DOCKETED	
Docket Number:	25-BSTD-03
Project Title:	2028 Energy Code Pre-Rulemaking.
TN #:	271419
Document Title:	Update Language in JA13 Basic Control Update Final CASE Team Comment Letter
Description:	Final CASE Team Comment Letter - Updated Language In JA13 Basic Control Credit - Nonresidential And Multifamily Alternative Calculation Method Reference Manual
Filer:	Michael Shewmaker
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	7/14/2026 9:45:21 AM
Docketed Date:	7/14/2026

CALIFORNIA ENERGY CODES & STANDARDS
A STATEWIDE UTILITY PROGRAM

UPDATED LANGUAGE IN JA13 BASIC CONTROL CREDIT - NONRESIDENTIAL AND MULTIFAMILY ALTERNATIVE CALCULATION METHOD REFERENCE MANUAL

July 7, 2026

California Energy Commission

Docket No. 25-BSTD-03

The California Statewide Codes and Standards Enhancement (CASE) initiative presents recommendations to support the California Energy Commission's (CEC's) efforts to update California's Energy Code (Title 24, Part 6), including revisions to simplify and clarify existing code requirements. Three California Investor-Owned Utilities (IOUs) — Pacific Gas & Electric Company (PG&E), San Diego Gas & Electric (SDGE), and Southern California Edison (SCE) sponsored this effort as a group.

This letter recommends adding a conformance requirement to the Joint Appendix 13 (JA13) Heat Pump Water Heater (HPWH) Basic Control Credit compliance language under the Nonresidential and Multifamily Alternative Calculation Method Reference Manual (ACM) to address stakeholder concerns, ensure consistent interpretation and application of the requirements, and to support strong compliance. This letter does not recommend changes that will increase the stringency of existing requirements or recommend that existing requirements be more broadly applied. As such, a cost-effectiveness analysis or use of the full codes and standards enhancement report template is not required.

1. Measure Description and Justification

1.1 Proposal Description

Current ACM - JA13 HPWH Basic Control Credit language states that projects complying with Reference Appendices, JA13 meet the requirements of the credit. This

Pacific Gas and Electric Company | Southern California Edison — Energy for What's Ahead | SDGE

comment letter proposes adding a conformance requirement, in addition to JA13 compliance, to the ACM - JA13 HPWH Basic Control Credit.

A conformance requirement is separate and distinct from a compliance requirement. Conformance is a determination as to whether a smart grid device performs in response to messaging in a manner that benefits both the load managing entity and the device owner. Compliance is a determination as to whether a smart grid device understands and responds appropriately to defined protocol messaging. (Paresa, D. Bass, R (2024) Flexible Load Conformance: A Work-in-progress White Paper).

There are two topics included in this comment letter:

1. Establish the need to include a conformance requirement within the ACM - JA13 HPWH Basic Control Credit.
2. Describe the absence of a conformance standard in the market and the need for others to develop a conformance standard in the future.

The proposed updated ACM - JA13 HPHW Basic Control Credit would be applicable only to performance modeling for new construction, additions and alterations in single family and multifamily buildings three habitable stories or less.

1.2 Benefits of Proposed Change

Establish the need to include a conformance requirement within the ACM – JA13 HPHW Basic Control Credit

The current ACM - JA13 HPWH Basic Control Credit requires projects to meet the requirements of the Building Energy Efficiency Standards Reference Appendices – Joint Appendix 13 (JA13). JA13 requires manufacturers to self-attest that equipment meets the credit requirements; however, the credit language does not sufficiently address conformance of the equipment. The Statewide CASE Team recommends adding a conformance requirement to the ACM to address ambiguity in the JA13 language.

Examples of clarifications a conformance standard will address include, but are not limited to:

- How equipment should respond immediately after a load shed event is over.
- How load reductions are measured and relayed from the equipment to the demand response program administrator or aggregator.
- Settings to be recovered after loss of power.
- Scenarios different load functions should be enabled.

These clarifications will allow demand management program administrators to confidently rely on consistent responses and participation from qualified equipment delivering greater bill savings to customers as well as reducing strain on the grid. Manufacturers can benefit from streamlined and clear requirements for equipment responses, removing confusion, and enabling confidence in the long-term design and manufacturability of their equipment.

Current JA13 language does not include which communication protocols the CEC requires to be receivable by the equipment or that equipment responses conform to a specific standard or performance metrics. The interpretation of how equipment should respond to meet JA13 targets is up to the individual manufacturers. Requiring selected equipment meets a conformance standard within the ACM credit will verify the respective equipment's ability to receive and respond to a load shift or demand response signal. Requiring selected equipment meets a conformance standard will also establish which communication protocol(s) equipment can use, and that the equipment responds as expected to the signals it receives.

