

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

ENERGY DIVISION

**AGENDA ID# 24527
RESOLUTION E-5474
October 29, 2026**

RESOLUTION

Resolution E-5474. Approval of the Database for Energy-Efficient Resources updates for Program Year 2028-2029 (DEER2028) and revised version for Program Years 2026 and 2027 (DEER2026).

PROPOSED OUTCOME:

- DEER2028 Update (effective January 1, 2028)
- Revise DEER2026 Update (effective January 1, 2026)

SAFETY CONSIDERATIONS:

- There are no safety considerations associated with this resolution.

ESTIMATED COST:

- There are no costs associated with this resolution.

By Energy Division's own motion in Compliance with D.15-10-028.

SUMMARY

This Resolution approves updates to the Database for Energy-Efficient Resources (DEER) for program year (PY) 2028 and a revised version of DEER for PY2026 and PY2027, in compliance with D.15-10-028, D.21-05-031,¹ and Resolutions E-4818, E-5152,

¹ <https://docs.cpuc.ca.gov/SearchRes.aspx?docformat=ALL&docid=385864616>

E-5221, and E-5350. This update also directs forward-looking research and addresses significant transitions for the DEER and measure package system maintenance and operation.

All updated DEER assumptions, methods, values and supporting documentation are available on the DEER Module on the California Energy Data and Reporting System (CEDARS).² Attachment A provides the technical description of the proposed changes.

BACKGROUND

The Database for Energy Efficient Resources (DEER) contains information on energy-efficient technologies and measures. DEER provides estimates of the typical energy-savings potential for these technologies in residential and nonresidential 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.

The DEER database has a 30-year history, starting in the 1990s under the California Energy Commission (CEC) where responsibility for developing energy efficiency measure parameters was delegated to a broad stakeholder coalition. With the 2006-08 energy-efficiency (EE) portfolio cycle, the CPUC staff assumed responsibility for the DEER.

Relevant Regulatory Background

The California Public Utilities Commission (Commission or CPUC) Decision D.15-10-028, Ordering Paragraph 17 states: “Commission staff shall propose changes to the Database of Energy Efficient Resources once annually via Resolution, with the associated comment/protest period provided by General Order 96-B. However, Commission staff may make changes at any time without a Resolution to fix errors or to change documentation.” D.15-10-028 retains the direction from D.12-05-015 that DEER values be updated for consistency with existing and updated state and federal codes and standards while incorporating these changes into the DEER update.³ D.21-05-031 retains previous direction regarding CPUC staff latitude in updating

² <https://cedars.cpuc.ca.gov/deer-resources/>

³ D.15-10-28, at 80, states “D.12-05-015 allowed additional mid-cycle changes if there are new state and federal codes and standards that affect DEER values. Specifically, the decision stated in Conclusion of Law 84: ‘We generally agree with parties’ request that ex ante values should be adopted and held constant throughout the portfolio cycle. However, mid-cycle updates of ex ante values are warranted if newly adopted codes or standards take effect during the cycle.’”

DEER.⁴ D.21-05-031 also adopts and Resolution E-5152 enacted a biennial update schedule for DEER, eliminates the DEER and non-DEER distinction for EE measures, and redefines the scope of the DEER resolution to:

a) lock down the version of ex ante (savings estimates before installation) EE values used for planning and claims; b) direct research to inform future DEER updates; and c) manage deemed ex ante processes.

Resolution E-5082 initiated the transition of existing DEER and measure package systems to a software platform jointly co-funded by the IOUs, called the Electronic Technical Resource Manual (eTRM),⁵ and conferred conditional designation “data source of record” to the eTRM.⁶ Resolution E-5082 also outlined a schedule and benchmarks for the phased transition from DEER to the eTRM as the new “data source of record” for the typical deemed energy savings values for energy efficiency measures.

In addition, Resolution E-4952⁷ (DEER2020), adopted on October 11, 2018, clarified and specified issues in Resolution E-4818,⁸ adopted on March 2, 2017. Among other things, these resolutions ordered many significant changes, including guidance on the peak demand period, building prototypes, and measure analysis software control (MASControl3) updates.

Timing and Applicability of DEER Updates

DEER updates flow into the EE portfolio development process by providing new deemed energy savings estimates and other EE measure parameter updates for program design. New energy savings estimates, and underlying assumptions, methods, and values, inform the direction of energy efficiency programs. These allow program administrators to shift program eligibility requirements and incentive support mechanisms to deliver the most reliable, cost-effective energy savings. DEER updates may also reflect new market conditions. The PAs are required to ensure new assumptions and values are incorporated into the next cycle of EE programs by considering a) when the next update is planned, b) the fundamental assumptions for

⁴ D.15-10-28, at 80, quotes from D.12-05-015: “Conclusion of Law 80 states: ‘Our Staff should have significant latitude in performing DEER and other policy oversight functions and, absent specific directives to the contrary, should not be required to consult with or otherwise utilize any other groups to perform this work.’”

⁵ <https://www.caetrm.com>

⁶ <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M346/K161/346161639.PDF>

⁷ <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M232/K459/232459122.PDF>

⁸ <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M179/K264/179264220.PDF>

the update, and c) whether shifts to their programs to capture cost-effective savings are needed. Updates to DEER methods apply to EE technical measure package development and custom project energy savings estimates as well as program delivery decisions.

The terminology “DEERxxxx” is used to designate the version of updated parameters and is independent of the conversion to using eTRM. The year shown reflects the program year that a given update takes effect.

Scoping Document and Updates for DEER2028 and Revised DEER2026

On May 27, 2026, the CPUC Energy Division released for public comment a Scoping Document outlining the proposed issues and updates to be addressed in this DEER resolution. The Scoping Document described the various issues that may be considered in this resolution and the rationale for why these issues need to be addressed.

Comments reviewed for this working draft were submitted by California Technical Forum (Cal TF) staff, Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), Southern California Gas Company (SoCalGas), San Diego Gas & Electric Company (SDG&E), Northern Rural Energy Network (NREN), Southern California Regional Energy Network (SoCalREN), and Willdan.

Across those comments, the topics raised most frequently involved: (1) Avoided Cost Calculator (ACC) and Cost Effectiveness Tool (CET) transition timing and notification; (2) weather files, peak days, load shapes, and EnergyPlus implementation; (3) the proposed archive or deferral treatment for measure packages; (4) water-heating calculator transitions and Evaluation, Measurement, and Verification (EM&V) timing; (5) timeline and review process concerns; and (6) appendix corrections and implementation details.

In consideration of the comments to the Scoping Document, the topic areas addressed in this DEER update are summarized in Table 1. The guidance for these updates is described in the Discussion section that follows. Complete documentation and supporting material on the updated assumptions and methods and updated DEER elements such as database tables, calculators, and web pages are available at the DEER Module on CEDARS.⁹

⁹ Supporting material is at <https://cedars.cpuc.ca.gov/deer-resources/tools/supporting-files/resource/2/history/>

Table 1. DEER2028 Update

Priority	Effort	DEER Version	Update Topic Area	Sector		Measure/Tech Group					Forecasted Value					
				Residential	Non-Res	Lighting	HVAC*	DHW*	Envelope	Plug/Process	UES*	NTG*	EUL*	Measure Cost	Other	
Management of DEER Processes																
!!!!	\$\$\$	2028	A. Updates to eTRM	X	X	X	X	X	X	X	X	X	X	X	X	
!!!!	\$\$\$	2028	B. DEER System and Measure Package Updates	X	X	X	X	X	X	X	X	X	X	X	X	
!!!!	\$\$\$	2030	C. DEER 2030 Update and Measure Package Submission/Review Timeline	X	X	X	X	X	X	X						
!!!!	\$\$\$	2026	D. Mid-Cycle Adjustments to the Locked Ex-Ante Values	X	X		X	X			X			X	X	
!!!	\$\$	2028	E. Updates to DEER Support Table Values	X	X	X	X	X	X	X		X	X		X	
Research Needs and Ongoing Updates																
!!!	\$\$	2028	F. EnergyPlus Prototypes	X	X		X	X	X	X	X				X	
!!	\$\$	2028	G. Variable Capacity Heat Pump Performance Curves		X		X				X					
Measure Adoption																
!!!!	\$\$\$	2028	H. Guidance from EM&V Review	X	X			X			X	X		X	X	

*HVAC=Heating, Ventilation, Air Conditioning; DWH=Domestic Water Heating; NTG=Net-to-Gross; UES=Unit Energy Savings; EUL=Effective Useful Life

DISCUSSION

Pursuant to D.15-10-028, the Energy Division published a DEER Update Scoping Document on May 27, 2026. The list of topic areas carried forward into this draft resolution is based on the scoping document and on stakeholder comments received through June 10, 2026. The discussion below summarizes the principal topics.

