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Statewide CASE Team Comments on Solar Pool and Spa Heating 45-Day Express Terms

Additional submitted attachment is included below.

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Docket Number 24-BSTD-01

May 21, 2024

Introduction

The California Statewide Utility Codes and Standards Enhancement Team (Statewide CASE Team) presents recommendations in support of the California Energy Commission's (CEC's) efforts to update the Energy Code with new or updated requirements for various technologies. The three California Investor-Owned Utilities (IOUs) — Pacific Gas and Electric Company, San Diego Gas and Electric, and Southern California Edison — and two Publicly Owned Utilities — Los Angeles Department of Water and Power and Sacramento Municipal Utility District— sponsored this effort. The program goal is to submit proposals that result in cost-effective enhancements to improve energy efficiency, energy performance, and greenhouse gas (GHG) emissions reductions in California buildings.

This document presents the Statewide CASE Team's reactions to a comment that the Pool and Hot Tub Alliance (PHTA) and the California Pool & Spa Association (CPSA) submitted to the rulemaking docket on May 13, 2024 ([TN 256307](#)) with recommended revisions to the 2025 Building Energy Efficiency Standards, Title 24 Parts 1 and 6, Express Terms, 45-day Language (45-Day Express Terms).¹

Heat Pump Pool Heating Supplementary Controls

The Statewide CASE Team supports cost-effective and feasible updates to the building code that assists in achieving California's GHG reduction targets. This requires code requirements that are easily understandable and enforceable. PHTA and CPSA have identified that, as currently proposed, the heat pump pool heater controls requirements in Section 110.4(c)2 reference Section 110.2(b) which is for space conditioning

¹ The Pool and Hot Tub Alliance comments from May 13, 2024 (TN 256307) are available for download here: <https://efiling.energy.ca.gov/GetDocument.aspx?tn=256307&DocumentContentId=92123>

equipment. Further, the current code language requires the reader to choose what requirements of section 110.2(b) apply to heat pump pool heating systems.

Our review of the proposed code language coupled with our background knowledge of the proposal, we understand that the intent is to control supplementary heating systems in accordance with Sections 110.2(b)1 and 110.2(b)2. This control requirement clearly defines that the primary heating system is indeed primary. Supplemental heating is controlled to supplement the primary system when loads cannot be met by the primary heating system. Though the control requirement is clearly stated in Sections 110.2(b)1 and 110.2(b)2, we find it confusing to send the reader to the space conditioning section.

We recommend that the intent of the supplemental heating controls for pool heating contained in the 45-Day Express Terms can be more clearly stated by copying the control requirements contained in Sections 110.2(b)1 and 110.2(b)2 into Section 110.4 for pool heating. Sample code language is shown at the end of this document.

We also recommend that a consistent terminology be used between Section 110.2 and 110.4 with reference to the additional heat source that is supplementing the primary heat source. Section 110.2 uses the term supplementary heating. The term backup heating is considered to mean the same thing, but there can be a nuance to the term. A back-up source might be a source that is available when the primary system is broken. For space heating, the “emergency” use of resistance heating is enabled by a manual control to limp through cold weather while the heat pump is being repaired. The automatic control of supplemental heat is intended to be used only when the heat pump cannot meet the total heating load. The same control approach is recommended for resistance electric or gas supplemental heat supporting a heat pump pool heater.

Marked-Up Code Language

The formatting of the proposed code language uses single underline and ~~single strikethrough~~ fonts to represent the changes as presented in the 45-Day Express Terms. Our proposed revisions to the 45-Day Express Terms are delineated with additions in red underlining and deletions in red ~~strikeouts~~.

Section 110.4 – Mandatory Requirements For Pool And Spa Systems And Equipment

...

(c) Heating Source Sizing. Heating systems or equipment for pool and/or spa shall meet the sizing requirements of 1, 2, or 3 below:

1. A solar pool heating system with a solar collector surface area that is equivalent to the following:

- A. For nonresidential and multifamily buildings, 65 percent or greater of the pool and/or spa surface area.
- B. For single family buildings, 60 percent or greater of the pool and/or spa surface area;
or
- 2. A heat pump pool heater as the primary heating system that meets the sizing requirements of Reference Joint Appendix JA16.3. ~~The control for the heat pump pool heater shall meet the requirements specified in section 110.2(b).~~The ~~backup supplementary~~ heater can be of any energy source, or
- 3. A heating system that derives at least 60 percent of the annual heating energy from on-site renewable energy or on-site recovered energy.

Exception 1 to Section 110.4(c): Portable electric spas compliant with the Appliance Efficiency Regulations.

Exception 2 to Section 110.4(c): Alterations to existing pools and/or spas with existing heating systems or equipment.

Exception 3 to Section 110.4(c): A pool and/or spa that is heated solely by a solar spool heating system without any ~~backup supplementary~~ heater.

Exception 4 to Section 110.4(c): Heating systems which are used exclusively for permanent spa applications in existing buildings with gas availability.

Exception 5 to Section 110.4(c): Heating systems which are used exclusively for permanent spa applications where there is inadequate solar access for a solar pool heating system to be installed.

(d) Controls for heat pump pool heaters with supplementary heating. Heat pump pool heaters with supplementary heaters shall have controls:

- 1. That prevent supplementary heater operation when the heating load can be met by the heat pump pool heater alone; and
- 2. In which the cut-on temperature for compression heating is higher than the cut-on temperature for supplementary heating, and the cut-off temperature for compression heating is higher than the cut-off temperature for supplementary heating.