Real-world results, feedback from JA13 load shifting programs, and research testing show that without the required non-existent conformance standard, and the anticipated end-to-end testing protocol performed by the conformance standard owner, manufacturer’s equipment will respond differently to the same program signal, with varying results (Besson, A., Dirr, N., Liu, H., (2024). Heat Pump Water Heater Daily Load Shifting: Advanced Load Up and Evaluation Challenges). Requiring selected equipment meets a conformance standard within the ACM credit would confirm proper response and configuration early in the design process, ensuring that once a product meets requirements, it can be reliably installed and utilized by load shed and demand response programs.

Need for a conformance standard

The Statewide CASE Team recommends future investigation and development of a HPWH conformance standard to reference in the ACM - JA13 HPWH Basic Control Credit. The Statewide CASE Team’s research to date has not identified a standard in the market that sufficiently addresses the identified issues outlined in this letter, but has confirmed with industry stakeholders, including original equipment manufacturers (OEMs), program implementers and subject matter experts, that the current JA13 requirement for residential heat pump water heater (HPWH) manufacturers to self-attest equipment compliance has proven to be insufficient.

The Statewide CASE Team anticipates a future conformance standard will include certification. Projects pursuing the ACM credit would not require conformance testing themselves. Instead, it would require projects to select equipment with the conformance

standard certification. Future work on a conformance standard should prioritize the expansion of an existing standard to address recognized JA13 conformance deficiencies, rather than the development of a new standard. Updating an existing standard would encourage OEMs to pursue meeting conformance requirements. Air-Conditioning, Heating, and Refrigeration Institute (AHRI) 1430 is an example of an existing standard that AHRI could expand.

1.3 Background Information

The proposed update to the ACM JA13 HPWH Basic Control Credit initially began when the Statewide CASE Team pursued a concept for a load shifting performance credit for central HPWH systems.

In early 2025, the Statewide CASE Team proposed a CASE measure to update JA13 language to include central HPWHs for nonresidential and multifamily buildings, as well as proposed updates to existing JA13 language for residential buildings. Beginning in the summer of 2025, the Statewide CASE Team engaged with the PG&E WatterSaver program administrators who recommended updates to the residential code language in JA13 and conformance testing requirements.

In March of 2026, the Statewide CASE Team discussed updated JA13 language with PG&E and the WatterSaver program for the purposes of a comment letter. However, the Statewide CASE Team's discussions with the CEC soon after concluded that AB130 legislation would not permit language changes to JA13 and that instead the Statewide CASE Team should incorporate necessary requirements within the ACM credit language.

Incorporating the requirements within the ACM would have allowed the credit requirements to be updated as needed, enabling the credit to be more responsive to the market, which has expressed the need for updates.

In June of 2026, the Statewide CASE Team determined that the ACM is not meant to define product and installation requirements; it is meant to define modeling rules. The Statewide CASE Team determined that adding a conformance requirement to the JA13 HPWH Basic Control Credit would be the most effective pathway to ensuring equipment conformance.

Establish the need to include a conformance requirement within the ACM – JA13 HPHW Basic Control Credit

Feedback from program administrators, manufacturers and industry experts has illustrated the need to clarify existing JA13 language; however, AB130 does not allow code language updates affecting residential units in the 2028 cycle. To address the

needs of the market and improve program outcomes, grid stability and customer bill savings, the Statewide CASE Team proposes adding a requirement that projects select equipment meeting a conformance standard to the ACM – JA13 HPWH Basic Control Credit to ensure equipment conformance.

Stakeholder feedback has shown that relying on self-attestation for compliance credit is unintentionally resulting in unreliable conformance of the equipment response to the expectations of the credit language. A manufacturer may test their equipment in-house and observe that the equipment appropriately responds to a signal simulation and meets their interpretation of code requirements, but there is no opportunity for building owners/operators, utility programs, or aggregators to learn what the equipment response will be until after it is installed. Requiring projects to meet a conformance standard ensures the manufacturers, program administrators, and aggregators have confidence in the expected and achievable equipment responses.

