



**California Energy Commission
September 9, 2026 Business Meeting
Backup Materials for Update to Alternative Calculation Method Reference Manual
for the 2025 Building Energy Efficiency Standards**

The following backup materials for the above-referenced agenda item are available as described below:

1. Proposed Resolution, attached below.
2. California Environmental Quality Act (CEQA) analysis, attached below.
3. 2025 Alternative Calculation Method (ACM) Reference Manual at <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-BSTD-03>.
4. Updates to Peak Cooling Performance Modeling Approach in the 2025 Energy Code Single-family Alternative Calculation Method Reference Manual.

For the complete record, please visit:

<https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-BSTD-03>.

To stay informed about this project and receive documents as they are filed, please subscribe to the proceeding Topic, which can be accessed here:

<https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards>. The Topic sends out email notifications and direct links when documents are filed in the proceeding docket.

CALIFORNIA ENERGY COMMISSION

PROPOSED RESOLUTION: RESOLUTION CERTIFYING THE UPDATED ALTERNATIVE CALCULATION METHOD REFERENCE MANUAL FOR THE 2025 BUILDING ENERGY EFFICIENCY STANDARDS

RESOLUTION NO: [26-0909]-XX

WHEREAS, the 2025 Building Energy Efficiency Standards (2025 Energy Code), amending California Code of Regulations, title 24, parts 1 and 6, were adopted by the California Energy Commission (CEC) on September 11, 2024, with a proposed effective date of January 1, 2026, and

WHEREAS, these standards were approved by the California Building Standards Commission (CBSC) on December 17, 2024; and

WHEREAS, the Warren-Alquist Act, in Public Resources Code section 25402.1(e), requires the CEC to certify “an energy conservation manual for use by designers, builders and contractors of residential and nonresidential buildings” no later than 180 days after CBSC approves the Energy Code; and

WHEREAS, in order to implement the requirement of Public Resources Code section 25402.1(e), CEC staff has developed an energy conservation manual (ECM) that is comprised of several documents, including residential and nonresidential compliance manuals, residential and nonresidential alternative compliance method reference manuals, a data registry requirements manual, and other compliance forms, all of which contain information to assist designers, builders, and contractors in meeting the 2025 Energy Code, including forms, charts and other data; and

WHEREAS, the 2025 Energy Code that was adopted by the CEC and approved by the CBSC, specifies, among other things, the requirement to update the Alternative Calculation Method Reference Manuals, which are part of the ECM; and

WHEREAS, CEC staff developed updated content for the Alternative Calculation Method Reference Manual, Publication Number CEC-400-2026-006-CMF (ACM Reference Manual), which document the modeling methods used in the 2025 compliance software, which demonstrates performance compliance with the 2025 Energy Code; and

WHEREAS, CEC staff has considered the application of the California Environmental Quality Act (CEQA) to certification of the updates made in the ACM Reference Manuals and find that the updates do not meet the definition of a “project” under Cal. Code Regs. Title 14, section 15061(a), because the updates in the ACM Reference Manual have no potential for resulting in either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment, and even if certifying the updated ACM Reference Manual was to be considered a project, then the project would fall under the “common sense exemption” in California Code of

Regulations, title 14, section 15061(b)(3) because it can be seen with certainty that there is no possibility the updated ACM Reference Manual would have a significant effect on the environment; and

WHEREAS, the CEC has considered staff's proposed updates to the ACM Reference Manuals and finding that its adoption is exempt from CEQA; and

THEREFORE, THE CALIFORNIA ENERGY COMMISSION FINDS:

With regard to CEQA, certification of the updates to the ACM Reference Manual is not a "project," as defined, subject to the California Environmental Quality Act (CEQA) and, alternatively, if it is a project, it is exempt pursuant to the "common sense exemption" in California Code of Regulations, Title 14, section 15061(b)(3).

THEREFORE, BE IT RESOLVED, that on the basis of the entire record before it, the CEC hereby adopts staff's finding that the certification of the updates made in the ACM Reference Manual are not subject to CEQA; and

FURTHER BE IT RESOLVED, that the California Energy Commission hereby certifies the updated Alternative Calculation Method Reference Manual, Publication Number CEC-400-2026-006-CMF, used to support compliance with the 2025 Energy Code; and

FURTHER BE IT RESOLVED, that documents and other materials that constitute the rulemaking record can be found at the CEC, 715 P Street, Sacramento, California, 95814 in the custody of the Docket Unit and online in [Docket 24-BSTD-03](https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-BSTD-03), <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-BSTD-03>; and

FURTHER BE IT RESOLVED, that, the CEC delegates the authority and directs the Executive Director or their designees to take, on behalf of the CEC, all actions reasonably necessary to have the ACM updates go into effect, including but not limited to making any appropriate non-substantive changes; and filing a notice of exemption with the Office of Planning and Research.

