

DOCKETED	
Docket Number:	25-BSTD-03
Project Title:	2028 Energy Code Pre-Rulemaking.
TN #:	269467
Document Title:	George Cavinta Comments - CPSA & PHTA Comments on the "Solar Heating for an Existing Pool and Spa" CASE Proposal – 2028 Title 24, Part 6 Code Cycle
Description:	N/A
Filer:	System
Organization:	George Cavinta
Submitter Role:	Public
Submission Date:	4/13/2026 12:41:59 PM
Docketed Date:	4/13/2026

*Comment Received From: George Cavinta
Submitted On: 4/13/2026
Docket Number: 25-BSTD-03*

CPSA & PHTA Comments on the “Solar Heating for an Existing Pool and Spa” CASE Proposal “ 2028 Title 24, Part 6 Code Cycle

Additional submitted attachment is included below.



California Pool & Spa Association
915 L Street, Suite 1100
Sacramento, CA 95814-3705
916-447-4113 | www.thecpsa.org



Pool & Hot Tub Alliance
1650 King Street, Ste. 602
Alexandria, Virginia 22314
703-838-0083 | www.phta.org

April 13, 2026

Melissa Schellinger Gutiérrez
Energy Solutions
mgutierrez@energy-solution.com

Sean Steffensen
Energy Solutions
ssteffensen@energy-solution.com

cc: info@title24stakeholders.com

Subject: Comments on the “Solar Heating for an Existing Pool and Spa” CASE Proposal – 2028 Title 24, Part 6 Code Cycle

Dear Ms. Gutiérrez and Mr. Steffensen,

On behalf of the California Pool and Spa Association (CPSA) and the Pool & Hot Tub Alliance (PHTA), we appreciate the opportunity to provide comments on the updated draft CASE addendum for nonresidential pool and spa heating as part of the 2028 Title 24 code cycle.

We recognize and appreciate the significant evolution of the proposal in response to stakeholder feedback, particularly the revisions discussed at the March workshop. These updates—including reduced solar sizing requirements, expanded modeling assumptions, and the introduction of a condensing gas compliance pathway—represent meaningful progress toward a more flexible and implementable framework.

However, despite these improvements, the proposal as currently structured still raises significant concerns regarding feasibility, cost, and real-world implementation in existing facilities.

Solar Feasibility in Retrofit Applications

CPSA and PHTA appreciate the adjustment of reducing solar collector sizing assumptions from approximately 65 percent to 40 percent of pool surface area, which reflects stakeholder input and real-world limitations related to available roof space. However, solar feasibility in existing facilities remains constrained by a range of factors beyond collector sizing alone.

In many retrofit scenarios, roof space is limited, structurally constrained, shaded, or otherwise unsuitable for solar installation. Even where sufficient surface area exists, practical limitations such as structural capacity, roof condition, and competing uses for available space can limit implementation. In addition, the physical separation between pool equipment and viable collector locations often requires trenching, additional piping, and system redesign, increasing both project cost and complexity.

Additionally, solar thermal systems often require substantial auxiliary infrastructure, including additional pumps to circulate water between collectors and pool systems. These pumps can consume significant energy, raising questions about whether solar installations deliver net energy savings in practice. Operators

have also indicated that, in some cases, installed solar systems are rarely used due to operational inefficiencies or limited performance, effectively functioning as duplicative systems rather than primary heating solutions.

While the revised sizing assumptions improve theoretical feasibility, they do not fully address these underlying constraints. As a result, it is critical that the proposal ensure compliance pathways remain viable in cases where solar is only partially feasible—or not feasible at all—due to common site conditions in retrofit applications.

Solar Thermal as a Supplemental Technology

Solar thermal systems can reduce overall energy demand by maintaining higher baseline water temperatures, but they are not capable of consistently meeting operational temperature requirements on their own, particularly for facilities such as swim schools, therapy pools, and spas that require elevated and tightly controlled temperatures.

In practice, most facilities will continue to rely on a supplementary heating system to meet operational demands. In retrofit applications, this dynamic can result in dual-system configurations, requiring both a solar installation and a conventional heating system. These configurations increase capital costs, introduce operational complexity, and create additional space and infrastructure constraints.

Real-world experience from facility operators indicates that solar systems are frequently underutilized or bypassed entirely due to performance limitations, reinforcing that they function as supplemental—rather than primary—heating systems in practice.

For many public, school, and nonprofit operators, these combined requirements are not economically feasible. Capital decisions are typically driven by near-term affordability rather than long-term projections and requiring duplicative systems may delay necessary equipment replacement or limit the ability of facilities to maintain operations.

Condensing Gas Compliance Pathway

CPSA and PHTA appreciate the CASE Team's discussion during the March workshop of a condensing gas compliance pathway as part of the evolving proposal. As described, this pathway is intended to function as a standalone compliance option independent of solar feasibility or Solar Access Roof Area (SARA) constraints.

Providing a clear and independent compliance pathway of this nature is critical for retrofit applications. High-efficiency condensing gas systems offer meaningful performance improvements over conventional gas heaters while avoiding many of the site and infrastructure limitations associated with solar and heat pump systems.