Management of DEER Processes

A. Updates to eTRM

Effective Program Year: 2028. California's statewide electronic Technical Reference Manual (eTRM) will continue as the Official Source of California Energy Efficiency Measure Data¹⁰ and the sole source of energy efficiency measure package development, submittal, review, and publishing.

¹⁰ <https://www.caetrm.com/shared-data/>

A.1 eTRM Funding

Effective Program Year: 2028. The Investor-Owned Utilities (IOUs) should continue to fund CalTF and eTRM from program or evaluation budgets. Consistent with Resolution E-5350, IOUs should continue to identify those funding sources in their Mid-Cycle Advice Letter filings.

A.2 eTRM Source Code Documentation

Effective Program Year: 2028. The DEER2026 resolution required eTRM source code to be documented and version-controlled using a Git¹¹ platform, subject to an appropriate transparency and security assessment. CalTF reports that Git-based source control was completed with eTRM Release 3.0 through a private repository managed by CalTF staff, with CPUC staff access available as needed.

A.3 Measure Lifecycle Management (MLM) in DEER

Effective Program Year: 2028. Measure Lifecycle Management (MLM) is now available in production through the eTRM Stats area¹² and can be used to support DEER2028 planning and scheduling. The MLM tracks measure identification information and key update drivers, including savings methodology, weather file, and future updates for code, Industry Standard Practice (ISP), EUL, NTG, and cost inputs. Stakeholders are encouraged to leverage MLM to support early identification of research needs, prioritization of measure package updates, and better sequencing of review timelines to avoid compressed review and comment periods.

B. DEER System and Measure Package Updates

This section describes any changes to policies that affect the eTRM and measure packages.

B.1 Avoided Cost Calculator (ACC)

Effective Program Year: 2028. The ACC values are inputs to RACC-FSC (Refrigerant Avoided Cost Calculator and Fuel Substitution Calculator) and are used to estimate cost effectiveness for Viable Electric Alternative (VEA) determinations and several other proceedings. The 2026 ACC is expected to be finalized in Q4 2026, which is after the submittal date for most PY2028 measure packages.

¹¹ Git is a distributed version control system that tracks changes in any set of computer files, usually used for computer programming.

¹² <https://www.caetrm.com/stats/>

PY2028 measure packages submitted before the 2026 ACC is approved by the CPUC and incorporated into Cost Effectiveness Tool (CET) can use the ACC values existing at the time of measure package submission. The CET will be updated up to 60 days after the CPUC approves the updated 2026 ACC.

B.2 Refrigerant Avoided Cost Calculator and Fuel Substitution Calculator (RACC-FSC)

Effective Program Year: 2028. For PY2028 measure packages, including both new measure packages and updates to existing measure packages, measure package developers should use RACC-FSC_v3.2. The completed RACC-FSC shall be provided as an addendum in the eTRM in accordance with the RACC-FSC Technical Guidance Document.

RACC-FSC_v3.2 includes updated HVAC refrigerant charge assumptions based on the May 15, 2026, CalNEXT residential¹³ and commercial¹⁴ refrigerant charge studies. These updates revise default refrigerant types and charge values to better reflect current market conditions, including increased use of low-global warming potential GWP refrigerants such as R-32 and R-454B. The updates are implemented primarily through revised lookup tables and default device assumptions within the tool. Measure package developers may continue to override default values and model alternative refrigerants, including legacy R-410A, where appropriate for specific measure cases or existing-equipment baselines.

The 2026 ACC update is expected after most PY2028 measure packages will already have been submitted and approved. CPUC staff will allow but not require previously submitted measure packages to rerun or resubmit the RACC-FSC to reflect updated ACC values. Any mid-cycle measure package submission that requires use of the RACC-FSC shall use the version of the workbook that is current at the time of submission. This preserves a stable submittal package while avoiding unnecessary resubmittal burden.

B.3 Lighting Baseline Updates

Effective Program Year: 2028. Most lighting applications continue to be handled through the custom pathway, with only limited statewide deemed lighting coverage at this time. Current deemed exceptions include the indoor horticultural lighting measure package and very specific general-lighting offerings in a statewide LED lighting

¹³ https://calnext.com/wp-content/uploads/2026/06/ET25SWE0036_Improving-HVAC-Refrigerant-Charge-Value-Estimates-for-Residential-Systems_Final-Report.pdf

¹⁴ https://calnext.com/wp-content/uploads/2026/06/ET25SWE0037_Improving-HVAC-Refrigerant-Charge-Value-Estimates-for-Commercial-Systems_Final-Report.pdf

package, including UL Type B mogul screw-base HID (High Intensity Discharge) replacement lamps for outdoor pole/arm-mounted area and roadway luminaires and outdoor pole/arm-mounted decorative luminaires.

Consistent with Resolution E-5350, lighting measure package baselines shall conform to the most up-to-date approved version of the Modified Lighting Calculator (MLC),¹⁵ and any new or mid-cycle lighting submissions shall use the current approved standard practice values.

B.4 Weather Files

Effective Program Year: 2028. For DEER2028, program administrators should use the 2025 California climate-zone weather basis (CZ2025) for modeled and other weather-dependent measures. The CZ2025 weather data are the CEC's current climate-zone weather files for the 2025 Energy Code and are publicly available through California Measurement Advisory Council (CALMAC).¹⁶ CALMAC describes CZ2025 as a set of 133 typical-year weather files developed from the 2000–2020 historical record. The CEC states that buildings with permit applications on or after January 1, 2026, must comply with the 2025 Energy Code, and its Reference Appendices include the weather data and related supporting information used for compliance.

To support consistent DEER modeling, the CPUC Ex Ante Review team posted the CZ2025 DEER Weather Files on CEDARS on March 9, 2026.¹⁷ The CEDARS package provides one representative station for each of California's 16 climate zones and includes hourly weather files (.epw), design-day files (.ddy), and auxiliary summary files (.stat, .BINM, and .FIN4). Note that CZ04 and CZ06 use the stations specified in the 2025 Energy Code Accounting Methodology—Paso Robles Municipal Airport for climate zone 04 and Los Angeles International Airport / LAX for climate zone 06—while the remaining climate zones use the representative stations identified in the 2025 Title 24 Reference Appendices. Staff sourced the weather file package posted on CEDARS from CALMAC's CZ2025 dataset and the California_CTZ_2025 design-day files which align with the weather set used in the CEC compliance software (CBECC) for the 2025 Energy Code.

¹⁵ Please reference the "Standard Practice Efficacy" values in the approved Modified Lighting Calculator (MLC), Version 13.2.1 (LOCKED) Rev. 01.23.2026 posted on February 9, 2026:

<https://cedars.cpuc.ca.gov/deer-resources/tools/supporting-files/resource/8/history/>

¹⁶ <https://www.calmac.org/weather.asp>

¹⁷ <https://cedars.cpuc.ca.gov/deer-resources/tools/energy-plus/resource/28/history/>

For DEER2028, measure package developers using EnergyPlus prototypes, other DEER-approved building simulation methods, or any other engineering model, calculator, or spreadsheet-based method developed for weather-dependent measures should use the CZ2025 weather basis for new modeled measure packages and for updates to existing modeled measure packages, unless CPUC staff directs otherwise. CPUC staff posted the same weather files on the GitHub for use in PY2028-29 measure updates.¹⁸ Measure package documentation shall identify the specific weather files or derived weather inputs used in the modeling workflow so that modeled savings, peak demand, and other weather-sensitive results can be traced to a consistent weather basis.