APPROVED AND ADOPTED this 9th day of 09 2026, by the following vote:

AYE:

NAY:

ABSENT:

ABSTAIN:

CERTIFICATION

The undersigned Secretariat to the CEC does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly approved and adopted by the affirmative vote of the CEC at a meeting held on September 9, 2026.

Kim Todd
Secretariat



MEMORANDUM

FROM: Will Vicent, Deputy Director

SUBJECT: Basis for finding that the certification of the updates made to the Alternative Calculation Method (ACM) Reference Manual is not a project or is otherwise exempt from the California Environmental Quality Act under the Common-Sense Exemption.

DATE: August 28, 2026

I. CEQA

The California Environmental Quality Act (CEQA) (Pub. Resources Code, sections 21000 *et seq.*; see also CEQA Guidelines, Cal. Code Regs. (CCR), tit. 14, sections 15000 *et seq.*) requires that state agencies consider the environmental impact of their discretionary decisions. CEQA allows for certain projects to be exempted from its requirements. Of relevance here, and discussed further below, is the common-sense exemption (14 CCR section 15061(b)(3)).

II. The Energy Conservation Manual (ECM) [Pub. Resources Code, section 25402.1(e)]

Public Resources Code Section 25402 requires the CEC to adopt building design and construction standards that increase the efficiency in the use of energy and water for new residential and new nonresidential buildings, and energy and water conservation design standards. The standards are contained in Part 6 and associated administrative regulations in Part 1 of Title 24 of the California Code of Regulations (Energy Code).

No later than 180 days after approval of the Energy Code by the California State Building Standards Commission, the CEC must certify an energy conservation manual for use by designers, builders, and contractors of residential and nonresidential buildings. (Pub. Resources Code, section 25402.1(e).) The manual shall contain, but not be limited to, the following: (1) The standards for energy conservation established by the commission, (2) forms, charts, tables, and other data to assist designers and builders in meeting the standards, (3) design suggestions for meeting or exceeding the standards, (4) any other information which the commission finds will assist persons in conforming to the standards, (5) instructions for use of the computer program for calculating energy consumption in residential and nonresidential buildings, (6) the prescriptive method for use as an alternative to the computer program.

III. Background for the Proposed Action

On September 11, 2024, the CEC adopted amendments to its Building Energy Efficiency Standards, located in Part 1, Chapter 10, and Part 6 of Title 24 of the California Code of Regulations (2025 Energy Code), as authorized and directed by Public Resources Code 25402. On December 17, 2024, the California Building Standards Commission approved the 2025 Energy Code. The 2025 Energy Code went into effect on January 1, 2026.

On September 11, 2024, the CEC adopted the Initial Study and Negative Declaration for the Energy Code. The CEC considered air emissions, water savings at California power plants, indoor air pollution, and increased materials use associated with the 2025 Energy Code. The Negative Declaration concluded that the potential environmental impacts associated with implementing the 2025 Energy Code were less than significant without need for mitigation. Thus, the Negative Declaration proposed no mitigation measures.

To implement the requirement of section 25402.1(e), on June 11, 2025, CEC adopted an Energy Conservation Manual (ECM) that is comprised of several documents, including Alternative Calculation Method Reference Manual, Compliance Manuals, a Data Registry Requirements Manual, and other Compliance Documents, all of which contain information to assist designers, builders, and contractors in meeting the 2025 Energy Code, including forms, charts, and other data. The ACM Reference Manual is being updated to clarify modeling descriptions for compliance software. The CEC is considering certifying the updated ACM Reference Manual (Publication Number CEC-400-2026-006-CMF) at the September 9, 2026, CEC Business Meeting.

IV. Certifying the updated ACM Reference Manuals is not a project.

CEQA only applies to an action “that has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment.” (14 CCR section 15061(a).)

As discussed above, the CEC certifies and updates an energy conservation manual to assist interested persons with demonstrating compliance with the Energy Code, pursuant to Public Resources Code, section 25402.1(e). The updates made in the ACM Reference Manual, as part of the ECM, provide information and guidance for the 2025 Energy Code compliance software. The updates made in the ACM Reference Manual do not impose any new requirements and, therefore, have no potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment. Accordingly, certifying the updated ACM Reference Manual, Publication Number CEC-400-2026-006-CMF, does not meet the definition of a project under CEQA.

V. If certification of the updated ACM Reference Manual was considered a project, it is exempt from CEQA under the Common-Sense Exemption.

Certification of the updated ACM Reference Manual is exempt from CEQA under the Common-Sense Exemption. As stated above, CEQA only applies to projects that have the potential to cause a significant effect on the environment. “Where it can be seen with certainty that there is no

possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA.” (14 CCR section 15061(b)(3).) A “significant effect on the environment” is defined as a “substantial, or a potentially substantial, adverse change” in the environment, and does not include an economic change by itself. (Pub. Resources Code, section 21068; 14 CCR section 15382.)

