	SCE - Negative		0.0			
Site NMEC	SCE	SCE - Positive	0.2	0.2	1.15	0.0%	1.15
Site NMEC	**SCE**	**Total**	**0.2**	**0.2**	**1.15**	**0.0%**	**1.15**
Site NMEC	SCR	SCR - Negative	0.0	0.0	0.00	0.0%	0.00
Site NMEC	SCR	SCR - Positive	0.0	0.0	0.37	0.0%	0.37
Site NMEC	**SCR**	**Total**	**0.0**	**0.0**	**1.27**	**0.0%**	**1.27**
Site NMEC	SDGE	SDGE - Positive	0.1	0.1	0.98	0.0%	0.98
Site NMEC	**SDGE**	**Total**	**0.1**	**0.1**	**0.98**	**0.0%**	**0.98**
Site NMEC		***Statewide***	***1.9***	***1.7***	***0.91***	***0.0%***	***0.91***

Table F-10. Net first-year savings (MW)

Report name	PA	Standard report group	Ex ante net	Ex post net	NRR	% Ex ante net pass through	Ex ante NTG	Ex post NTG	Eval ex ante NTG	Eval ex post NTG
Site NMEC	PGE	PGE - Positive	1.3	1.1	0.80	0.0%	0.84	0.77	0.84	0.77
Site NMEC	**PGE**	**Total**	**1.3**	**1.1**	**0.80**	**0.0%**	**0.84**	**0.77**	**0.84**	**0.77**
Site NMEC	SCE	SCE - Negative	0.0	0.0						
Site NMEC	SCE	SCE - Positive	0.2	0.2	1.21	0.0%	0.95	1.00	0.95	1.00
Site NMEC	**SCE**	**Total**	**0.2**	**0.2**	**1.21**	**0.0%**	**0.95**	**1.00**	**0.95**	**1.00**
Site NMEC	SCR	SCR - Negative	0.0	0.0	0.00	0.0%	1.29		1.29	
Site NMEC	SCR	SCR - Positive	0.0	0.0	0.82	0.0%	0.39	0.86	0.39	0.86
Site NMEC	**SCR**	**Total**	**0.0**	**0.0**	**-0.60**	**0.0%**	**-1.82**	**0.86**	**-1.82**	**0.86**
Site NMEC	SDGE	SDGE - Positive	0.1	0.1	0.52	0.0%	0.95	0.51	0.95	0.51
Site NMEC	**SDGE**	**Total**	**0.1**	**0.1**	**0.52**	**0.0%**	**0.95**	**0.51**	**0.95**	**0.51**
Site NMEC		***Statewide***	***1.6***	***1.4***	***0.85***	***0.0%***	***0.84***	***0.78***	***0.84***	***0.78***

Table F-11. Gross first-year savings (MTherms)

Report name	PA	Standard report group	Ex ante gross	Ex post gross	GRR	% Ex ante gross pass through	Eval GRR
Site NMEC	PGE	PGE - Positive	102	91	0.89	0.0%	0.89
Site NMEC	**PGE**	**Total**	**102**	**91**	**0.89**	**0.0%**	**0.89**
Site NMEC	SCE	SCE - Negative	0	0			
Site NMEC	SCE	SCE - Positive	0	0	1.00	0.0%	1.00
Site NMEC	**SCE**	**Total**	**0**	**0**	**1.00**	**0.0%**	**1.00**
Site NMEC	SCR	SCR - Negative	0	0			
Site NMEC	SCR	SCR - Positive	0	0			
Site NMEC	**SCR**	**Total**	**0**	**0**			
Site NMEC	SDGE	SDGE - Positive	0	0			
Site NMEC	**SDGE**	**Total**	**0**	**0**			
Site NMEC		***Statewide***	***102***	***91***	***0.89***	***0.0%***	***0.89***

Table F-12. Net first-year savings (MTherms)

Report name	PA	Standard report group	Ex ante net	Ex post net	NRR	% Ex ante net pass through	Ex ante NTG	Ex post NTG	Eval ex ante NTG	Eval ex post NTG
Site NMEC	PGE	PGE - Positive	68	69	1.01	0.0%	0.67	0.76	0.67	0.76
Site NMEC	**PGE**	**Total**	**68**	**69**	**1.01**	**0.0%**	**0.67**	**0.76**	**0.67**	**0.76**
Site NMEC	SCE	SCE - Negative	0	0						
Site NMEC	SCE	SCE - Positive	0	0	0.89	0.0%	0.86	0.76	0.86	0.76
Site NMEC	**SCE**	**Total**	**0**	**0**	**0.89**	**0.0%**	**0.86**	**0.76**	**0.86**	**0.76**
Site NMEC	SCR	SCR - Negative	0	0						
Site NMEC	SCR	SCR - Positive	0	0						
Site NMEC	**SCR**	**Total**	**0**	**0**						
Site NMEC	SDGE	SDGE - Positive	0	0						
Site NMEC	**SDGE**	**Total**	**0**	**0**						
Site NMEC		***Statewide***	***68***	***69***	***1.01***	***0.0%***	***0.67***	***0.76***	***0.67***	***0.76***

APPENDIX G. STANDARD PER-UNIT SAVINGS TABLES

Table G-1. Per unit (quantity) gross energy savings (kWh)