This weather-data update affects downstream DEER values that depend on climate-zone weather, including peak-period day definitions, exterior-lighting coincidence demand factors, and the incoming cold-water temperature (“mains” temperature) used in water-heater modeling.

B.5 DEER Peak 3-Day Period Update

Effective Program Year: 2028. For DEER2028, program administrators should use the updated DEER peak 3-day periods based on the CZ2025 DEER Peak 3-Day Period Lookup Table (peakperspec_CZ2025.csv) posted on CEDARS¹⁹ and DEER GitHub page.²⁰ The lookup table identifies the peak 3-weekday period for each of California’s 16 climate zones for use with CZ2025 weather and DEER peak-day analysis. The lookup table is based on the CZ2025 EPW weather files, uses a 2009 calendar with all ten observed holidays excluded, evaluates consecutive 3-weekday windows in June through September beginning at midnight, and selects the period with the highest equal-weight index consisting of: (1) the peak dry-bulb temperature over the 72-hour period, (2) the 72-hour average dry-bulb temperature, and (3) the average dry-bulb temperature during the noon-to-6 p.m. period over the three days. In the lookup table, DEER-defined six-hour period is represented by hours 12 through 17.²¹

The updated CZ2025 peak days supersede the older CZ2022 peak-day start dates reflected in DEER2026. Accordingly, measure package developers using EnergyPlus prototypes, other DEER-approved building simulation methods, or other engineering methods should use the updated CZ2025 peak 3-day periods when calculating annual

¹⁸ <https://github.com/sound-data/DEER-Prototypes-EnergyPlus/tree/main/weather>

¹⁹ <https://cedars.cpuc.ca.gov/deer-resources/tools/energy-plus/resource/29/history/>

²⁰ <https://github.com/sound-data/DEER-Prototypes-EnergyPlus/blob/main/scripts/energy%20savings/peakperspec.csv>

²¹ Hour 18 is not included because the calculation uses six hourly values.

peak demand, unless CPUC staff instructs otherwise. Any derived peak-demand inputs or methods that depend on the DEER peak-period definition should also be refreshed to align with the CZ2025 weather basis.

B.6 DEER Load Shapes

Effective Program Year: 2028. For PY2028 measure packages, PA's must use a load shape from the load shape library for deemed measures on CEDARS. This will enable the uploading and processing of hourly load shapes for the first baseline, second baseline, and measure cases associated with a given measure package. For DEER2028, the CEDARS workflow is expected to rely on hourly unitized, consumption-based 8760 load shapes that can be mapped to measure package permutations using identifiers such as building type, building location, building vintage, HVAC type, TechGroup, TechType, and TechID so that quarterly avoided costs and related cost-effectiveness outputs can be produced for the measure package.

For weather-dependent measures that are currently modeled, EnergyPlus-generated load shapes are expected to replace legacy DEER impact profiles for PY2028. CPUC staff has updated the DEER-Prototypes-EnergyPlus post-processing workflow to automatically produce unitized, consumption-based 8760 CSV files ready for upload to CEDARS. This new post-processing workflow also generates HTML outputs to facilitate review of TechID-based load shapes by building type. This approach is intended to support a more detailed review of hourly profiles while minimizing additional processing needed to generate quarterly avoided costs and related cost-effectiveness outputs.

Non-weather-dependent measures and non-modeled measures for PY2028 may continue to use existing impact-profile-based approaches, including an existing Electric Impact Profile ID where appropriate, or another appropriate non-EnergyPlus load-shape source such as engineering-model output, spreadsheet-based hourly calculations, or measured data. The applicability and appropriateness of the proposed load-shape method for a given measure package will be evaluated as part of Ex Ante Review together with the submitted measure package. Where hourly load shapes are uploaded to CEDARS, measure package documentation should identify the source year, normalization basis, mapping to permutations, and rationale for the selected method.

CPUC staff will allow the use of the load shape library for new measures submitted before PY2028 to accommodate mid-cycle measure package submissions including load-shifting measure packages.

CPUC staff will evaluate and authorize alternative proposed load shape methods as appropriate.

B.7 Viable Electric Alternative (VEA)

The Viable Electric Alternative D.23-04-035, beginning January 1, 2024, limits eligibility of gas measures for ratepayer-funded energy efficiency incentives (specifically, non-exempt, non-cost-effective gas measures) in the residential New Construction and commercial New Construction portions of the resource acquisition and market support segments where there is no existing gas line, or where an existing gas line is present and gas usage will materially increase.

Effective Program Year: TBD. As of the time this resolution is being published, only the original VEA Phase 1 rules under Decision 23-04-035 are in effect. A Phase 2 VEA Decision is under development that will build on the current requirements. CPUC staff may provide updates on the VEA Phase 2 policy and the applicability to PY2028-29 measure packages in the future.

B.8 New DEER Commercial and Multifamily Water Heater Calculator

Effective Program Year: 2028. CPUC staff and the Ex Ante Review team have developed a new Excel-based, physics-based DEER Commercial and Multifamily Water Heater Calculator intended for use across commercial and multifamily water-heating measure packages, including heat pump and gas water heating applications.²² The calculator is intended to provide a more transparent and flexible framework for commercial water heating measure packages by modeling hourly system performance based on hot-water loads, storage behavior, and equipment performance characteristics. SCE convened a Commercial Heat Pump Water Heater Technical Advisory Group (CHPWH-TAG)²³ which reviewed the draft calculator and provided feedback on the tool.

Effective Program Year: 2026. The new Water Heater calculator shall be applied to the SWWH028 measure package as part of the PY2026 mid-cycle update. The new calculator is needed to address the federal commercial water heating standards

²² The version currently posted on CEDARS is titled the DEER Commercial Heat Pump Water Heater Calculator and was developed initially for SWWH028, Large Heat Pump Water Heater, Commercial and Multifamily, Fuel Substitution. CPUC staff and the Ex Ante Review team are updating the calculator to ensure that it can also accommodate commercial and multifamily gas water-heater measure packages. Upon completion of this update, CPUC staff will rename the tool the DEER Commercial and Multifamily Water Heater Calculator. The current version is posted at: <https://cedars.cpuc.ca.gov/deer-resources/tools/water-heaters/resource/12/history>. Future versions will be posted on the same page.

²³ The group includes broad participation from IOUs, CPUC staff and consultants.

scheduled to become effective starting October 6, 2026.²⁴ Inputs and assumptions in the calculator may be refined over time based on findings from the Nonresidential Water Heating Measure Impact Evaluation, including results from billing analysis, customer surveys, and onsite metering.

Effective Program Year: 2028. The PAs should switch all commercial water heating measures, including gas, to the new calculator (New DEER Commercial and Multifamily Water Heater Calculator) in place of the DWHC, unless otherwise directed by CPUC staff. SWWH028 will start using the new calculator in the updated DEER2026 measure package.

B.9 Updated DEER Water Heater Calculator (DWHC)

Effective Program Year: 2026. CPUC staff released Version 6.0 of the DEER Water Heater Calculator (DWHC) on CEDARS to support commercial water-heating measure package updates still being made for DEER2026, with the exception of SWWH028.²⁵ DWHC v6.0 updates the incoming cold-water mains temperature values, ambient air temperature values. DWHC v6.0 also adds a macro for creating hourly load shapes.

B.10 Archivable Measure Packages

In determining whether a measure package may be archived, deferred, suspended, or otherwise not kept current—or must remain current—CPUC staff will consider not only current program use, but also whether the measure package may still be needed for policy or analytical purposes, including assessment of viable electric alternatives, compliance with a Commission decision requiring that a specific measure package remain available for use, future market need, and the potential impact on ratepayers and portfolio claims.