Stakeholder feedback, supported by previous studies (Besson, A., Dirr, N., Liu, H., (2024). Heat Pump Water Heater Daily Load Shifting: Advanced Load Up and Evaluation Challenges) and discussions with research teams, detailed discrepancies with the accuracy of the projected kilowatt (kW) and kilowatt-hour (kWh) reduction of a load shed or demand response mode across tested equipment. Different manufacturers may rely on the compressor or electric resistance element's rated capacities to estimate reduction capabilities, while others may use in-house testing results. Some manufacturers may include on-board power meters to confirm load reduction. Requiring projects to meet a conformance standard will remove the variability in results and approaches so that all parties can be confident in how the values are determined and can make necessary changes if needed.

Need for a conformance standard

Although the benefits of a project meeting a conformance standard are detailed and understood by key stakeholders in the load shifting arena, the Statewide CASE Team has not identified a standard or conformance test for use. The Statewide CASE Team investigated multiple options including the CTA-2045 standard, Northwest Energy Efficiency Alliance (NEEA) standards, AHRI 1430 standards as well as Title 20.

2. Stakeholder Engagement to Inform Proposal

When developing this comment letter, the Statewide CASE Team worked with industry stakeholders including the PG&E program administrators of the WatterSaver program, the program implementor AEA, the PG&E codes and standards (C&S) team, experts in the load shifting arena including Helen Davis from Energy Solutions, Peter Grant from Berkeley Laboratory and Robert Bass from Portland State University, fellow C&S

research teams, two single family HPWH manufacturers (A.O. Smith, Rheem) as well as four central HWPH manufacturers (A.O. Smith, Rheem, Mitsubishi and Water Drop). The stakeholder engagement plan includes receiving feedback during a public stakeholder workshop at a future time if the proposed compliance credits advance to development.

Based on meetings with the industry stakeholders listed above it is clear that the JA13 HPWH Basic Control Credit language requires updates to address conformance needs. To meet industry and stakeholder needs, the Statewide CASE Team concluded that including a requirement to meet a future conformance standard is the best viable pathway for immediate action.

The Statewide CASE Team has had ongoing discussions with PG&E and the WatterSaver program administrator (AEA) since mid-2025 that have informed the need for a conformance standard requirement. WatterSaver has been in operation since 2022 and is slated to continue through the end of 2027. Both PG&E and AEA have deep experience operating a load shifting program and provided suggested JA13 conformance requirement improvements and definitions.

The need for a conformance standard requirement is also largely based on successful third-party load shifting field projects:

ACEEE

- Advancing Grid Sustainability: Heat Pump Water Heaters for Load Shifting in Commercial and Multifamily Applications

BPA

- Mitsubishi Heat2O Hot Water Load Shift Demonstration and Simulation Analysis: at Bayview Towers
- Demonstration and M&V: Commercial HPWH System using the Mitsubishi HEAT2O in Origin by Steffes Plug-and-Play Package at Bayview Tower, Seattle WA
- Lochinvar Veritus HPWH Feasibility Study and Applications Testing

SCE Codes and Standards

- Impacts of Flexible Demand Events by Residential Heat Pump Water Heaters in San Joaquin Valley | ETCC

CalNEXT

- Commercial and Multifamily CO2 Heat Pump Water Heater Market Study and Field Demonstration
- Central Heat Pump Water Heater Controls Optimization

Packaged Central CO2 Heat Pump Water Heater Multifamily Demonstration

3. Proposed Code Language

3.1 Guide to Markup Language

The proposed changes to the ACM Reference Manual are provided below. Changes to the 2025 documents are marked with dark blue underlining (new language) and ~~strikethroughs~~ (deletions).

3.1.1 Nonresidential and Multifamily ACM Reference Manual

6.3 Heat Pump Water Heater Load Shifting

Any HPWH installed in multifamily buildings three habitable stories or less, which is compliant with Reference Appendices, Joint Appendix JA13 and XX[1] conformance standard will receive LSC credit in each climate zone according as shown in Table 22: JA13 HPWH Basic Control Credit. The LSC percentage reduction is applied upon the completion of the compliant simulation run. Note that this percentage reduction only applies to the long-term system cost (LSC) values for water heating.

Table 22: JA13 HPWH Basic Control Credit

Climate Zone	Credit
1	6.7
2	3.7
3	7.6
4	4.0
5	8.5
6	6.8
7	8.8

[1] This XX placeholder is intentional. The Statewide CASE team proposes that a TBD future conformance standard be a requirement for obtaining the JA13 HPWH Basic Control Credit.

Climate Zone	Credit
8	4.4
9	4.4
10	4.4
11	4.2
12	4.7
13	8.0
14	3.1
15	8.2
16	22.7