The updated ACM Reference Manual, as part of the ECM, is a reference guide designed to help develop compliance software that reiterates the regulatory language already contained in the 2025 Energy Code. The ACM Reference Manual contains no new requirements to comply with the 2025 Energy Code. As such, it can be seen with certainty that there is no possibility that certifying the updated ACM Reference Manual may have a significant effect on the environment thus making it subject to the common sense exemption in 14 CCR section 15061(b)(3).

VI. Conclusion

As shown above, it can be seen with reasonable certainty that certifying the proposed update to the ACM Reference Manual is not a project because it does not impose any new requirements and, therefore, has no potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment. If certifying the updated ACM Reference Manual was to be considered a project subject to CEQA, it can be seen with certainty that certifying the updates to the ACM Reference Manual would not have a significant effect on the environment and, therefore, is exempt pursuant to the Common-Sense Exemption under 14 CCR section 15061(b)(3).



MEMORANDUM

TO: 2025 Energy Code Compliance Software, Manuals and Forms (24-BSTD-03)

FROM: California Energy Commission

SUBJECT: Updates to Peak Cooling Performance Modeling Approach in the 2025 Energy Code Single-family Alternative Calculation Method Reference Manual

DATE: August 28, 2026

Executive Summary

Newly constructed single-family homes complying with the 2025 Energy Code (California Code of Regulations, Title 24, Part 6) using the performance modeling approach must meet or exceed the budgets for two metrics: Long-term System Cost (LSC) and Source Energy. The 2025 Energy Code Accounting Methodology Report¹ describes the development of these metrics in detail. However, projects meeting or exceeding the budgets for these two Energy Code metrics may still experience unintended peak period cooling energy between 4 pm and 9 pm from July to November that is higher than the standard design. These designs may result in exacerbated peak loads on California's electric grid during summer heat waves. This issue was described in a memorandum published to California Energy Commission (CEC) Docket Number 24-BSTD-03² on April 25, 2025, referred to as the "2025 Peak Cooling Memo."³

The 2025 Energy Code metrics encourage single-family homes to reduce demand during the winter peak and overnight periods. The CEC also finds it critically important for buildings to reduce demand during summer peak period cooling expected to occur in California's near- and medium-term future. To help resolve this issue, the CEC developed a peak cooling performance modeling approach in Section 1.6 of the 2025 Energy Code Single-Family Alternate Calculation Method (ACM) Reference Manual.⁴ The ACM Reference Manuals specify the CEC-approved methods for demonstrating compliance with California's Energy Code using the performance modeling approach and are periodically updated to align with Energy Code implementation. The method currently allows up to a 20% increase in peak period cooling energy for a proposed design compared to the standard design and is applicable in climate zones 4 and 8 through 15. The analysis supporting the peak cooling energy performance modeling approach was detailed in the 2025 Peak Cooling Memo.

¹ <https://efiling.energy.ca.gov/GetDocument.aspx?tn=255318-1&DocumentContentId=91004>

² <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-BSTD-03>

³ <https://efiling.energy.ca.gov/GetDocument.aspx?tn=262800&DocumentContentId=99416>

⁴ <https://www.energy.ca.gov/publications/2025/2025-single-family-residential-alternative-calculation-method-reference-manual>

Comments to Docket Number 24-BSTD-03⁵ raised an issue with the 20% threshold in the California Building Energy Code Compliance (CBECC) software, CBECC 2025 v2.0. Commenters noticed that newly constructed single-family homes expected to comply with the 2025 Energy Code were exceeding the peak cooling energy threshold for a proposed design. Staff investigated the issue and discovered that an adjustment in threshold is warranted to better align with CBECC 2025 v2.0. In response to these comments, and based on independent analysis performed by the CEC, the CEC proposed revising the limit to a 30% increase in peak cooling energy for climate zones (CZ) 4, 8, 9, 11, 12, 13, and 15, and up to a 25% increase in climate zones 10 and 14. Staff also considered additional measure packages for custom homes and accessory dwelling units (ADUs) to demonstrate compliance with the proposed peak cooling performance modeling approach. The analysis supporting a revision to the peak cooling energy performance modeling approach was published to Docket Number 24-BSTD-03 on May 14, 2026, and referred to as the May 2026 Peak Cooling Update Memo⁶.

Comments to Docket Number 24-BSTD-03⁷ were generally supportive of the revision proposed in the May 2026 Peak Cooling Update Memo, but continued to request additional options to reduce energy use during the summer peak period. Specifically, commenters requested that contributions from photovoltaic and battery energy storage systems be considered in the peak cooling energy calculation. In response to these comments, staff investigated applying battery energy storage system (BESS) contributions to the peak cooling energy. Based on independent analysis performed by the CEC, the CEC proposes to allow users to choose to apply contribution of a JA12-compliant battery energy storage system (BESS) to the proposed design peak cooling energy (up to a maximum of 20% of the standard design peak cooling energy) or to use the existing self-utilization credit that offsets efficiency LSC energy.