²⁴ Use of the DEER Commercial Heat Pump Water Heater Calculator is not contingent on whether the federal commercial water-heating standard ultimately takes effect on the current federal schedule. The calculator is a methodological update for SWWH028 and may be used regardless of whether the federal standard is delayed, modified, not enforced, or otherwise remains legally uncertain; the legal status of the federal rule affects the applicable baseline assumptions, not whether CPUC staff may use the calculator.

²⁵ <https://cedars.cpuc.ca.gov/deer-resources/tools/water-heaters/resource/11/history/>

C. DEER 2030 Update and Measure Package Submission/Review Timeline

Effective Program Year: 2028. This resolution sets forth the **tentative** schedule for DEER Update and for submission of measure packages for CPUC staff approval for PY2030-31. The timeline and schedule are provided in Table 2.

Table 2. Tentative PY2030-2031 DEER Update Cycle Timeline

Description	Responsible Party	Due Date	Approval Date	Effective Date
Draft DEER2030 Update Resolution	CPUC	2028-07-31	-	-
DEER2030 Update Resolution	CPUC	-	2028-10-30	2030-01-01*
Measure Package Update Schedule	PAs/ Stakeholders	2027-08-01**	-	-
Measure Package Submittals	PAs		2028-07-31 ⁺	2030-01-01*

* There may be exceptions when updates become effective mid-cycle.

** Draft for workflow scheduling; updates to the schedule may be made if needed. Future updates such as EnergyPlus prototypes, EM&V evaluations, and CPUC guidance will be incorporated into the review of the Measure Package Update Schedule to properly stagger measure package submissions and reviews.

+ Per Draft Resolution release, adoption in Final Resolution.

CPUC staff will work with PAs to set a prioritized schedule of updates for all PY2030-31 measure packages. PAs may submit additional updates to measure packages beyond what is directed and may include additional measure packages for update during that time. Examples of such updates may include, but are not limited to costs, new study data, and EM&V results.

Staff will work with the PAs to develop a schedule of submissions so measure packages requiring more time to develop can be submitted well before the standard three-month timeframe for review and approval to avoid delays. It is the responsibility of the PAs to follow the agreed schedule for submissions or risk measure packages not being included in the DEER resolution and therefore not receiving approval.

PAs and their measure developers are responsible for submitting clean, complete, and review-ready measure packages, including all required documentation, supporting analyses, addenda, references, and identification of dependencies needed for Ex Ante Review. Where a PA seeks to pause, shelve, retire, or otherwise remove a measure

package from the proposed review queue, the PA should submit a written proposal identifying the affected measure package(s), the basis for the request, whether the currently approved version would remain active, and the PA's proposed path forward, including any planned future update, reactivation, or retirement. CPUC staff will review that PA proposal and may approve it or suggest revisions.

D. Mid-Cycle Adjustments to the Locked Ex-Ante Values

Decision D.21-05-031 locks the ex-ante values used for Potential and Goals study, forecasting, portfolio planning, and claims for the two-year DEER cycle. Mid-cycle adjustments do not reopen the adopted DEER vintage generally, but may be made on a limited basis for new measure package submittals, new measure package offerings, reasonable corrections to existing locked values, updates required by codes and standards, policy changes that become effective during the cycle, or any other reason CPUC staff deems necessary. Reasonable corrections, including typographical, clerical, and other obvious inadvertent errors or omissions, shall be reviewed on a case-by-case basis with consideration of their impact on the portfolio. Mid-cycle corrections to existing locked values will be communicated to the lead IOU for stakeholder awareness. IOUs and sponsoring PAs are responsible for communicating these updates to statewide stakeholders including Community Choice Aggregators (CCAs) and Regional Energy Networks (RENs). New measures and new offerings should become effective upon approval. Changes to existing measures shall generally become effective 90 days after approval, unless CPUC staff determines that a different effective date is warranted to account for application, true-up, claims, or other mid-cycle implementation needs.

D.1 Codes and Standards

Anticipated changes to codes and standards that occur during the DEER2028 cycle, or that become effective during development of PY2028-29 measure packages, should be planned for by PAs. These may include federal and state codes and standards updates, including applicable ENERGY STAR specification changes where those changes affect active measure packages, baseline assumptions, or eligibility requirements. PAs shall work with CPUC staff and the Ex Ante Review team to document revision timelines for affected measure packages so that required baseline changes, cost-effectiveness updates, and any related addenda can be incorporated in an orderly manner. These updates should be treated as planned revisions rather than ad hoc exceptions. In some cases, however, a standard or other requirement may be revised, vacated, repealed, delayed, suspended, or not enforced without substantial notice. CPUC staff will distinguish between a formal revision to a standard and non-enforcement or enforcement discretion for a codified requirement and will determine the appropriate

DEER treatment on a case-by-case basis, including whether a baseline update, delayed implementation, alternate measure package version, or other transitional treatment is warranted.

One code update affecting water heating is the U.S. Department of Energy final rule for commercial water heating equipment under 10 CFR part 431.²⁶ DOE published the rule on October 6, 2023; it became effective on December 5, 2023; and compliance with the amended standards is required on and after October 6, 2026. The outcome of the DOE rule will raise the minimum efficiency standard for gas commercial water heaters, raising the cost associated with installing a commercial gas water heater as well as raising the baseline from which energy savings are determined. It will also raise the baseline for fuel substitution measures that have a gas water heater baseline. Therefore, all the measure packages listed in Table 3 below will result in decreased gas savings. The rule applies to commercial water heating equipment, including gas-fired storage water heaters, residential-duty commercial gas-fired storage water heaters, and gas-fired instantaneous water heaters and hot water supply boilers, and therefore requires updated baseline treatment for affected DEER water-heating measures.

Table 3 summarizes the water-heating measure packages, which include, at a minimum, SWWH006 Tankless Water Heater, Commercial; SWWH007 Storage Water Heater, Commercial; SWWH025 Heat Pump Water Heater, Residential, Fuel Substitution; SWWH027 Heat Pump Water Heater, Commercial, Fuel Substitution; and SWWH028 Large Heat Pump Water Heater, Commercial and Multifamily, Fuel Substitution. Because these measure packages include accelerated replacement and other measure application types, two baseline cases may be needed: an existing-equipment baseline applicable to the remaining useful life (RUL) period for accelerated replacement applications, and a standard practice baseline applicable to new construction, normal replacement, and the post-RUL portion of accelerated replacement applications.

The October 6, 2026, federal standard update affects the standard practice baseline. This means that for a Normal Replacement, the code minimum or the industry standard practice (whichever is higher) is the baseline, but the Accelerated Replacement baseline reflects what is being replaced in existing installations.

²⁶ U.S. Department of Energy, “Energy Conservation Program: Energy Conservation Standards for Commercial Water Heating Equipment,” 88 Fed. Reg. 69686 (Oct. 6, 2023), effective Dec. 5, 2023; compliance required on and after Oct. 6, 2026.
<https://www.federalregister.gov/documents/2023/10/06/2023-20392/energy-conservation-program-energy-conservation-standards-for-commercial-water-heating-equipment>

The federal commercial gas water-heater standards are codified with an October 6, 2026 compliance date. However, at the time of this draft resolution, the rule remains under active litigation. On June 8, 2026, the United States Supreme Court granted certiorari, vacated the November 2025 judgment of the United States Court of Appeals for the District of Columbia Circuit upholding the rule, and remanded the case for further proceedings.²⁷ Additionally, on May 5, 2026, the United States Department of Energy announced that it will exercise its enforcement discretion and not seek civil penalties through October 6, 2027 for violations of the affected gas-fired commercial water-heater thermal-efficiency standards.²⁸ Accordingly, CPUC staff will treat the rule as legally in force as it is codified but subject to change pending further judicial or Department of Energy action.

CPUC staff reserves the authority to require a minimum efficiency level for implementing incentives or rebates. Lack of enforcement by itself does not preclude setting the minimum efficiency level to the codified minimum efficiency standard.

