

DOCKETED

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2022 T24 California Energy Code Update Rulemaking

Additional submitted attachment is included below.



June 21, 2021

Payam Bozorgchami
California Energy Commission (CEC)
1516 9th Street
Sacramento, CA 95814

RE: Docket No. 21-BSTD-01, 2022 Energy Code Update Rulemaking

Dear Mr. Bozorgchami:

On behalf of Bradford White Corporation (BWC), thank you for providing an opportunity to comment on docket 21-BSTD-01, 2022 Energy Code Update Rulemaking.

BWC is an American-owned, full-line manufacturer of residential, commercial, and industrial products for water heating, space heating, combination heating, and water storage. In California, a significant number of individuals, families, and job providers rely on our products for their hot water and space heating needs. As a manufacturer of water and space heating products, we have made substantial investments in products that provide significant energy and environmental benefits, such as heat pump water heater (HPWH) technology and Ultra Low NO_x gas water heaters. As a testament to these efforts, our company was recognized as a 2021 ENERGY STAR® Partner of the Year.

We thank the CEC for their diligence in the pre-rulemaking workshops, the 2022 Energy Code Express Terms, and the 2022 Energy Code Update Rulemaking. BWC makes the following recommendations and comments.

Section 150.0(j)1 and 160.4(f) Insulation for Piping and Tanks

The Energy Policy and Conservation Act (EPCA) amended Public Law 94-163 (42 U.S.C. 6291-6317, as codified), among other things, which authorizes the Department of Energy (DOE) to regulate the energy efficiency of a number of consumer products, commercial, and industrial equipment. Federal energy efficiency requirements for covered products listed under EPCA are subject to the energy efficiency standards and test procedures established by EPCA.

BWC alerts the CEC to the aforementioned energy efficiency requirements established under EPCA, as the Express Terms for 2022 Update to Energy Code references a regulation to impose an energy efficiency minimum for unfired hot water storage tanks (UFHWST) that exceeds the energy efficiency standards established by EPCA. UFHWST's federal energy conservation standard requires a thermal resistance of R-12.5; California states UFHWST shall be externally

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wrapped with insulation having an installed thermal resistance of R-4 or greater. To our knowledge, no other equipment with federal energy efficiency standards is handled in this manner in Title 24. CEC's mandatory requirement exceeds a federal requirement by a significant amount. In addition, it begs the following questions:

- What research and analysis did CEC complete to determine that wrapping a UFHWST with R-4 insulation is a mandatory requirement?
- Has CEC evaluated the stored temperature of the service hot water to the additional thermal resistance of the insulation? The current code language requires an UFHWST storing service hot water at 140°F to have the same insulation requirements as an UFHWST storing service hot water at 180°F.

Subchapter 11 Multifamily Buildings – Performance and Prescriptive Compliance Approaches **Section 170.2(d) Water Heating Systems**

BWC appreciates California's shift towards a HPWH baseline for Hotel/Motel Occupancies with the 2022 Energy Code and that Section 170.2(d) preserves options for mixed-fuel solutions.

During the California Title 24 Building Energy Efficiency Standards hearings on 5/24, 5/27, and 5/28, the following questions were raised regarding HPWHs:

Are multi-family requirements going to allow individual HPWH units with compressors within conditioned space (integrated compressor type HPWHs)? If so, have the CASE teams fully considered the impact of having a large air-conditioner in conditioned space in small apartments year-round and the impact this configuration has on both the HPWH system efficiency and ASHP [air source heat pump] efficiency?

To summarize, CEC's response was to not address installation requirements of an individual HPWH in multi-family and defer to the designer. We believe CEC's approach should be similar regarding central HPWH systems serving multiple dwelling units; however, CEC has laid out installation requirements for 170.2(d)2, which are overly prescriptive. We believe CEC had good intentions with the requirements of 170.2(d)2 as HPWHs, especially central HPWHs, are a relatively new technology. It is critical that plumbers and installers receive the necessary training regarding proper sizing, installation, troubleshooting, and maintenance of central HPWHs.

We recommend that CEC should defer the proper sizing, installation, troubleshooting, and maintenance of central HPWHs to the manufacturers of central HPWHs. The overly prescriptive requirements are restrictive and limit improvements in known and unknown technologies. In addition, we recommend modifying 170.2(d)2 to read as follows:

"2. For heat pump water-heating systems serving multiple dwelling units, the water heating system shall be installed according to the manufacturer design and installation guidelines and meet the following requirements:

- A. A recirculation system
- B. Design documentation shall be provided in accordance with JA14.4."

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Appendix JA13 – Qualification Requirements for Heat Pump Water Heater Demand Management Systems

Per Section 1.2.1 of ASSE 1084, “This water heater is intended to supply tempered water at point of use in order to reduce the risks of scalding.” These devices limit water temperature to a maximum of 120°F. A water heater listed to ASSE 1082, per Section 1.2 of the standard “is for water heaters that control the outlet temperature to specific limits and are installed within the hot water distribution system but not at point-of-use.” BWC points out the aforementioned, as JA13.3.1 Safety Requirements states, “A thermostatic mixing valve conforming to ASSE 1017 shall be installed on the hot water supply line following all manufacturer installation instructions or the water heater shall conform to UL 60730-1, ASSE 1082, or ASSE 1084.”