The revised peak cooling energy recommendations described in this memo have been incorporated into the California Building Energy Code Compliance (CBECC) 3.0 Research Version 7 (RV7), which is for research only and cannot be used for compliance. CBECC 3.0 RV7 can be downloaded from the California Energy Commission CBECC GitHub project website, <https://github.com/california-energy-commission/CBECC/releases>.

Analysis

To investigate applying BESS contributions to the peak cooling energy, staff developed an internal version of California Building Energy Code Compliance (CBECC) software, based on CBECC 2025.3.0 Peak Cooling Research Version (RV), which included the changes proposed in the May 2026 Peak Cooling Update Memo. CBECC is a free open-source software tool developed and

⁵ <https://efiling.energy.ca.gov/GetDocument.aspx?tn=267721&DocumentContentId=104745>,
<https://efiling.energy.ca.gov/GetDocument.aspx?tn=267726&DocumentContentId=104750>,
<https://efiling.energy.ca.gov/GetDocument.aspx?tn=267728&DocumentContentId=104752>

⁶ <https://efiling.energy.ca.gov/GetDocument.aspx?tn=269979&DocumentContentId=107129>

⁷ <https://efiling.energy.ca.gov/GetDocument.aspx?tn=270408&DocumentContentId=107676>,
<https://efiling.energy.ca.gov/GetDocument.aspx?tn=270430&DocumentContentId=107682>,
<https://efiling.energy.ca.gov/GetDocument.aspx?tn=270535&DocumentContentId=107834>

approved by the CEC to demonstrate compliance with the California Energy Code. Within CBECC, a prototype for a 2,700 ft² single-family home was used; the same prototype that was used to support the original 2025 Peak Cooling Memo. The prototype included window and wall area distributions typical of California production homes. The analysis also included custom home and accessory dwelling unit (ADU) designs.

Results in the following peak cooling energy analysis are presented in terms of the percentage differences between the proposed design and standard design (compliance margin %). A negative percentage represents a design that uses more peak cooling energy than the baseline building. For building designs with compliant LSC margins, the associated peak cooling margins were evaluated to highlight potential compliance software solutions to the peak cooling energy issue. All scenarios analyzed met or outperformed the Energy Code's Source Energy metric.

The 2025 Peak Cooling Memo analyzed seven packages of measures (documented in Tables 3 through 9 in the 2025 Peak Cooling Memo). The packages included some measures below prescriptive code requirements, and some measures above prescriptive code requirements. The goal of this analysis was to identify peak cooling performance thresholds that would provide designers with sufficient flexibility.

The packages were designed to reflect a wide range of builder-friendly and realistic construction packages for production homes. The base case was the standard design. In addition to the measures listed, all packages included a minimally code-compliant solar photovoltaic (PV) system and no battery.

The May 2026 Peak Cooling Update Memo (Table 2) listed the compliance results for the same packages as the 2025 Peak Cooling Memo. In some climate zones, Packages 1, 4, 5, 6 and 7 (Tables 1a and 1d through 1g in the May 2026 Peak Cooling Update Memo) were close to the peak cooling energy threshold.

For those packages, this memorandum evaluated including a 5kWh JA12- compliant BESS, with 20% of the battery discharge during the peak cooling energy period applied to the peak cooling energy.

For each measure package, the resulting total LSC and peak period cooling energy margins, with and without the BESS contribution, are shown in Table 2.

Table 1a – Package 1 (Peak Cooling Compliant Case with 2x6 Walls) Evaluated in 2025 Peak Cooling Memo for 2,700 ft² Single-Family Prototype with Builder-provided Design Specifications

System	Above Prescriptive Requirements	Below Prescriptive Requirements
HVAC	14.3 SEER2, 11.7 EER2, 9 HSPF2 (CZ 4, 8-12, 14) 14.3 SEER2, 11.7 EER2, 10 HSPF2 (CZ 13, 15)	No Whole House Fan (CZ 8-14)
DHW	NEEA Tier 3 HPWH (CZ 4, 12, 14) NEEA Tier 3 HPWH w/ CDHW (CZ 8-11, 13, 15)	N/A
Envelope	N/A	No QII Roof Solar Reflectance: 0.1 Ceiling Insulation: R-38 Roof Insulation: R-4 (below deck)
Overhangs	N/A	N/A

Table 2d – Package 4 (2x4 Walls, 16 SEER2, 13 EER2) Evaluated in 2025 Peak Cooling Memo for 2,700 ft² Single-Family Prototype with Builder-provided Design Specifications