Report name	PA	Standard report group	Pass through	% ER ex ante	% ER ex post	Average EUL (yr)	Ex post lifecycle	Ex post first-year	Ex post annualized
Site NMEC	PGE	PGE - Positive	0	0.0%	0.0%	6.0	2,810,262.9	419,151.7	419,151.7
Site NMEC	SCE	SCE - Negative	0	0.0%	0.0%	0.0	0.0	0.0	0.0
Site NMEC	SCE	SCE - Positive	0	0.0%	0.0%	9.9	2,006,923.0	201,716.8	201,716.8
Site NMEC	SCR	SCR - Negative	0	0.0%	0.0%	0.0	0.0	0.0	0.0
Site NMEC	SCR	SCR - Positive	0	0.0%	0.0%	13.3	1,742,436.0	116,167.4	116,167.4
Site NMEC	SDGE	SDGE - Positive	0	0.0%	0.0%	12.0	5,813,055.4	484,421.3	484,421.3

Table G-2. Per unit (quantity) net energy savings (kWh)

Report name	PA	Standard report group	Pass through	% ER ex ante	% ER ex post	Average EUL (yr)	Ex post lifecycle	Ex post first-year	Ex post annualized
Site NMEC	PGE	PGE - Positive	0	0.0%	0.0%	6.0	2,118,095.2	315,914.6	315,914.6
Site NMEC	SCE	SCE - Negative	0	0.0%	0.0%	0.0	0.0	0.0	0.0
Site NMEC	SCE	SCE - Positive	0	0.0%	0.0%	9.9	1,995,282.8	200,546.9	200,546.9
Site NMEC	SCR	SCR - Negative	0	0.0%	0.0%	0.0	0.0	0.0	0.0
Site NMEC	SCR	SCR - Positive	0	0.0%	0.0%	13.3	1,113,416.6	74,231.0	74,231.0
Site NMEC	SDGE	SDGE - Positive	0	0.0%	0.0%	12.0	2,946,056.5	245,504.7	245,504.7

Table G-3. Per unit (quantity) gross energy savings (Therms)

Report name	PA	Standard report group	Pass through	% ER ex ante	% ER ex post	Average EUL (yr)	Ex post lifecycle	Ex post first-year	Ex post annualized
Site NMEC	PGE	PGE - Positive	0	0.0%	0.0%	6.0	17,500.1	4,121.9	4,178.9
Site NMEC	SCE	SCE - Negative	0	0.0%	0.0%	0.0	0.0	0.0	0.0
Site NMEC	SCE	SCE - Positive	0	0.0%	0.0%	9.9	-133.2	-11.4	-14.4
Site NMEC	SCR	SCR - Negative	0	0.0%	0.0%	0.0	0.0	0.0	0.0
Site NMEC	SCR	SCR - Positive	0	0.0%	0.0%	13.3	0.0	0.0	0.0
Site NMEC	SDGE	SDGE - Positive	0	0.0%	0.0%	12.0	0.0	0.0	0.0

Table G-4. Per unit (quantity) net energy savings (Therms)

Report name	PA	Standard report group	Pass through	% ER ex ante	% ER ex post	Average EUL (yr)	Ex post lifecycle	Ex post first-year	Ex post annualized
Site NMEC	PGE	PGE - Positive	0	0.0%	0.0%	6.0	13,300.1	3,138.4	3,176.0
Site NMEC	SCE	SCE - Negative	0	0.0%	0.0%	0.0	0.0	0.0	0.0
Site NMEC	SCE	SCE - Positive	0	0.0%	0.0%	9.9	-101.2	-8.7	-10.9
Site NMEC	SCR	SCR - Negative	0	0.0%	0.0%	0.0	0.0	0.0	0.0
Site NMEC	SCR	SCR - Positive	0	0.0%	0.0%	13.3	0.0	0.0	0.0
Site NMEC	SDGE	SDGE - Positive	0	0.0%	0.0%	12.0	0.0	0.0	0.0

APPENDIX H. DETAILED NET-TO-GROSS METHODOLGY

Table H-1 provides a detailed description of the NTG methodology, showing how each PAI is calculated. The rest of this appendix provides example calculations to demonstrate how various responses influence each PAI.

Table H-1. NTGR scoring methodology

Score	Description	Calculation
Program attribution index 1 (PAI_1)	• PAI_1 reflects two different ways of measuring the relative influence of program and non-program factors on project decision making. • Respondents rate each program influence factor and nonprogram influence factor using a 0-to-10 scale, where 0 means “not at all important” and 10 means “extremely important.” PIF is the maximum score given to any program influence. NPIF is the maximum score given to any non-program influence. • Respondents also allocate ten points between their collective program factors and their collective non-program factors. • PIP is the number of points given to the collective program factors. NPIP is the number of points given to the collective non-program factors.	$PAI_1 = 10 * \frac{PIF * PIP}{((PIF * PIP) + (NPIF * NPIP))}$
Program attribution index 2 (PAI_2)	• PAI_2 reflects the prior plans of a participant, namely if a site had plans in place and budget set aside for the capital project prior to interacting with the NMEC program. • If the respondent says they made the decision to do a project after interacting with the program, PAI_2 is set to 10. • If they say they made the decision before interacting with the program, PAI_2 is set to 0. • If they give a mixed response, PAI_2 is set to 5.	Decision made **after** program contact: $PAI_2 = 10$ Decision made **before** program contact: $PAI_2 = 0$ Mixed response: $PAI_2 = 5$
Program attribution index 3 (PAI_3)	• PAI_3 reflects program influence on project scope and timing. • The score is calculated by subtracting from 10 the respondent’s ranked likelihood that they would have installed a project of the same scope in the same time frame even if the program had not been available. • S is the respondent’s ranked likelihood that they would have installed a project of the same scope even if the program had not been available. • T is the respondent’s ranked likelihood that they would have installed a project in the same time frame even if the program had not been available. • PAI_3 is calculated with the greater of S or T.	$PAI_3 = 10 - Max(S, T)$
Customer-level net-to-gross ratio (NTGR)	• The NTGR is calculated as the average of the three program attribution index scores. • The evaluation team divide the average score by 10 to make it into a value between 0 and 1.	$NTGR_{cust} = \frac{Average(PAI_1, PAI_2, PAI_3)}{10}$

PAI_1 calculation

Table H-2 lists the four influences that DNV asked respondents to rate, with each categorized as either a program or a non-program influence. These ratings are used to calculate PAI_1. If respondents rated “Company policies or mandates” five or greater, they were asked a follow-up question to identify which specific policies influenced their decision. If respondents indicated that corporate sustainability or environmental policy was their main influence, this influence was discarded to not penalize companies for having environmental goals.