Table 3. Measure Packages Impacted by Federal Energy Conservation Standards for Commercial Water Heating Equipment

Measure Package	Measure Package Title	Responsible Party
SWWH006-11	Tankless Water Heater, Gas, Commercial	SoCalGas
SWWH007-09	Storage Water Heater, Gas, Commercial	SoCalGas
SWWH025-11	Heat Pump Water Heater, Residential, Fuel Substitution	SCE
SWWH027-08	Heat Pump Water Heater, Commercial, Fuel Substitution (in unit WH)	SCE
SWWH028-09	Large Heat Pump Water Heater, Commercial and Multifamily, Fuel Substitution (central WH)	SCE

Consistent with Resolution E-5350, anticipated mid-cycle codes and standards changes shall be planned for by PAs, and PAs shall work with CPUC staff and the Ex Ante

²⁷ *American Gas Association v. Dept. of Energy* (U.S., June 8, 2026, No. 25-879) 2026 U.S. LEXIS 2453.

²⁸ <https://www.energy.gov/gc/articles/commercial-water-heater-enforcement-policy/>. The Department of Energy’s announcement states that this exercise of enforcement discretion “does not create or remove any rights or duties” and is “not a final agency action, has no legally binding effect on persons or entities outside the federal government, and may be rescinded or modified in the Department’s complete discretion.”

Review team to document revision timelines for affected measure packages. Table 4 includes a list of upcoming federal standards.

Table 4. Upcoming Federal Standards

Federal standard	Compliance (Manufactured on or after) Date
Room air conditioners	May 26, 2026
Residential dishwashers	April 23, 2027
Electric motors	June 1, 2027
Conventional cooking products	January 31, 2028
Clothes dryers	March 1, 2028
Clothes washers	March 1, 2028
Circulator pumps	May 22, 2028
Consumer furnaces	December 18, 2028
Consumer storage-type water heaters	May 6, 2029
Consumer refrigerators, refrigerator-freezers, and freezers	January 31, 2029
Miscellaneous refrigeration products	January 31, 2029
Air-cooled commercial package air conditioners and heat pumps of 65,000 Btu/h and greater	January 1, 2029
Distribution transformers	April 23, 2029

This list is not exhaustive. Each PA remains responsible for conducting further research and ongoing monitoring for additional applicable codes and standards changes that may affect active or proposed measure packages and for proposing any needed updates on the applicable DEER2028 or mid-cycle schedule.

E. Updates to DEER Support Table Values

The following changes to the DEER support table values are completed or planned.

E.1 *Updates to NTG Table and values*

Effective Program Year: 2026. The statewide Commercial, Industrial, and Agricultural Custom (CIAC) net-to-gross ratio (NTGR) for PY2026 shall be 0.60 for both electric and gas custom measures. The following Net-to-Gross ID values were updated so that NTG_Elec and NTG_Gas both equal 0.60:

- NonRes-sAll-mCust
- NonRes-sAll-mCust-Elec

- NonRes-sAll-mCust-Gas

For those same records, MeasImpactType was updated from Cust-Gen | Deem to Cust-Gen. This update is supported by January 27, 2026, CPUC Energy Division memorandum, Justification for updating the Statewide Commercial, Industrial, Agricultural Custom (CIAC) Net-to-Gross Ratio, which established a NTG ratio of 0.60 for both electric and gas CIAC custom measures for PY2026.²⁹ CPUC staff may update the statewide CIAC NTG ratios as updated evaluation data becomes available.

Effective Program Year: 2026. The SEM (Strategic Energy Management) Default Net-to-Gross ID was updated for DEER2026 to add the Deemed Measure Impact Type.

Effective Program Year: 2028.

- Because systems using CO₂ refrigerant typically involve substantially higher equipment costs and, in some cases, specialized installation training, we find that these measures are likely to exhibit higher net-to-gross values than comparable systems using other refrigerants. Accordingly, this resolution sets the NTG ratio for equipment using CO₂ as the refrigerant at 1.0 for all delivery types under deemed measure packages. **Measures using CO₂ refrigerants in custom projects may use a NTG ratio of 1.0, effective January 1, 2027.**
- The building weatherization measure packages listed in Table 5 shall have a NTG ratio of 1.0 for all delivery types. Prior studies suggesting an NTG ratio of 0.28 for envelope improvements are outdated and lack sufficient granularity for current program design, particularly because they did not address many of the customer segments now served by Program Administrators. Setting the NTG ratio for these weatherization measures at 1.0 will also facilitate more practical integration of weatherization and HVAC measures within Program Administrator programs. **Weatherization measures included in custom projects may use a NTG ratio of 1.0, effective January 1, 2027.**

²⁹ [CPUC Energy Evaluation Public Comment](#)

- The multifamily sector has specific challenges, as acknowledged in Order Instituting Rulemaking R.25-04-010. The Commission has recognized the “complex and challenging to serve” nature of the multifamily sector, stating “there is a need to address the needs of the multifamily sector more directly and potentially craft new approaches.” This resolution offers one area to address this issue by allowing the NTG ratio of 1.0 be applied for **custom projects** installed in common areas within the multifamily sector that are metered on a commercial rate schedule, excluding deemed lighting measures, **effective January 1, 2027**.

Table 5. Building Weatherization Measure Packages with NTG of 1.0

Measure Package	Measure Package Title
SWBE007	Wall Insulation, Residential
SWBE006	Ceiling Insulation, Residential
SWSV001	Duct Seal, Residential
SWBE010	Deeply Buried Ducts, Residential
SWBE011	High Efficiency Window, Residential
SWBE014	Door Sweeps and Door Sealing, Residential
SWBE013	Efficient Doors, Residential
SWBE012	High Efficiency Window, Commercial

Updates to HVAC types

Effective Program Year: 2028. Two new residential equipment records were added:

- rPTAC, described as packaged terminal air conditioner, and
- rPTHP, described as packaged terminal heat pump

E.2 Updates to EULs

Effective Program Year: 2026. Program administrators may use four new EUL IDs:

- Agr-GasCondUnitHtr for the Gas Condensing Unit Heater – Greenhouse measure category to support agricultural greenhouse space-heating applications, with an EUL of 12 years,
- Agr-LowIntIRHtr for the Low-Intensity Gas Infrared Heater measure category to support agricultural space-heating applications, with an EUL of 12 years,

- BS-StorefrontDoor for sliding glass storefront doors in commercial applications, with an EUL of 10 years, and
- BS-DoorSealSweep for commercial door seals and sweeps, with an EUL of 10 years.

Program administrators may use the updated glazing-related EUL IDs:

- GlazDaylt-HPWinDaylt, High Performance Windows for Daylighting, and
- GlazDaylt-LoSHGC, Low Solar Heat Gain Coefficient Windows.

For both records, this resolution sets the EUL to 30, replacing the previous 20-year values.

Research Needs and Ongoing Updates

F. EnergyPlus Prototypes

For DEER2028, prototype updates include both implemented changes and possible future enhancements

- **Nonresidential design-day schedule update.** This update revised all 26 prototype root files to incorporate ASHRAE 90.1 Appendix G design-day schedules, including cooling-design-day schedules with full lighting/equipment/occupancy fractions, heating-design-day schedules with zero non-HVAC internal loads, and standardized HVAC design-day schedules.
- **Residential prototype parameterization and sizing fixes.** This update revises design-day internal gains schedules, design-day temperature setpoint schedules, thermostat objects, and sizing-run options, with the objective of reducing unmet hours and improving auto-sizing consistency across prototype models.
- **HVAC Sizing Factor.** The current DEER EnergyPlus guidance applies the ASHRAE 90.1 Appendix G3.1.2.2 sizing factors of 1.15 for cooling and 1.25 for heating to commercial models, while residential models continue to use the interim 1.8 sizing factor. For PY2028 measure submissions, it is reasonable to continue using these same sizing assumptions. The ongoing prototype refinements—including ASHRAE Appendix G design-day schedule updates for

nonresidential prototypes, and residential revisions to design-day internal gains, temperature setpoints, thermostat objects, and sizing-run options that reduce unmet hours and bring auto-sized cooling capacities closer to field data—have improved overall model fidelity but do not yet provide a stronger market-based basis for revising the sizing factors themselves.