System	Above Prescriptive Requirements	Below Prescriptive Requirements
HVAC	16 SEER2, 13 EER2, 9 HSPF2 Low-Leakage AHU Reduced Fan Power: 0.4 W/cfm	No Whole House Fan (CZ 8, 10, 11, 13, 14)
DHW	NEEA Tier 3 HPWH	N/A
Envelope	Roof Solar Reflectance: 0.25 Window Performance: U=0.27, SHGC=0.20 (CZ 4, 11-14) U=0.30, SHGC=0.20 (CZ 8-10)	Wall Cavity Insulation: R-15 Wall Exterior Insulation: R-5 Ceiling Insulation: R-49 Roof Insulation: R-4 (below deck)
Overhangs	N/A	N/A

Table 3e – Package 5 (2x4 Walls with R-6 Exterior Insulation, 16 SEER2, 13 EER2) Evaluated in 2025 Peak Cooling Memo for 2,700 ft² Single-Family Prototype with Builder-provided Design Specifications

System	Above Prescriptive Requirements	Below Prescriptive Requirements
HVAC	16 SEER2, 13 EER2, 9 HSPF2 Low-Leakage AHU Reduced Fan Power: 0.4 W/cfm	No Whole House Fan (CZ 8, 10, 11, 13, 14)
DHW	NEEA Tier 3 HPWH	N/A
Envelope	Roof Solar Reflectance: 0.25 Window Performance: U=0.27, SHGC=0.20 (CZ 4, 11-14) U=0.30, SHGC=0.20 (CZ 8-10)	Wall Cavity Insulation: R-15 Wall Exterior Insulation: R-6 Ceiling Insulation: R-49 Roof Insulation: R-4 (below deck)
Overhangs	N/A	N/A

Table 4f – Package 6 (2x4 Walls, 16 SEER2, 11.7 EER2) Evaluated in 2025 Peak Cooling Memo for 2,700 ft² Single-Family Prototype with Builder-provided Design Specifications

System	Above Prescriptive Requirements	Below Prescriptive Requirements
HVAC	16 SEER2, 11.7 EER2, 9 HSPF2 Low-Leakage AHU Reduced Fan Power: 0.4 W/cfm	No Whole House Fan (CZ 8, 10, 11, 13, 14)
DHW	NEEA Tier 3 HPWH	N/A
Envelope	Roof Solar Reflectance: 0.25 Window Performance: U=0.27, SHGC=0.20 (CZ 4, 11-14) U=0.30, SHGC=0.20 (CZ 8-10)	Wall Cavity Insulation: R-15 Wall Exterior Insulation: R-5 Ceiling Insulation: R-49 Roof Insulation: R-4 (below deck)
Overhangs	N/A	N/A

Table 5g – Package 7 (2x6 Walls, 14.3 SEER2, 11.7 EER2) Evaluated in 2025 Peak Cooling Memo for 2,700 ft² Single-Family Prototype with Builder-provided Design Specifications

System	Above Prescriptive Requirements	Below Prescriptive Requirements
HVAC	Low-Leakage AHU	N/A
DHW	N/A	N/A
Envelope	Blower Door: 3 ACH50	N/A
Overhangs	N/A	N/A

Acronyms for Tables 1a through g:

- ACH50 – air changes per hour at 50 Pascals
- AHU – air handler unit
- CDHW – compact hot water distribution
- cfm – cubic feet per minute
- CZ – climate zone
- DHW – domestic hot water
- EER – energy efficiency ratio
- HSPF – heating seasonal performance factor
- HPWH – heat pump water heater
- HVAC – heating, ventilation, and air conditioning
- NEEA – Northwest Energy Efficiency Alliance
- QII – quality insulation installation
- SEER – seasonal energy efficiency ratio
- SHGC – solar heat gain coefficient

Table 6 - Compliance Results: 2,700 ft² Single-Family Prototype with Builder-provided Design Specifications