Table H-2. PAI_1 influences

Influence type	Influence factor
Program	**Financial incentives** (e.g., financing, rebates, or performance payments)
Program	**Technical assistance** (e.g., program-provided feasibility study or facility or system energy audit)
Non-program	**Company policies or mandates** (e.g., maintenance/replacement schedules or regulatory requirements. Note this excludes corporate sustainability goals)
Non-program	**Other payback/return on the project** (excluding program incentives, e.g., utility bill savings)

Figure H-1 shows three hypothetical examples of PAI_1 calculations for illustrative purposes.

Example 1: The first example shows a case where a hypothetical respondent considered at least one program influence and one non-program influence as extremely important in their decision-making process (providing a PIF and NPIF of 10). The respondent viewed all program influences collectively as equally influential as all non-program influences collectively on their decision-making process (providing a PIP of 5 and an NPIP of 5). This results in a PAI_1 of 5, indicating equal program and non-program influence.

Example 2: In Example 2, the respondent viewed at least one program influence and one non-program influence as extremely important in their decision-making process, just like in Example 1. However, in Example 2, the respondent viewed the importance of all program influences collectively as more important than the importance of all non-program influences collectively (providing a PIP of 8 and NPIP of 2). The result is a PAI_1 of 8, indicating high program influence.

Example 3: In Example 3, the respondent views one non-program influence as the most important factor in their decision-making process (providing NPIF of 10) while they gave their most important program influence only a 7. This respondent views the importance of all non-program influences collectively as more important than all program influences collectively (providing a NPIP of 6 and PIP of 4). Example 3 results in a PAI_1 of 3.1, indicating low program influence.

Figure H-1. PAI_1 calculation examples

Example 1: Equal importance	Example 2: Higher collective program importance	Example 3: Higher individual and collective non-program importance
PIF = 10 NPIF = 10 PIP = 5 NPIP = 5	PIF = 10 NPIF = 10 PIP = 8 NPIP = 2	PIF = 7 NPIF = 10 PIP = 4 NPIP = 6
$10 * \frac{10 * 5}{((10 * 5) + (10 * 5))}$	$10 * \frac{10 * 8}{((10 * 8) + (10 * 2))}$	$10 * \frac{7 * 4}{((7 * 4) + (10 * 6))}$
PAI_1 = 5.0	PAI_1 = 8.0	PAI_1 = 3.1

PAI_2 Calculation

Figure H-2 shows examples of PAI_2 calculations. PAI_2 is based on a respondent's report of when they decided to do a project. If the respondent indicates that their organization decided to do a project after their involvement with the program, the evaluation team sets PAI_2 to 10. Specifically, the instrument ask the respondent, "was the decision to do this project made before or after you began discussions with [RELEVENT IMPLEMENTER] regarding the availability of incentives or technical assistance for this project?" The evaluation team chose this scoring based on the assumption that if the decision was made prior to engaging with the program, then the program did not motivate the decision; however if it was made after, the program did influence the decision. For example, perhaps the program conducted an audit and told the organization about energy efficiency measures that the organization then decided to implement. Alternatively, perhaps the organization decided to do the project after learning they could get financial incentives from the program. In Example 5, the respondent's organization decided to do the project before interacting with the program and then sought out incentives from the program to improve their return-on-investment. In cases like this one, the evaluation team sets PAI_2 is set to 0. In Example 6, the respondent provided a mixed response. The project could have included multiple measures, some of which the organization decided to implement before interacting with the program and some of which they may have learned about only after having the program conduct an audit. In Example 3, the evaluation team sets PAI_2 to 5.

Figure H-2. PAI_2 calculation examples

Example 4: Decision made after program involvement	Example 5: Decision made before program involvement	Example 6: Decisions made before and after program involvement
PAI_2 = 10	PAI_2 = 0	PAI_2 = 5

PAI_3 Calculation

Figure H-3 shows three hypothetical examples of PAI_3 calculations. The first example shows a case where a hypothetical respondent indicated that their organization would have been extremely unlikely to implement the same project scope without the program (providing an S of 0) and would have been extremely unlikely to implement the project at the same time as they did without the program (providing a T of 0). This results in a PAI_3 of 10, indicating high program influence. In Example 8, the respondent indicated that their organization would have been somewhat likely to implement a project with the same scope without the program but that the project would have been implemented later than it was. Example 8 results in a PAI_3 of 5. In Example 9, the respondent indicated that their organization likely would have implemented a project with a nearly identical scope at the same time without the program. Example 9 results in a PAI_3 of 0, indicating low program influence.

Figure H-3. PAI_3 calculation examples

Example 7: Equal importance	Example 8: Higher collective program importance	Example 9: Higher individual and collective non-program importance
S = 0 T= 0	S = 5 T= 1	S = 9 T= 10
$10 - Max(0, 0)$	$10 - Max(5,1)$	$10 - Max(9, 10)$
PAI_3 = 10.0	PAI_3 = 5.0	PAI_3 = 0.0

APPENDIX I. SITE-LEVEL NMEC EVALUATION REPORT COMPILED STAKEHOLDER COMMENTS

Table I-1 presents DNV's responses to the comments on the draft report that were received during the public review period.