- Demand management functionality includes the advanced load up function. The system stores extra thermal energy, where some or all the tank may exceed the user’s setpoint temperature.
- Has CEC considered how a water heater listed to ASSE 1084 will function when it receives a call for hot water and the stored tank temperature is greater than 120°F +3°/-5° F? A water heater listed to ASSE 1084 shall be set to deliver a maximum water temperature of 120°F or less.
- California’s Self-Generation Incentive Program (SGIP) staff proposed basing the residential unitary HPWH on the energy storage capacity of a 50-gallon tank volume and a setpoint temperature of 135°F. A water heater listed to ASSE 1082 at >5 and <50 GPM flow rate and a maximum permissible variation from initial output temperature +/-5°F, could supply very hot water at 140°F with high scald potential.
- UL 60730-1, General Requirements for Automatic Electrical Controls, is a safety standard for electrical controls. This is a safety standard that water heaters listed to ASSE 1082 and ASSE 1084 shall comply; however, an appliance with a control complying with UL 60730-1 isn’t necessarily a water heater compliant with ASSE 1082 or ASSE 1084.

Appendix JA14 – Qualification Requirements for Central Heat Pump Water Heater Systems

BWC thanks CEC for removing the requirement of defrost strategy algorithm from JA14.3.2. We alert CEC that manufacturers of federally regulated products, including HPWHs, are prohibited from providing or publishing testing results to other test points other than those established by DOE. Therefore, CEC’s requirements are imposing requirements on manufacturers such that they would be conflicting with federal requirements. CEC must defer to the federal metrics and test procedures, which necessitates the following edits to JA14:

- JA14.3.1(a) – Strike “for each of the test conditions described in JA14.3.3”
- JA14.3.1(b) – Strike “to generate the performance data described in JA14.3.2”
- JA14.3.2 – Strike “The performance data shall be provided at the following conditions:
 - d) Inlet ambient air temperature: Maximum, minimum, and two midpoint temperatures of the manufacturer specified operating range.
 - e) Inlet water temperature: Maximum, minimum, and two midpoint temperatures of the manufacturer specified operating range.

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f) Outlet water temperature: Maximum, midpoint, and minimum of outlet water (setpoint) temperatures of the manufacturer specified operating range.”

- JA14.3.3 – Strike this entire section. The section is void, as the basic model test conditions are addressed via DOE’s regulations, as detailed in Appendix E to Subpart G of 10 CFR Part 431.

As previously stated, manufacturers of federally regulated products are prohibited from providing or publishing testing results to other test points other than those established by DOE. BWC also notes the additional test points will significantly increase the testing burden and cost for the central HPWH industry. In order to further reduce burden in this nascent market, we recommend CEC provide a standard credit for all central HPWHs, which are in compliance with the edits we have provided in Sections 170.2(d)2 and JA14.

Compliance to Energy Codes Using Federal Energy Efficiency Standards

BWC supports AHRI Comments on CEC Draft Staff Report - California Building Decarbonization Assessment, especially the following.

“Indeed, AHRI has expressed concern with CEC’s proposed approach to electrification of buildings through the removal of certain equipment types to meet Code through the prescriptive path. Indeed, there are federal preemption issues related to proposed changes to single family, multifamily, and non-residential sections regarding space heating, space cooling, and water-heating systems. These proposals have removed options for certain equipment with federal energy efficiency standards to comply with the energy code using the prescriptive pathway. With these proposals, CEC is considering the prescriptive and performance pathways to be separate; however, they are not severable. The prescriptive path sets forth specific requirements that HVAC systems and equipment must meet to comply with the Code if a building does not comply with the performance-based compliance paths. The concept of compliance to energy codes through multiple pathways using minimum efficiency equipment is a fundamental aspect of the Energy Policy and Conservation Act (EPCA). Equipment efficiency has increased dramatically under EPCA and has contributed significantly to the reduction of emissions.”¹

Given these concerns, BWC recommends the CEC to revise any proposed changes to the code, which are federally preempted, inclusive of Sections 150.0(j), 160.4(f), 170.2, JA13, and JA14 prior to adoption of the 2022 T24 California Energy Code. We recognize California’s efforts to increase building energy efficiency and the state’s Greenhouse Gas reduction goals, but we respectfully request that improvements in energy efficiency are done without conflicting with the requirements currently in place by the Department of Energy, including the prescribed test methods required, and energy efficiency minimums.

Thank you for continuing to include BWC and other stakeholders in the 2022 California Energy Code discussions. Bradford White Corporation thanks you for the opportunity to comment on Docket 21-BSTD-01. Please let me know if you have any questions, and we stand ready to work with the Commission moving forward.

¹ Air-Conditioning, Heating, and Refrigeration Institute, 6/11/2021, AHRI Comments on CEC Draft Staff Report - California Building Decarbonization Assessment, Docket # 19-DECARB-01, TN#238181

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Respectfully Submitted,

Bradford White Corporation

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