		Package 1			Package 4			Package 5			Package 6			Package 7		
CZ	Proposed Peak Cooling Margin Allowance (%)	Total LSC Margin – no BESS (%)	Peak Cooling Margin – no BESS (%)	Peak Cooling Margin – with BESS (%)	Total LSC Margin – no BESS(%)	Peak Cooling Margin – no BESS (%)	Peak Cooling Margin – with BESS (%)	Total LSC Margin (%) – no BESS	Peak Cooling Margin – no BESS (%)	Peak Cooling Margin – with BESS (%)	Total LSC Margin (%)– no BESS	Peak Cooling Margin – no BESS (%)	Peak Cooling Margin – with BESS (%)	Total LSC Margin (%)– no BESS	Peak Cooling Margin – no BESS (%)	Peak Cooling Margin – with BESS (%)
4	-30%	6%	-11%	15%	6%	-19%	7%	7%	-17%	9%	6%	-30%	-4%	2%	-30%	-4%
8	-30%	7%	-32% *	-6%	5%	-32% *	-6%	6%	-31% *	-5%	5%	-32% *	-6%	0%	-7%	19%
9	-30%	7%	-21%	5%	4%	-10%	16%	4%	-9%	17%	3%	-14%	12%	0%	-9%	17%
10	-25%	7%	-16%	9%	5%	-17%	8%	6%	-16%	9%	4%	-23%	2%	1%	-8%	17%
11	-30%	7%	-11%	15%	6%	-12%	14%	7%	-11%	15%	5%	-25%	1%	1%	-12%	14%
12	-30%	7%	-54%*	-28%	7%	-17%	9%	8%	-15%	11%	7%	-28%	-2%	2%	-12%	14%
13	-30%	9%	-9%	17%	5%	-10%	16%	6%	-9%	17%	3%	-22%	4%	1%	-9%	17%
14	-25%	7%	-5%	20%	8%	-5%	19%	8%	-4%	21%	7%	-14%	11%	3%	-9%	16%
15	-30%	3%	-5%	21%	1%	-7%	19%	2%	-5%	21%	-4%	-22%	4%	0%	-4%	22%

* Indicates that the package does not comply with the peak cooling allowance proposed in the May 2026 Peak Cooling Update Memo.

The analysis demonstrates that the battery energy storage system is highly effective at reducing peak cooling energy use within the proposed margin.

Custom Homes Analysis

In addition to the single-family home prototype model analysis, analysis was performed on custom home designs, following the approach in the 2025 Peak Cooling Memo. The models were analyzed at the worst-case orientation relative to peak cooling energy. The homes had four to five bedrooms and varied in terms of size, and percentage fenestration relative to conditioned floor area. In the 2025 Peak Cooling Memo, the homes were assumed to have air leakage of 5 ACH50 (meets prescriptive requirement), to not include a whole house fan (below prescriptive requirements), and to use two split system heat pumps with 15.2 SEER2, 12.5 EER2, and 8.9 HSPF2 (above prescriptive requirements).

Other building features, such as envelope, equipment efficiencies, and presence of PV and/or batteries, are described in Tables 3a through 3c. Packages 1, 2, and 3 represent three different custom home designs analyzed in climate zone 12 with inputs matching those used in the 2025 Peak Cooling Memo. Climate zone 12 was chosen because it represents a median California climate with both cooling and heating loads. The base case was the standard design.

For this memorandum, staff evaluated similar packages as in the 2025 Peak Cooling Memo with changes described below. For package 1, the efficiency of the two split system heat pumps was increased to 16 SEER2, 13 EER2, and 9 HSPF2 to ensure that the model passes LSC requirements. Additionally, all packages included a 5 kWh JA12- compliant BESS, with 20% of the battery discharge during the peak cooling energy period applied to the peak cooling energy.

Analysis results for the custom home packages 1, 2, and 3 with and without the BESS contribution are summarized in Table 4.

Table 7a – Package 1 Evaluated in 2025 Peak Cooling Memo for Custom Homes

System	Above Prescriptive Requirements	Below Prescriptive Requirements
HVAC	16 SEER2, 13 EER2, 9 HSPF2 (prev. 15.2 SEER2, 12.5 EER2, 8.9 HSPF2) ERV Ducts: In Conditioned Space Except <12 ft, 5%	No Whole House Fan (CZ 12)
DHW	NEEA Tier 4, 80-gallon HPWH, DR	N/A
Envelope	Roof Solar Reflectance: 0.63 (prev. 0.5) Roof IR Emittance: 0.85 (new) Roof Deck Insulation: R 38 Cathedral Ceiling cavity plus R-10 continuous above deck	No QII Total Glazing: 38%

Package 1 detail: 2 stories, 5,686 ft², 5 bedrooms, zero slope roof, cathedral ceiling, standard design 4.89 kW rooftop PV. (prev. 6 kW rooftop PV, 10kWh BESS self-utilization credit)

Table 8b – Package 2 Evaluated in 2025 Peak Cooling Memo for Custom Homes

System	Above Prescriptive Requirements	Below Prescriptive Requirements
HVAC	15.2 SEER2, 12.5 EER2, 8.9 HSPF2 Ducts: R-8, 5%, Crawlspace Low-Leakage AHU Reduced Fan Power: 0.4 W/cfm	Whole House Fan (CZ 12) (prev. No Whole House Fan (CZ 12))
DHW	NEEA Tier 4, 80-gallon HPWH, DR, Recirculation	N/A
Envelope	Floor Insulation: R-30 Over Crawlspace Ceiling Insulation: R-38 Roof Insulation: R-21 (below deck)	Wall Cavity Insulation: R-21 Window Performance: U=0.32, SHGC=0.23 Roof Solar Reflectance: 0.1 Total Glazing: 22%

Package 2 detail: 1 story, 4,546 ft², 4 bedrooms, standard design 4.2 kW rooftop PV (prev. 4.5 kW rooftop PV)