Table I-1. Responses to comments on draft report

Commenter	Comment	DNV response
Cal TF	[Overarching] EM&V Recommendations to Reduce Program Requirements Cal TF Staff observe that generally within the industry EM&V Recommendations are objective oriented. They tend to increase requirements often to achieve an objective, reduce requirements where risk is mitigated or the objective has been achieved, or reinforce an existing requirement that may not be followed consistently and thus, not achieve the objective. We reviewed the Draft Report Recommendations and assessed which of these categories they fall into. Out of the fourteen recommendations, none of them reduce requirements. Stacking requirements on California energy efficiency programs has been occurring for over a decade. This has caused increased program implementation costs and, in many cases, legacy requirements not applicable to current program designs and not providing ratepayer benefits in more accurate program grid impacts. Reducing requirements when EM&V results show consistent performance can benefit ratepayers by promoting increased program participation and reducing administrative costs while managing portfolio risks. An example of a reduced requirement is Cal TF Staff's suggestion on program influence below.	Thank you for your comment. The majority of the recommendations in this evaluation are not intended to introduce new requirements but to reinforce existing NMEC rulebook requirements. Given that the SLNMEC program approach is still evolving, many of the findings point to areas where existing requirements are not yet being consistently implemented, rather than areas where requirements can be reduced.

Commenter	Comment	DNV response
Cal TF	[Overarching] <u>Program Influence for Scope and Timeline Altered Projects</u> The past three SL-NMEC evaluations encompassing projects from PY2020-PY2024 have each shown 80-90% of sites influenced by the program to increase scope of the project beyond what they would have done without program interaction. Similarly, 80-90% of the sites also have accelerated the project implementation due to program interactions. [Note that in the EM&V Reports, the results are shown individually. It is reasonable to expect that some sites increased scope but not timeline and vice versa. This would make the percent of sites influenced by these factors higher.] Both are elements identified in E-5115 for program influence. Appendix B of the Draft Report lists the details on the responses to different program influence attributes. Figure B-5 describes 35 of the 38 projects (92%) scope altered through program intervention. Figure B-6 shows that 81% of the site's timelines were altered. Collecting documentation for program influence is a considerable program burden. These results would imply that collecting this documentation does not provide additional value to ratepayers in supporting program influence. The SL-NMEC CMG used similar charts from previous EM&V reports as a basis to develop a SL-NMEC Influence Job Aid. This is single document completed by the customer that asks whether the scope and/or project timeline were altered due to the program services. The questions are similar to those asked by the EM&V team. This document would serve as the basis for all documentation to support program influence when project scope and timeline have been altered. Recommendation: Include a recommendation to incorporate the SL-NMEC Influence Job Aid as the sole evidence for projects in which the scope and/or timelines have been influenced by the program.	The program influence methodology applied in this evaluation is an established and approved approach. As such, changes to the approach or framework would require broader stakeholder alignment and are beyond the scope of this report. The CPUC is interested in constructive ideas that reduce implementer burden while demonstrating that regulatory compliance will be maintained. Further consideration would be needed, however, to assess whether new tools can provide sufficient and consistent support for program influence determinations, including how well they align with NMEC baseline assumptions over the full effective useful life of the measures.

DNV

Cal TF	[Overarching] Program Influence Algorithm The program influence algorithm has been adjusted in recent evaluations but still does not accurately represent the “more likely than not” criteria for determining PoE. “More likely than not” represents a greater than 50% chance likelihood. The weighting of the PAI components implies that these indexes should be considered together. However, policy for program influence would indicate that a single influential aspect can satisfy the requirements. [E-5115 at 29. “Program influence may be in the form of technical assistance and/or financial support.”] The current framework averages three distinct Program Attribution Indices (PAI1, PAI2, PAI3) to calculate the final customer-level NTGR. While structured, the mathematical design of these indices often relies on conservative "veto" mechanics or rigid boundaries rather than weighing the totality of evidence to see which side of the scale is heavier. The components of the algorithm are described in detail in Appendix H of the Draft Report and summarized below. PAI1 mixes both technical and financial influence with potential non-program influence factors. While it is important within policy to include factors against program influence, the combined nature of this metric and the calculation differs from policy. When considering eligibility under PoE, weighing for and against program influence that results in 51% and 100% probability are considered eligible and equal. Similarly, 50% and 0% probability are considered not eligible and equal. Thus, a PAI1 result for an individual project should be either 0 or 1. We would like to note that policy identifies different weighting for different factors which the current formula does not consider. The PAI1 formula multiplies individual maximum factor ratings (PIF/NPIF) by collective point allocations (PIP/NPIP). As illustrated in Example 3 on page H-3 of the Draft Report, a single highly-rated non-program factor (such as an urgent equipment replacement need giving an NPIF of 10) can severely suppress the score, even if the respondent allocates a substantial portion of collective weight to program factors. This allows isolated outliers to overpower the balanced, holistic allocation of influence expressed by the respondent, conflicting with a true weight-of-evidence assessment.	The full text from finding #5 of E5115 reads, "The evidence of program influence must demonstrate that an energy efficiency program caused a customer to implement a more costly, more efficient equipment or process than they would have otherwise in absence of the program intervention. Program influence may be in the form of technical assistance and/or financial support." The last sentence includes technical assistance and/or financial support as possible considerations with respect to PI but does not imply that either of those factors can indicate PI without consideration of other drivers. Furthermore, the concept of PoE is not relevant to an ex post evaluation. It is a simplified algorithm applied at the custom project review stage to determine if a project can proceed and receive incentives. Also, PoE is primarily used to assess whether AR is an appropriate MAT for a project. NMEC has, by design, an effective MAT that is far more generous than AR. NMEC captures savings from an existing conditions baseline for the full EUL of the measure. PoE is not currently formulated to address the NMEC baseline.