Future studies leveraging broader field and program data may be pursued through ongoing coordination with the PA-initiated EnergyPlus Subject Matter Expert group to develop more research-based and market-representative sizing assumptions and to support potential future updates to these factors.

Calendar-year and holiday alignment. The DEER EnergyPlus prototype annual simulations have been updated to align with the CEC 2009 non-leap reference calendar. The 2009 non-leap reference calendar is consistent with the CEC calendar-year convention used for 2025 Title 24 modeling. The same 2009 calendar basis was also used for the CZ2025 DEER peak 3-day period lookup table. The 2009 calendar begins on Thursday and supports consistent treatment of day-of-week assignments, weekends, holidays, and weather-sensitive hourly results. The update would revise prototype run-period and holiday treatment so that annual simulations use a consistent calendar basis across DEER prototype modeling, peak-period analysis, and downstream weather-dependent tools. This alignment is important because modeled hourly load shapes are ultimately used with hourly avoided-cost values in CET/ACC-related cost-effectiveness processing. If the ACC calendar and modeled load-shape calendar do not align, one dataset may need to be shifted to align weekdays and weekends before avoided costs are applied. That type of post-processing shift can improve day-type alignment, but it can also misalign the weather sequence and holiday treatment used to generate the original modeled load shape. Aligning the DEER prototype calendar, peak-period analysis, and load-shape development around the CEC 2009 calendar basis reduces that risk and improves traceability between modeled results, weather data, peak-period calculations, and avoided-cost application.

G. Variable Capacity Heat Pump Performance Curves

San Diego Gas & Electric should continue laboratory testing of variable capacity heat pump (VCHP) to develop performance curves. We support continued research on

VCHP performance curves as a continuation of the DEER2026 research effort. SDG&E is responsible for incorporating resulting performance-curve findings into the related DEER EnergyPlus prototype models, in coordination with CPUC staff and the EnergyPlus prototype team, as warranted by the study results. This work may require planning and consideration of relevant EnergyPlus objects, configurations, and model-input requirements before the findings can be translated into prototype updates.

Measure Adoption

The DEER2028 Resolution will adopt and lock approved ex ante values contained in the measure packages for PY2028-2029 and mid-cycle change from PY2026-27. The list of measure packages with mid-cycle changes for PY2026-27 is listed in Appendix A1 and the list of measure packages for PY2028-29 is listed in Appendix A2. All measures that will be active in that program year will be adopted and locked, not just those with updates. New measures can be added mid-cycle and these will be tracked with start and expiry dates of those measures in the eTRM. Exceptions are made to allow changes to measure packages including new codes and standards, ENERGY STAR changes, errors in existing measure packages or any other reason CPUC staff deems necessary.

H. Guidance from EM&V Review

EM&V evaluation results and special studies will continue to be among the primary sources for DEER measure and measure package updates. Evaluation results with sufficient rigor and precision will be used to update DEER and measure package assumptions, and parameters. For DEER2028, the current EM&V cycle is focused on PY2023 and PY2024 claims. Two water-heating studies are still in progress and will not be completed until PY2027.

Effective Program Year: 2028.

- **Large Heat Pump Water Heater, Commercial and Multifamily (central WH), Fuel Substitution (SWWH028).** The EM&V study will improve the DEER modeling and develop verified updates to measure package characteristics and ex ante parameters using billing analysis, customer surveys, and onsite metering data collection.
CPUC staff is extending the PY2028 submission deadline for this measure package to Q2 2027 to allow incorporation of the final EM&V study results, including onsite metering data into the measure package update.

- **Faucet Aerator, Residential (SWWH001) and Low-Flow Showerhead, Residential (SWWH002).** The EM&V study will include updating the Gross Savings Installation Adjustment (GSIA) using a participant survey. CPUC staff is extending the PY2028 submission deadline for this measure package until Q1 of 2027 to incorporate the EM&V study results.

Effective Program Year: 2030.

- **Heat Pump Water Heater, Residential, Fuel Substitution (SWWH025).** The EM&V study will develop verified updates to measure package characteristics and ex ante parameters and assumptions for the PY2030 submission.
- **Tankless Water Heater, Gas, Commercial (SWWH006).** The EM&V study will develop verified updates to measure package characteristics and ex ante parameters and assumptions for the PY2030 submission.

FINDINGS

1. We find it reasonable for the eTRM to continue as the Official Source of California Energy Efficiency Measure Data and the sole source for deemed measure package development, submittal, review, and publishing.
2. Decision D.15-10-028 retains the direction from D.12-05-015 that DEER values be updated to be consistent with existing and updated state and federal codes and standards.
3. Decision D.15-10-028 also states that CPUC staff may make changes at any time without a Resolution to fix errors or to change documentation.
4. It is appropriate to update the DEER values and deemed ex ante processes as result of: a) updates to underlying methodology, b) corrections and clarifications, c) evaluation and research results, d) new code and standards, e) review of market and technical studies, and f) addition of new measures or tools or processes needed to support deemed measure package development and review.
5. Decision D.05-01-055 establishes CPUC Energy Division authority to review and approve measures, including authority to designate a set of values as the deemed data source of record.

6. We find it reasonable for CPUC staff and the Ex Ante Review team to update calculators and related technical tools used to develop deemed ex ante values, including the new DEER Commercial and Multifamily Water Heater Calculator for commercial water-heating measure packages, in order to reflect updated methods, standards, weather inputs, and evaluation results.
7. We find it reasonable for CPUC staff to establish targeted exceptions to the general measure package submission timeline where updated tools, mid-cycle standards changes, or pending EM&V results are necessary to support accurate ex ante values.

THEREFORE, IT IS ORDERED THAT:

1. The DEER2028 and Revised DEER2026 and DEER2027 Updates, listed in Table 1, and per supporting documentation available on the DEER Module at the CEDARS website, are approved with effective dates as listed. The Appendices and the Attachment to this resolution may be updated by staff as needed.
2. Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), Southern California Gas Company (SoCalGas), and San Diego Gas & Electric (SDG&E), Bay Area Regional Energy Network (BayREN), Southern California Regional Energy Network (SoCalREN), Tri-County Regional Energy Network (3CREN), Local Government Sustainable Energy Coalition (LGSEC), Lancaster Choice Energy (LCE), Marin Clean Energy (MCE), Ava Community Energy, Central California Rural REN, CleanPowerSF, Inland Regional Energy Network, Peninsula Clean Energy, Redwood Coast Energy Authority, Rural REN North, San Diego REN, San Jose Clean Energy, and Sonoma Clean Power must use the updated assumptions, methods and values for Program Years 2026 and 2027 planning and savings claims, and Program Years 2028-29 planning, implementation and reporting.
3. Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), Southern California Gas Company (SoCalGas), and San Diego Gas & Electric (SDG&E), the San Francisco Bay Area Regional Energy Network (BayREN), Southern California Regional Energy Network (SoCalREN), Tri-County Regional Energy Network (3CREN), Local Government Sustainable Energy Coalition (LGSEC), Lancaster Choice Energy (LCE), Marin Clean Energy (MCE), Ava Community Energy, Central California Rural REN, CleanPowerSF, Inland Regional Energy Network, Peninsula Clean Energy, Redwood Coast Energy Authority, Rural

REN North, San Diego REN, San Jose Clean Energy, and Sonoma Clean Power must follow the updated process adopted in this resolution for deemed ex ante activities as directed in this resolution.

4. Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), Southern California Gas Company (SoCalGas), and San Diego Gas & Electric (SDG&E), the San Francisco Bay Area Regional Energy Network (BayREN), Southern California Regional Energy Network (SoCalREN), Tri-County Regional Energy Network (3CREN), Local Government Sustainable Energy Coalition (LGSEC), Lancaster Choice Energy (LCE), Marin Clean Energy (MCE), Ava Community Energy, Central California Rural REN, CleanPowerSF, Inland Regional Energy Network, Peninsula Clean Energy, Redwood Coast Energy Authority, Rural REN North, San Diego REN, San Jose Clean Energy, and Sonoma Clean Power must comply with the updated schedule for activities adopted in this resolution unless expressly authorized by CPUC staff.

This Resolution is effective today.

The foregoing resolution was duly introduced, passed and adopted at a conference of the Public Utilities Commission of the State of California held on September 17, 2026; the following Commissioners voting favorably thereon:

Commissioner Signature blocks to be added
upon adoption of the resolution

Dated _____, at _____, California

APPENDIX A

A1. PY2026-27 Mid-Cycle Measure Package Updates

Expected mid-cycle updates are listed in **Error! Reference source not found.** These measure packages are measures that have planned code or standard updates that go into effect in 2026 and 2027, before the DEER2028 measure package version update.

Table A1.1. PY2026-27 Mid-Cycle Measure Package Updates

Measure Package ID	Measure Name	Mid-Cycle Update Reason	Program Year	Lead IOU
SWWH006-11	Tankless Water Heater, Gas, Commercial	Federal standard update	PY2026	SCG
SWWH007-09	Storage Water Heater, Gas, Commercial	Federal standard update	PY2026	SCG
SWWH025-11	Heat Pump Water Heater, Residential, Fuel Substitution	Federal standard update	PY2026	SCE
SWWH027-08	Heat Pump Water Heater, Commercial, Fuel Substitution	Federal standard update	PY2026	SCE
SWWH028-09	Large Heat Pump Water Heater, Commercial and Multifamily (central WH), Fuel Substitution	Federal standard update and calculator update	PY2026	SCE
SWAP007-05	Room Air Conditioner, Residential	Federal standard update	PY2026	SDG&E

CPUC staff is extending the PY2028 submission deadline for all of the above measure packages until Q4 2026 to allow for mid-cycle updates and approval. For SWWH028 and SWWH027, the submission deadline is being extended further to Q2 2027, or earlier if final EM&V study results, including onsite metering data, become available sooner.

A2. PY2028-29 Measures

The list provided in **Error! Reference source not found.** is current as of the adoption of the final resolution. *The list provided in Table A2.1 is preliminary and will be updated for the final resolution.*

Table A2.1. DEER2028-29 Measure Packages to be Updated

Measure Package ID	Measure Name	Program Year	Lead IOU
SWHC039-10	Smart Thermostat, Residential	2028	SCE

Measure Package ID	Measure Name	Program Year	Lead IOU
SWFS010-05	Commercial Hand-Wrap Machine, Electric	2028	SCE
SWAP011-06	Vending and Beverage Merchandise Controller	2028	SCE
SWLG020-04	UL Type B LED Screw-in Lamp HID Retrofits	2028	SCE
SWCR019-05	Low-Temperature Coffin to Reach-In Display Case Conversion	2028	PG&E
SWAP013-07	Cooking Appliances, Residential, Fuel Substitution	2028	SCE
SWFS007-06	Insulated Hot Food Holding Cabinet	2028	SCE
SWAP014-05	Heat Pump Clothes Dryer, Residential, Fuel Substitution	2028	SCE
SWFS006-05	Ice Machine, Commercial	2028	PG&E
SWPR002-04	VFD for Glycol Pump Motor	2028	PG&E
SWCR017-07	Ultra-Low Temperature Freezer	2028	PG&E
SWPR006-04	VSD for Ventilation Fan, Agricultural	2028	PG&E
SWPR008-04	VFD on Rod Beam Pump	2028	PG&E
SWPR005-05	VFD for Dust Collection Fan	2028	PG&E
SWWP005-05	Variable Frequency Drive on Irrigation Pump	2028	PG&E
SWPR001-04	Ventilation Fan, Agricultural	2028	PG&E
SWRE005-07	Heat Pump Pool Heater, Residential, Fuel Substitution	2028	SCE
SWFS023-05	Contact Conveyor Toaster, Commercial	2028	SCE
SWFS016-05	Refrigerated Chef Base	2028	SCE
SWCR014-06	Medium or Low-Temperature Display Case	2028	SCE
SWAP015-05	Efficient Electric Cooking Appliances, Residential	2028	SDGE
SWFS009-05	Deck Oven, Electric, Commercial	2028	SCE
SWCR010-06	Bare Suction Line Insulation	2028	SCE
SWFS012-05	Exhaust Hood Demand Controlled Ventilation, Commercial	2028	SCE
SWPR004-06	Circulating Block Heater	2028	SCE
SWFS022-05	Convection Oven, Commercial, Fuel Substitution	2028	SCE
SWFS021-06	Fryer, Commercial, Fuel Substitution	2028	SCE
SWLG019-03	LED, Indoor Horticulture	2028	SCE
SWMI003-03	High-Efficiency Toilets, Residential and Commercial	2028	SDGE
SWWH006-12*	Tankless Water Heater, Commercial	2028	SCG
SWWB004-04*	Home Energy Reports	2028	PG&E
SWWH028-10*	Large Heat Pump Water Heater, Commercial & Multifamily, Fuel Substitution	2028	SCE
SWWH010-04*	Boiler, Multifamily	2028	SCG
SWFS011-08*	Fryer, Commercial	2028	SCG
SWSV014-06*	Lifecycle Refrigerant Management, Residential	2028	PG&E
SWWH025-12*	Heat Pump Water Heater, Residential, Fuel Substitution	2028	SCE

Measure Package ID	Measure Name	Program Year	Lead IOU
SWWH027-09*	Heat Pump Water Heater, Commercial, Fuel Substitution	2028	SCE
SWWH017-07*	Hot Water Pipe Insulation, Nonresidential & Multifamily	2028	SCG
SWWH013-07*	Tankless Water Heater, Residential	2028	SCG
SWHC045-07	Heat Pump HVAC, Residential, Fuel Substitution	2028	SCE
SWWH008-03*	Boiler, Process	2028	PG&E
SWWH011-04*	Central Storage Water Heater, Multifamily	2028	SCG
SWSV001-08*	Duct Seal, Residential	2028	SDGE
SWBE001-06*	Greenhouse Heat Curtain	2028	SCG
SWWH018-06*	Hot Water Tank Insulation, Nonresidential & Multifamily	2028	SCG
SWWH007-10*	Storage Water Heater, Commercial	2028	SCG
SWWB008-06*	All-Electric Homes, Residential, New Construction	2028	PG&E
SWWH001-06*	Faucet Aerator, Residential	2028	SCG
SWFS017-05*	Automatic Conveyor Broiler, Commercial	2028	SCG
SWBE006-05*	Ceiling Insulation, Residential	2028	SCG
SWAP012-04*	Gas Dryer Modulating Valve, Commercial and Multifamily	2028	SCG
SWHC059-06*	Smart Fan Controller, Residential	2028	SDGE
SWFS001-05*	Convection Oven, Commercial	2028	SCG
SWCR015-07*	Medium-Temperature Case Doors	2028	PG&E
SWWH031-07	Heat Pump Water Heater, Commercial	2028	SCE
SWWH002-07*	Low-Flow Showerhead, Residential	2028	SCG
SWRE001-05*	Pool Cover, Commercial	2028	SCG
SWBE010-03*	Deeply Buried Ducts, Residential	2028	MCE
SWBE002-06*	Greenhouse Infrared Film	2028	SCG
SWFS005-06*	Steamer, Commercial	2028	SCG
SWHC062-03*	Occupancy Fan Controller, Commercial	2028	PG&E
SWHC038-06	Brushless Fan Motor Replacement, Residential	2028	SCE
SWBE007-05*	Wall Insulation, Residential	2028	SCG
SWWP004-06*	Water Pump Upgrade	2028	SoCalR EN
SWFS003-06*	Combination Oven, Commercial	2028	SCG
SWFS014-05*	Rack Oven, Gas, Commercial	2028	SCG
SWHC014-10*	Unitary Air-Cooled Air Conditioner or Heat Pump, Under 65 kBtu/hr, Commercial	2028	SDGE
SWHC004-08*	Space Heating Boiler, Commercial & Multifamily	2028	SCG
SWWH005-08*	Boiler, Commercial	2028	SCG
SWCR021-05*	Medium or Low-Temperature Display Case With Doors	2028	PG&E