Table 9c – Package 3 Evaluated in 2025 Peak Cooling Memo for Custom Homes

System	Above Prescriptive Requirements	Below Prescriptive Requirements
HVAC	15.2 SEER2, 12.5 EER2, 8.9 HSPF2 Ducts: R-6, 5%, Attic and Crawlspace ERV (new) Low-Leakage AHU Reduced Fan Power: 0.4 W/cfm	No Whole House Fan (CZ 12)
DHW	NEEA T4 80 gallons HPWH, DR, Recirculation	N/A
Envelope	Floor Insulation: R-30 Over Crawlspace	Wall Cavity Insulation: R-21 Window Performance: U=0.32, SHGC=0.24 Ceiling Insulation: R-38 Roof Insulation: R-13 (below deck) Total Glazing: 22.24% (prev. 17%)

Package 3 detail: 2 stories, 5,402 ft², 5 bedrooms, standard design 4.7 kW rooftop PV, 5 kWh BESS self-utilization credit (prev. 4.8 kW rooftop PV)

Acronyms for Tables 3a through 3c:

- AHU – air handler unit
- BESS – battery energy storage system
- cfm – cubic feet per minute
- CZ – climate zone
- DHW – domestic hot water
- DR – demand response
- EER – energy efficiency ratio
- ERV – energy recovery ventilator
- HSPF – heating seasonal performance factor
- HPWH – heat pump water heater
- HVAC – heating, ventilation, and air conditioning
- IR - infrared
- NEEA – Northwest Energy Efficiency Alliance
- QII – quality insulation installation
- PV - photovoltaic
- SEER – seasonal energy efficiency ratio
- SHGC – solar heat gain coefficient

Table 10 – Compliance Results: Custom Homes

		Package 1			Package 2			Package 3		
CZ	Proposed Peak Cooling Margin Allowance (%)	Total LSC Margin – no BESS (%)	Peak Cooling Margin – no BESS (%)	Peak Cooling Margin – with BESS (%)	Total LSC Margin – no BESS (%)	Peak Cooling Margin – no BESS (%)	Peak Cooling Margin – with BESS (%)	Total LSC Margin – no BESS(%)	Peak Cooling Margin – no BESS (%)	Peak Cooling Margin – with BESS (%)
12	-30%	8.8%	-17%	2.8%	3.1%	-11%	8.5%	2.7%	3.9%	24%

Analysis of the custom homes indicates that the proposed contribution from BESS allows these custom home packages to comply with the proposed peak cooling energy allowance.

Accessory Dwelling Units Analysis

In the 2025 Peak Cooling Memo, performance of an accessory dwelling unit (ADU) in four climates zones was analyzed. The analysis used a 623 ft², one-bedroom ADU with 33% total glazing with the largest window exposure facing East. The ADU assumes quality insulation installation (QII), walls with R-21 cavity insulation and R-5 exterior insulation, R-38 ceiling insulation, R-19 below roof deck insulation, no PV system, no battery energy storage system, and floors that are slab on grade exposed which outperforms 2025 Energy Code prescriptive requirements.

For this memorandum, ADU packages 1, 2, and 3 match the inputs used in the 2025 Peak Cooling Memo (see Tables 5a through 5c), with the changes described below. The base case was the standard design.

The changes evaluated include:

- Vented attic with insulation at the roof deck and at the ceiling as evaluated in the 2025 Peak Cooling Memo, as well as the option of an unvented attic with R-30 insulation levels at the roof deck and R-0 at the ceiling.
- Including a 5kWh JA12- compliant BESS, with 20% of the battery discharge during the peak cooling energy period applied to the peak cooling energy.

Analysis results are shown in Table 6.

Table 11a – Package 1 Evaluated in 2025 Peak Cooling Memo for ADUs

System	Above Prescriptive Requirements	Below Prescriptive Requirements
HVAC	Split HP: 17 SEER2, 13 EER2, 7.5 HSPF	No Whole House Fan (CZ 10, 12, 15)
DHW	NEEA Tier 4, 50-gallon HPWH with Point of Use (POU) distribution	N/A
Envelope	N/A	Roof Solar Reflectance: 0.1 (CZ 10, 12, 15) Windows Performance: U=0.3 (CZ4, 12)

For this memo, Package 1a has a vented attic, Package 1b has an unvented attic.

Table 12b – Package 2 Evaluated in 2025 Peak Cooling Memo for ADUs

System	Above Prescriptive Requirements	Below Prescriptive Requirements
HVAC	Split HP: 17 SEER2, 13 EER2, 7.5 HSPF	No Whole House Fan (CZ 10, 12, 15)
DHW	NEEA Tier 4, 50-gallon HPWH with POU	N/A
Envelope	Roof Solar Reflectance: 0.25 Window Performance: SHGC=0.20	Windows Performance: U=0.3 (CZ4, 12)

For this memo, Package 2a has a vented attic, Package 2b has an unvented attic.