PAI3 assesses the outcomes of program influence such as scope and timeline altering. PAI3 is calculated using the formula 10 - Max(S, T), where S is the likelihood of matching the project's scope without the program and T is the likelihood of matching the timing. By selecting the maximum value of non-program likelihood, the formula acts as a strict penalty. For example, if a participant is certain they would have done a project at the exact same time (T = 10) but would have been completely unable to do it at the same scope (S = 0), PAI3 is forced to 0. This completely erases strong evidence that the program heavily influenced the project's scope, violating a standard meant to evaluate whether the program was a major driver of the final project outcome.

Additionally, a project with a value of 6 for either S or T does meet the PoE policy requirements of "more likely than not" and should be credited with a 1.0 NTGR as described in more detail in the second recommendation. However, the algorithm would suggest a lower NTGR.

Recommendation: Modify the program influence algorithm to accurately reflect policy which supports program influence when it is more likely than not (i.e., >50%). Some ideas are presented below

- In PAI1, reduce the mathematical leverage given to single-factor maximums (PIF/NPIF) and lean on the 10-point collective allocation. A constant-sum allocation is inherently a direct measurement of preponderance; if a participant allocates 6 points to program factors and 4 points to non-program factors, they are explicitly stating that the program held a majority share of the influence.
- For PA3, replace 10 - Max(S,T) with an absolute 1 or 0 with 1 for either scope or timeline receiving a ≥6 and 0 for both scope and timeline <6. Alternatively, a blended metric, such as 10 - Average(S,T), or apply weightings based on the energy savings impact of scope vs. timing. This ensures that if a program successfully altered either the scale or the velocity of an installation, it receives fair, proportional credit.
- For the combined NTGR score, a sequenced approach to the distinct indices can determine the NTGR for a project.
  - If PA2 is 0, then project NTGR is 0.
  - If PA1 and PA3 <=5, then NTGR is 0
  - If PA1 and PA3 >5, then NTGR is 1

Commenter	Comment	DNV response
PG&E	[Page 3: Table 1-1. SLNMEC evaluation population and savings claimed in the tracking data] PG&E team is curious about the presentation of this table, as the footnote notes that the negative TSB is driven by a single project with a final claimed TSB of -4,684,078. For this project, the initial 2021 claim did not include TSB, while the true-up claim did, which appears to have resulted in the negative final TSB. To support consistency in how data is presented across all program administrators, PG&E team would appreciate consideration of excluding this project from the table. Similar to Table 1-3, the impact of this project could instead be described in a footnote. In 2024 CPUC's Energy Efficiency goals switched from net savings goals to TSB goals. Any claims prior to 2024 were measured against net savings goals rather than TSB. The projects from 2021 did deliver actual system benefits but the reporting system was not yet set up to calculate those benefits. Since the initial claim was measured against net savings, it makes sense that the evaluation should also be based on net savings for consistency. If we do need to perform a TSB comparison, then it would be necessary to factor in the TSB associated with the initial claim. This can be calculated by running the initial claim through CET to determine the appropriate TSB value. The true-up TSB should then be based on this derived figure.	Thank you for the comment. We updated Table 1-1 to exclude this outlier and modified the corresponding table note accordingly. With this update, the presentation of TSB results is consistent throughout the report.
PG&E	[Page 22: "The NMEC rulebook 2.1 was not in place when the evaluated projects were completed or when the programs published these PIPs, but future projects will need to comply with the new rulebook."] PG&E suggests that this note be included for readers' information towards the start of the document with caveat that projects developed after issuance of Rulebook 2.1 will need to follow its guidelines. Thus, the note would be applicable for all other references of Rulebook 2.1.	Thank you for the comment. The report includes this caveat on page 2 in a footnote: "DNV evaluated PY2024 programs under this version 2.0 of the NMEC rulebook, not version 2.1, which was released in 2025." This early footnote is intended to establish the applicable rulebook for all evaluated projects and provide context for subsequent references to Rulebook 2.1 throughout the report.

Commenter	Comment	DNV response
PG&E	[Page 53: "The majority of reclassifications involved replacement measures (AR and NR), which are inherently more complex to classify and continue to present challenges for the SLNMEC projects. This remains a recurring issue in NMEC evaluations. The updated NMEC rulebook 2.1 specifies that for measures claiming NR, 'an estimate of the below-code portion of savings must be provided, documented, and debited from preliminary and final trued-up performance-based savings estimates.' Consistent with this requirement, for the two measures evaluated as NR, the evaluation team calculated and separated below-code and above-code savings components."] From the draft report, it is unclear if the calculation and separation of the below-code and above-code savings had any impact on the validated savings. PG&E requests that the final report provides clarification. PG&E would like to emphasize that above- and below-code savings were not required under Rulebook 2.0 and should not have any impact on savings validation. Above- and below-code savings should be noted as informational-only content to provide comparison to future evaluation cycles.	Thank you for the comment. For the two measures evaluated as NR, we conducted below-code and above-code savings calculations as part of a forward-looking analysis. In both cases, we found zero below-code savings and did not adjust any evaluated savings values. We have added a sentence to the report to make this explicit.
PG&E	[Page 54: "Going forward, NR claims are expected to include complete below-code and above-code savings documentation to support compliance with current program requirements."] This statement should be more explicit on stating from which date is "going forward". Many projects at issuance of Rulebook 2.1 were already in development under the guidance of Rulebook 2.0. As stated, it can be misconstrued as a requirement for all projects after PY2024, but Rulebook 2.1, which updates the NR guidance, wasn't issued until the end of Q3 of PY2025. PG&E suggests changing the term "going forward" to "for projects that fall under NMEC Rulebook V2.1".	Thank you for the comment. We have updated the text based on your feedback, more explicitly referring to projects that fall under NMEC Rulebook 2.1