Measure Package ID	Measure Name	Program Year	Lead IOU
SWFS019-05*	Underfired Broiler, Commercial	2028	SCG
SWHC046-07*	Packaged Heat Pump Air Conditioner, Commercial, Fuel Substitution	2028	SCE
SWWH021-03*	Recirculation Pump Timer, Commercial	2028	SCG
SWFS008-04*	Conveyor Oven, Gas, Commercial	2028	SCG
SWHC023-08	Enhanced Ventilation for Packaged HVAC	2028	PG&E
SWFS004-04*	Griddle, Commercial	2028	SCG
SWFS029-03	Rotisserie, Gas, Commercial	2028	SCG
SWHC044-08*	Ductless HVAC, Residential, Fuel Substitution	2028	SCE
SWSV013-06	Duct Optimization, Residential	2028	SDGE
SWWH004-05*	Laminar Flow Restrictor, Commercial	2028	SCG
SWPR007-03	Steam Boiler Economizer, Industrial	2028	SCG
SWWH015-05*	Demand Control for Centralized Water Heater Recirculation Pump, Multifamily & Commercial	2028	SCG
SWHC041-09*	Software-Controlled Switch Reluctance Motor	2028	SCE
SWHC031-08*	Furnace, Residential	2028	SCG
SWWH016-07*	Domestic Hot Water Loop Temperature Controller, Multifamily & Commercial	2028	SCG
SWWH032-04*	Solar Thermal Water Heating System, Residential	2028	SCG
SWWH034-04*	Solar Thermal Water Heating System, Commercial and Multifamily	2028	SCG
SWWH014-09	Heat Pump Water Heater, Residential	2028	SCE
SWCR018-06*	Reach-In Refrigerator or Freezer, Commercial	2028	PG&E
SWCR007-06	Floating Temperature Controls, Multiplex	2028	PG&E
SWCR001-06	Anti-Sweat Heater Controls	2028	SCE
SWPR003-04*	Steam Trap, Commercial	2028	SCG
SWFS002-06*	Door-Type Dishwasher, Commercial	2028	SCG
SWAP003-06*	Clothes Dryer, Residential	2028	SCG
SWFS013-05*	Low-Flow Pre-Rinse Spray Valve	2028	SCG
SWWH026-07*	Water Heater Pipe Wrap, Residential	2028	SCG
SWHC018-06	VSD for HVAC Fan Controls, Commercial	2028	PG&E
SWHC050-09*	Ductless Heat Pump, Residential	2028	SDGE
SWHC013-09*	Unitary Air-Cooled Air Conditioner, Over 65 kBtu/hr, Commercial	2028	SDGE
SWHC058-03*	Patio Heater, Gas, Commercial and Residential	2028	SCG
SWWH019-07*	Faucet Aerator, Commercial	2028	SCG
SWHC001-08*	Wall Furnace, Residential	2028	SCG
SWWH020-07*	Low-Flow Showerhead, Commercial	2028	SCG
SWAP004-05*	Clothes Washer, Residential	2028	SCG
SWRE003-05*	Heater for Pool or Spa, Commercial and Multifamily	2028	SCG

Measure Package ID	Measure Name	Program Year	Lead IOU
SWCR003-05	Fan Motor Retrofit for a Refrigerated Display Case	2028	SCE
SWSV005-05*	Economizer Repair, Commercial	2028	SDGE
SWHC012-06	HVAC Occupancy Sensor, Classroom	2028	SCE
SWRE004-05*	Pool Heater, Residential	2028	SCG
SWHC027-09*	Package Terminal Air Conditioner or Heat Pump, Under 24kBtu/hr	2028	SDGE
SWCR008-06*	Floating Suction Controls, Multiplex	2028	SCE
SWHC008-05*	Variable Speed Drive for a Central Plant System	2028	SCE
SWFS030-03	Pressure Fryer, Commercial	2028	SCG
SWWH012-07*	Storage Water Heater, Residential	2028	SCG
SWSV010-05	Economizer Controls, Commercial	2028	SDGE
SWCA001-06*	VFD Retrofit for Air Compressor	2028	SCE
SWFS018-07*	Undercounter Dishwasher, Commercial	2028	SCG
SWCR002-06	Low-Temperature Display Case Doors With No Anti-Sweat Heaters	2028	SCE
SWBE011-02*	High Efficiency Window, Residential	2028	SCE
SWFS024-04*	Hot Food Holding Bins, Commercial	2028	SCG
SWFS026-04*	Cooktop, Commercial	2028	SCG
SWAP005-05*	Ozone Laundry, Commercial	2028	SCG
SWAP006-06*	Dishwasher, Residential	2028	SCG
SWWH003-06*	TSV with and without an Integrated Low-Flow Showerhead, Residential	2028	SCG
SWFS025-04*	Radiant Conveyor Toaster, Commercial	2028	SCG
SWHC047-08*	Gas Fireplace, Residential	2028	SCG
SWAP017-05*	Oven, Gas, Residential	2028	SCG
SWAP007-06*	Room Air Conditioner, Residential	2028	SDGE
SWWH023-05*	Diverting Tub Spout with TSV, Residential	2028	SCG
SWFS028-03*	Steam Table, Electric, Commercial	2028	SCG
SWHC006-07	Demand Control Ventilation for Single Zone HVAC	2028	PG&E
SWFS027-03	Soup Well, Electric, Commercial	2028	SCG
SWAP008-06*	Room Air Cleaner, Residential	2028	SDGE
SWBE012-02*	High Efficiency Window, Commercial	2028	SCE
SWBE013-02*	Efficient Doors, Residential	2028	PG&E
SWBE014-02*	Door Sweeps and Door Sealing, Residential	2028	PG&E
SWFS032-02*	Refrigerated Prep Table, Commercial	2028	SCG
SWFS034-02*	Cooktop, Commercial, Fuel Substitution	2028	SCE
SWHC002-07*	Intermittent Pilot Light, Residential	2028	SCG
SWHC011-04*	Furnace, Commercial	2028	SCG
SWHC024-07	Drive Belt for HVAC Fan, Commercial	2028	SCE
SWHC048-05*	Packaged Air Conditioner Heat Recovery, Commercial	2028	SCG

Measure Package ID	Measure Name	Program Year	Lead IOU
SWHC057-03*	Space Heating Gas Absorption Heat Pump, Multifamily	2028	SCG
SWMI002-04*	No Savings	2028	SDGE
SWWB002-03*	Universal Audit Tool	2028	PG&E
SWWB007-02*	Business Energy Reports	2028	SCE
SWWH033-04*	Gas Heat Pump Water Heater, Multifamily	2028	SCG
SWBE015-02*	Door Weatherproofing, Small Business	2028	PG&E
SWBE016-02*	Efficient Sliding Glass Doors, Storefront	2028	PG&E
SWFS031-02*	Range Oven, Gas, Commercial	2028	SCG
SWFS033-02*	Pasta Cooker, Gas, Commercial	2028	SCG
SWSV015-02*	Weather Sealing, Residential	2028	SCG
SWSV017-02*	Duct Seal, Commercial	2028	SDGE

*Refer to the eTRM for the current version of all measure packages. Measure packages marked with an asterisk have not yet been submitted to CPUC staff for Ex Ante Review; accordingly, the version numbers shown here are preliminary and may change before submittal and approval.

A3. Measure Package Guidance

Any guidance in this resolution supersedes previously dated guidance in [Guidance for Deemed Measures - CEDARS](#).