Table 5c. Package 3 Evaluated in 2025 Peak Cooling Memo for ADUs

System	Above Prescriptive Requirements	Below Prescriptive Requirements
HVAC	Ductless minisplit VCHP (prev. split): 17 SEER2, 13 EER2, 7.5 HSPF (prev. Verified Low Leakage Ducts in Conditioned Space) HRV Reduced Fan Power: 0.4 W/cfm)	No Whole House Fan (CZ 10, 12, 15)
DHW	NEEA Tier 4, 40-gallon HPWH, POU (prev. N/A)	N/A
Envelope	Blower Door: 3 ACH50	N/A

For this memo, Package 3a has a vented attic, Package 3b has an unvented attic.

Acronyms for Tables 5a through 5c:

- ACH50 – air changes per hour at 50 Pascals
- ADU – accessory dwelling unit
- DHW – domestic hot water
- EER – energy efficiency ratio
- HP – heat pump
- HRV – heat recovery ventilator
- HSPF – heating seasonal performance factor
- HPWH – heat pump water heater
- HVAC – heating, ventilation, and air conditioning
- NEEA – Northwest Energy Efficiency Alliance
- POU – point of use
- SEER – seasonal energy efficiency ratio
- SHGC – solar heat gain coefficient

Table 13-1 - Compliance Results: ADUs with vented attic

		Package 1a			Package 2a			Package 3a		
CZ	Proposed Peak Cooling Margin Allowance (%)	Total LSC Margin – no BESS(%)	Peak Cooling Margin – no BESS (%)	Peak Cooling Margin – with BESS (%)	Total LSC Margin – no BESS(%)	Peak Cooling Margin – no BESS (%)	Peak Cooling Margin – with BESS (%)	Total LSC Margin – no BESS(%)	Peak Cooling Margin – no BESS (%)	Peak Cooling Margin – with BESS (%)
4	-30%	2.7%	-1.8%	18.6%	2.2%	17%	36%	2.3%	15%	36%
10	-25%	3.7%	-8.4%	11.6%	4.4%	4%	24%	2.1%	11%	31%
12	-30%	2%	-37.6% *	-17.7%	2.2%	-11%	8.5%	1.7%	-15%	9.3%
15	-30%	-0.2%	-1%	20.9%	1.6%	6.3%	26%	4.0%	21%	41%

* Indicates that the package does not comply with the peak cooling allowance proposed in the May 2026 Peak Cooling Update Memo.

Table 14-2 - Compliance Results: ADUs with unvented attic

		Package 1b			Package 2b			Package 3b		
CZ	Proposed Peak Cooling Margin Allowance (%)	LSC Margin – no BESS(%)	Peak Cooling Margin – no BESS (%)	Peak Cooling Margin – with BESS (%)	LSC Margin – no BESS(%)	Peak Cooling Margin – no BESS (%)	Peak Cooling Margin – with BESS (%)	LSC Margin – no BESS(%)	Peak Cooling Margin – no BESS (%)	Peak Cooling Margin – with BESS (%)
4	-30%	1.9%	-7%	13%	1.5%	12%	32%	0.3%	6.7%	27%
10	-25%	3.6%	-2.1%	18%	4.3%	10%	30%	1.3%	13%	33%
12	-30%	1.6%	-12.3%	7.3%	1.9%	9%	29%	0.2%	5.6%	26%
15	-30%	-0.7%	0%	20%	1.2%	5.6%	26%	2.1%	16%	36%

Analysis of the ADUs indicates that the proposed contribution from BESS allows these ADU packages to comply with the proposed peak cooling energy allowance.

Proposed Adjustment to Peak Cooling Performance Modeling Approach

This updated analysis shows that applying a contribution from a BESS, in addition to revising the peak cooling performance modeling threshold up to 25%-30% (depending on climate zone), facilitates designs minimizing peak cooling energy for newly constructed single family homes.

Therefore, the CEC proposes to update the Single-Family ACM Reference Manual, and corresponding Energy Code compliance software (CBECC), to allow users to choose to apply contribution of a JA12-compliant battery energy storage system (BESS) to the proposed design peak cooling energy (up to a maximum of 20% of the standard design peak cooling energy) or to use the existing self-utilization credit that offsets efficiency LSC energy. In addition, the CEC also proposes to update the Single-Family ACM Reference Manual, and corresponding Energy Code compliance software (CBECC), to revise the peak cooling performance modeling threshold up from 20% to 30% for climate zones 4, 8, 9, 11, 12, 13, 15 and up from 20% to 25% for climate zones 10 and 14. These modifications will provide added flexibility to single-family homebuilders and designers when using the performance modeling approach to comply with the 2025 Energy Code.