Commenter	Comment	DNV response
PG&E	[Page 65: "Recommendations 1 – 3: PAs should review site-level energy consumption data over multiple years to assess whether it can support a reliable modeled savings approach. They should also follow the commercial and commercial-like eligibility requirements outlined in NMEC rulebooks 2.0 and 2.1 to reduce the likelihood of selecting sites for which NMEC approaches cannot create effective models."] PG&E recommends this recommendation to be changed to "PAs could review site-level energy consumption data over multiple years..." While PG&E agrees that multiyear assessments could reduce risk, this may overcomplicate a process. For instance, a multiyear assessment would require investigating NREs that project developers may not have access to (i.e. changing of customer staff is frequent, so there may not be knowledge of NREs in years past). While it should be encouraged as a good practice, this should not be a requirement for SL NMEC as based on the NMEC Rulebook V2.1, the baseline energy model only requires a minimum of 12-months energy usage and independent variable to normalize usage to (i.e. weather data).	Thank you for the comment. The intent of this recommendation is not to require detailed investigation of historical NREs beyond what is feasible, but rather to encourage a high-level review of multi-year consumption trends, where available, to identify potential instability or anomalies that could affect the suitability of NMEC modeling. While a minimum of 12 months of data is required, evidence of instability of recurring NREs in earlier periods can help inform whether additional attention or alternative approaches may be needed.

Commenter	Comment	DNV response
PG&E	[Page 65: "Recommendations 1 – 3: PAs should document the condition and efficiency of replaced equipment (e.g., operational viability and nameplate/rated efficiency) and the code-minimum baseline assumptions."] It's worth noting that under Rulebook 2.0, AR and NR MAT classifications were treated similarly, with both using existing conditions as the baseline in alignment with the language of the legislation AB802, provided the equipment met the customer's minimum level of service. As a result, documenting existing efficiency was not a requirement at that time. Moving forward, projects developed under Rulebook 2.1 will need to collect this information to appropriately distinguish whether the replacement falls under the AR or NR MAT classifications.	Thank you for your comment. Based on our evaluation, however, documentation of pre-existing equipment condition and efficiency remains important for several reasons. First, demonstrating the viability of existing equipment—specifically that it met the minimum level of service at the time of implementation—is a key component in supporting an AR classification. Second, in cases where NMEC modeling fails or engineering adjustments are required, documentation of removed equipment becomes critical for substantiating claimed savings. This information supports evaluation activities, including validating savings assumptions, developing engineering estimates where needed, and appropriately applying adjustments for NR measures.

Commenter	Comment	DNV response
PG&E	[Page 66: "Recommendations 4 – 6: PAs should develop processes to facilitate timely updates to documentation with post-installation information, including scope changes, subsequent EUL updates, and other unexpected project changes. Such processes—of which the new NMEC project feasibility study (PFS) template is one example—should span planning, installation, and post-installation phases."] PG&E already complies with this recommendation. The project lifecycle is captured in a minimum of 3 project phases and each phase requires updates to documentation: 1) Pre-Installation - Once a project is developed, the initial energy estimates of the proposed measures are reviewed by the PA, then submitted to the CMPA for ex-ante review, 2) Post-Installation - After installation, the initial energy estimates are updated based on the installed measures and the updated estimates are reported as the Initial Claim, 3) Performance (i.e. Post-Installation M&V) - After installation, the project enters a 12-month M&V period, normalized savings are used to True-Up the Initial Claim. During the 12-month M&V period, the PG&E may require interim check-ins (i.e. 3-month progress reports) depending on the complexity of the project.	Thank you for the additional detail—this is helpful. We acknowledge that PG&E has established processes across the project lifecycle to support documentation updates. Our review, however, did not consistently observe this level of documentation updates in the project files or claims. We believe this recommendation remains applicable and look forward to continued improvements as these processes are implemented.

Commenter	Comment	DNV response
PG&E	[Page 67: "Recommendations 7-8: Implementers should incorporate routine NRE monitoring such as periodic review of meter data, regular check-ins with customers, and timely updates to project documentation during the performance period. If they identify potential NREs, they should investigate and document the NREs in a timely manner and be prepared to sub-meter to capture added loads and/or generation."] We appreciate this recommendation. Project developers typically advise customers to notify them of NREs as they occur. However, customers may not always be familiar with what constitutes an NRE or how it can affect their energy model. To help address this, PG&E contracts with a third-party M&V provider who has established a continuous energy dashboard to track predicted energy usage against actual energy usage for some OBF projects. This service was designed to support Trade Pros (i.e., installation contractors) who may not have dedicated M&V engineering support. Additionally, some third-party programs require a 3-month savings progress report to help ensure projects are progressing in the right direction.	Thank you for the additional context. We understand that PG&E has implemented several practices to support ongoing monitoring and documentation of NREs, which aligns with the intent of this recommendation. Based on our review and customer interviews, we observed cases where NREs were not consistently identified or documented. There may be opportunities to further expand coverage and improve performance of current NRE monitoring practices.

Commenter	Comment	DNV response
PG&E	[Pages D-3, D-4, D-7: *Model interval change: Used hourly model rather than daily model*] PG&E team is curious about the basis for preferring an hourly model, given that NMEC Rulebook v2.0 and PG&E M&V Requirements do not appear to prescribe a specific temporal resolution for baseline models. Instead, both frameworks emphasize model acceptability based on demonstrated goodness-of-fit and predictability, rather than whether the model is hourly or daily. The selected daily model meets the applicable goodness-of-fit and predictability criteria and should adequately characterize the building's energy use, aligning with NMEC guidance. Additionally, the use of a daily model may offer several practical advantages, particularly in this context: • Greater resilience to interval data quality issues (e.g., missing or noisy hourly data), which can reduce the need for data imputation or filtering. • Lower risk of overfitting, given fewer model parameters and a stronger emphasis on weather-driven behavior. • Improved transparency and reproducibility, which can support clearer technical review and alignment with documentation expectations. • Comparable performance for weather-dominated loads, where intra-day variation may not significantly improve explanatory power. Absent a clear indication of limitations in model fit, predictive performance, or the ability to capture key drivers of energy use, PG&E team is interested in better understanding the rationale for requiring a transition to an hourly model in these cases.	Since hourly electric impact profiles are an important part of TSB, the primary goal metric for energy efficiency programs beginning in PY2024, it is critical to estimate electric savings with hourly models whenever possible. There is an ongoing discussion regarding how to address risk associated with hourly modeling and the potentially more challenging task of meeting eligibility thresholds while also leveraging hourly models to inform TSB. This will be a topic of conversation at the PCG and in follow-up guidance from CPUC.

Commenter	Comment	DNV response
SDG&E	[Overarching] It is encouraging to hear that the evaluation team has generally identified an improving trend in the management of Site-Level NMEC programs. SDG&E would also like to acknowledge improvements in the conduct and usefulness of this evaluation report. Recommendations are clearly explained and more closely tied to findings in the report. Furthermore, these recommendations point to key areas and trends that warrant further evaluation and improvement as opposed to a focus on specific details that do not have as broad of applicability. Recently, the Ex Post team has been proactive in soliciting feedback from stakeholders on how to improve the usefulness of the EM&V process and considered incorporation of this feedback is apparent in this report. SDG&E recommends that this feedback loop continue.	Thank you for the feedback. We agree on the importance of continuing this stakeholder feedback loop and will carry it forward in future evaluations.
SDG&E	[Overarching] The report emphasizes limiting engineering adjustments and applying stricter requirements, which could constrain flexibility in addressing real-world project conditions. Is there any additional flexibility for complex or atypical projects before moving them out of the NMEC program? Further, reduced flexibility may limit the number of projects SDG&E can feasibly pursue, as fewer projects will fit within tighter constraints.	This is a good topic for further discussion beyond this report. Our recommendations focus on improved screening so that projects are able to use the NMEC approach as intended whenever possible. We encourage you to reach out to the CPUC Staff if you have questions about the suitability of specific projects.
SDG&E	[Page 9: Recommendation 8] The report states "NREs without meter-based solutions may not affect more than 25% of performance period data." SDG&E is seeking clarification on whether the 25% is based on total savings or total consumption.	Thank you for the question. The 25% threshold refers to the portion of the performance period data that is affected by NREs without meter-based solutions. Put another way, NREs cannot affect more than three months of the annual period. The threshold is not based on total savings or total consumption.

Commenter	Comment	DNV response
SDG&E	[Page 13: Section 2.2] SDG&E appreciates that the scope of the study included preliminary review of projects that have not made final savings claims in order to allow adjustments earlier in the evaluation cycle. Real-time feedback provides significantly more options to incorporate findings and make program improvements, and SDG&E views this approach as much more effective in improving program delivery. SDG&E considers it highly worthwhile to further explore aligning Ex Ante and Ex Post review processes to minimize duplication and potentially integrate activities, and believes this approach deserves consideration.	We appreciate the suggestion to further align ex ante and ex post review processes, which we are actively continuing to develop, with the goal of minimizing duplication and improving overall efficiency and usefulness of the EM&V process.
SDG&E	[Page 37: Section 4.2.8] While custom hourly load shapes or impact profiles are a planned improvement that was not available in CEDARS at the time of projects under evaluation, substantial work is necessary to fully understand how to roll this out under circumstances where it may not make sense or be too burdensome to do a new load shape for each site (several small similar projects; also relevant to pop NMEC). In this case, it might be better to create a new load shape for the CEDARS library.	Thank you for the comment. For SLNMEC projects, hourly savings shapes are often already developed as part of the savings calculation process using interval meter data. These project-specific normalized savings profiles effectively serve as the “custom” impact shapes for each site. As such, the challenge is less about generating new shapes and more about how to incorporate and standardize these project-specific shapes within CEDARS for TSB reporting.

Commenter	Comment	DNV response
SDG&E	[Page 53: Section 4.6.4.1] The analysis is based on NMEC rulebook version 2.1, not 2.0 which was in effect during the project period.	Thank you for the comment. Projects evaluated in this study were implemented under NMEC Rulebook 2.0. The below-code and above-code savings calculations presented here were developed as a forward-looking evaluation effort to align with updated Rulebook 2.1 requirements and provide insight into how these projects would be treated under the current framework. The MAT reclassification results presented in this section remain valid.
SDG&E	[Page 65: Section 5.2] Based on recent decision language (D.23-06-055, p. 41) requiring NMEC approaches for commercial programs, the IOUs and their implementers have developed NMEC-based offerings for these customer segments. However, Section 5.2 suggests that site applicability for NMEC may be more constrained than initially anticipated, as the effects of “forcing” projects into the NMEC pathway are becoming evident. Given the emerging risk to SLNMEC savings, it may be appropriate to revisit the NMEC policy for commercial programs in light of these findings.	We encourage more careful consideration of NMEC eligibility before beginning a project using existing NMEC policy as a starting point. Based on the projects we have evaluated so far, we expect that existing guidance will resolve the majority of issues. For projects for which eligibility remain uncertain, we agree that early consultation with CPUC staff or discussion at the PCG can help clarify expectations.

Commenter	Comment	DNV response
SDG&E	[APPENDIX H. Net-To-Gross (NTG) evaluation methodology] SDG&E seeks clarification on whether the NTG survey instrument is the sole method used to evaluate Net-to-Gross ratios in the study, or whether the evaluation also incorporates the level of influence documented during the ex ante process. The survey provides only a single perspective or data point on NTG, reflecting the customer's view of how program participation contributed to project savings. In contrast, ex ante documentation offers additional, evidence of program influence, such as the implementer's role in identifying and promoting the project, whether program involvement accelerated project timing or expanded its scope, and the value of technical support provided. For Site-Level NMEC projects in particular, activities such as modeling, measurement and verification, and adherence to NMEC Rulebook protocols often exceed the customer's technical capacity and available resources. As a result, customers may not fully recognize or appropriately value these contributions. Relying solely on survey responses may therefore introduce undercoverage bias, as customers may be unaware of the full extent of implementer support. Given that influence is inherently subjective, it may be difficult to establish a definitive "true" value. SDG&E believes that final NTG determinations should be based on the full body of available evidence, including both survey results and ex ante documentation, especially if evaluated NTG values are intended to inform default assumptions for future projects. More broadly, NTG may be more appropriately framed as a binary determination: either the project was more likely than not to occur due to program intervention (NTG = 1), or it was not (NTG = 0). Under this framing, the null hypothesis should assume program influence, with statistically significant evidence required to reject that assumption.	Thank you for the comment. The NTG methodology does not use ex ante documentation in calculating NTG ratios. The NTG methodology is adapted from the CIAC methodology, which also does not use ex ante documentation in scoring NTG ratios. Interviewers do review ex ante documentation prior to interviewing customers to try to catch and probe any instance in which an interviewed customer says something that differs from ex ante documentation. As the continuous improvement process provides templates to better standardize ex ante documentation, with CPUC approval, it may be worth exploring how ex ante documentation can be leveraged for NTG ratio estimation. The evaluation team explored the possibility of harnessing the ex ante project influence documentation to inform post-installation net savings in the PY2023 SLNMEC Additional Research Report, but we found too many gaps in quality and organization of the documentation to be useful by the time of the evaluation.

Commenter	Comment	DNV response
SDG&E	[APPENDIX H. Net-To-Gross (NTG) evaluation methodology] SDG&E believes projects are generally either influenced or not, and influence can occur in different ways. For example, a project may be driven primarily by technical support with little to no financial incentive, yet still depend on that technical influence to move forward. In such cases, averaging across different drivers could unintentionally underrepresent the true level of influence. Given this, it may be worth considering whether using the highest contributing driver, rather than an average, would better reflect the impact of the program. Additionally, it is not entirely clear that averaging across NTG drivers fully aligns with current NTG policy and guidance, which emphasize technical and/or financial influence. If there is supporting guidance or precedent for the proposed averaging approach, it would be helpful to reference it for clarity.	Thank you for the comment. Current scoring algorithms are based on previously approved methods for CIAC that were then adapted for NMEC and run through a stakeholder process with utilities before receiving CPUC approval.
SoCalGas	[Page 4 – 5: Section 1.4.1 / Table 1-3 – PY2024 Savings Impacts] SoCalGas requests that the executive summary provides a more prominent explanation of the TSB realization rate compared to the gross realization rate difference. The executive summary presents the GRR of 93.8% as evidence of "high savings realization rates," yet the TSB Realization Rate (RR) is only 64.5%, a substantially lower figure, which represents the metric that is now the CPUC's primary program goal. Given that TSB is the new metric for PY2024 going forward, the executive summary should give a more prominent explanation for the TSB performance findings.	Thank you for your comment. The lower TSB RR relative to the first-year GRR is expected, as TSB reflects lifecycle impacts that incorporates not only the GRR but also the measure life (EUL) adjustments, program influence (NTG ratio), and avoided cost inputs updates. We have added a sentence in the executive summary to clarify this distinction and provide additional context for interpreting the TSB results.

Commenter	Comment	DNV response
SoCalGas	[Page 20 – 21: Section 3.3 – Net Savings Methods] SoCalGas requests DNV to include the rationale for the exclusion “whole project timing” component of PAI3 score in calculating NTGR to be explained in Section 3.3, not only in Appendix H. The report states that the NTGR methodology is consistent with the PY2023 evaluation. It references Appendix H for the full detail. However, the report does not explain why the PAI3 "whole project timing" question, Table 4-9, is explicitly not included in the PAI3 score. This exclusion is consequential as 45% of PY2024 respondents stated they would "never" have completed the project without the program. However, this strong indicator of attribution is apparently not factored into the score. The rationale for this exclusion should be stated clearly in Section 3.3, not only in Appendix H, as it is central to understanding what the NTGR measures.	Thank you for your comment. We have added text to report for clarity. The "whole project timing" question summarized in Table 4-9 is an alternative way of asking the likelihood that a project would have occurred at the same time without the program--as shown in Table 4-8. Respondents who indicated "never" in Table 4-9 do get maximum credit for influence on timing in Table 4-8, where they fall into the "very unlikely" category. Additionally, other respondents who didn't go as far as to say "never" when asked about whole project timing also get maximum credit for program influence in Table 4-8 if they answered that question with "very unlikely." DNV added the question reflected in Table 4-9 for exploratory purposes. At the CPUC's request, we could explore altering the scoring algorithm to leverage that question as well.

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