Feedback from operators of large, high-use aquatic facilities consistently indicates that high-efficiency gas systems remain the only technology currently capable of reliably meeting operational demands. These systems provide rapid heating, operational flexibility, and consistent performance across varying environmental conditions. For facilities operating extended hours and serving high volumes of users, the ability to quickly reach and maintain required temperatures is critical and cannot be replicated by current alternative technologies.

Even so, it is concerning that this pathway is not yet clearly reflected in the draft proposal language. To ensure that the intended flexibility is realized in practice, the final proposal should explicitly codify

condensing gas as a full and independent compliance option, rather than a secondary or conditional alternative.

Cost-Effectiveness and Real-World Decision-Making

While the draft addendum concludes that the proposal is cost-effective over a 30-year analysis period, this lifecycle framework does not align with how most facility operators evaluate capital investments. Public agencies, schools, and nonprofit organizations typically operate under constrained budgets and must prioritize projects based on near-term affordability and operational necessity.

The current analysis does not appear to fully capture key cost drivers associated with retrofit projects, including electrical upgrades, structural modifications, trenching and piping, and operational disruptions during installation. These factors can materially increase total project costs and affect feasibility.

Operational Realities Not Reflected in Modeling

Aquatic facilities operate under unique and energy-intensive conditions that are not fully captured in current modeling assumptions. Large public facilities often operate extended hours and rely on continuous circulation and heating systems. In many cases, facilities must also manage competing temperature demands, including the need to cool pools during warmer months to meet competition standards.

Operators emphasized that energy use should be evaluated based on real-world system performance, including runtime and operational efficiency. High-efficiency gas systems may operate for shorter durations to achieve target temperatures, while electric systems may require longer or continuous operation to maintain those same conditions. These dynamics raise important questions about whether modeled energy savings align with actual usage patterns.

In addition, the CASE Team has indicated that it continues to seek stakeholder input on key assumptions, suggesting that the analysis remains under development. Cost-effectiveness conclusions should be revisited once assumptions are validated and aligned with real-world conditions.

Heat Pump System Constraints

Heat pump pool heaters are included as a compliance pathway, but their application in retrofit scenarios presents significant challenges.

These systems can require substantial electrical capacity, often necessitating panel or service upgrades that increase both project costs and timelines. Larger or higher-temperature pools may require multiple units to meet operational demand, increasing equipment costs and space requirements.

Stakeholder input from large municipal aquatic facilities indicates that heat pump systems are not currently viable at scale. Heating a single large competition pool could require an impractically large number of units and a significant physical footprint, making deployment infeasible in many real-world settings.

In addition, performance is highly dependent on ambient temperature and humidity. During colder periods, heat pumps may not generate sufficient heat, while coastal conditions can further reduce efficiency. These systems also lack the ability to rapidly heat pools, limiting operational flexibility.

Recognizing these constraints will be critical to ensuring that compliance pathways are both technically feasible and economically realistic.

Insurance and Risk Implications

In addition to the significant upfront capital costs associated with retrofit compliance, the proposal raises important and currently unexamined questions regarding insurance coverage and long-term risk exposure.

The installation of rooftop solar systems may introduce new structural and liability considerations that can affect property insurance requirements. In many cases, solar installations necessitate roof modifications or reinforcements, which may trigger higher premiums, additional underwriting scrutiny, or limitations on coverage depending on the insurer and facility risk profile.

Similarly, the requirement that heat pump water heaters be installed outdoors introduces additional exposure to theft, vandalism, and environmental damage. Unlike traditional indoor systems, these units are more accessible and vulnerable, particularly in commercial or publicly accessible environments. This increased exposure may result in higher insurance premiums, increased deductibles, or the need for supplemental coverage.

These insurance-related costs have not been accounted for in the current cost-effectiveness analysis. Given the already challenging insurance market in California — particularly for property-related risks — these additional requirements may further complicate coverage availability and affordability for facility operators.

At a minimum, a comprehensive evaluation of insurance implications should be included in the analysis to fully capture the total cost and risk profile of the proposal.

SARA Exception and Broader Feasibility Considerations

CPSA and PHTA support maintaining the Solar Access Roof Area (SARA) exception as an important safeguard for sites that lack sufficient solar access. However, solar access alone does not determine overall feasibility.

Facilities may meet SARA thresholds while still facing significant constraints related to structural capacity, equipment layout, or financial limitations. Expanding the exemption framework to account for broader feasibility considerations would help ensure that the code can be applied more consistently and practically across a wide range of facility types and conditions.

Application of Requirements to New Construction

As seen throughout this comment, CPSA and PHTA support many of the considerations in the most recent CASE report. This effective compromise that meets the needs of pool and spa operators, designers, builders, and the people of California, raises the possibility that these same requirements, exemptions, and exceptions could easily be applied to the existing 2025 Title 24 Energy Code requirements for new construction projects. The CASE report also reflects similar work being done in the International Code Council (ICC) 2027 International Energy Conservation Code (IECC) update, as well as a parallel proposal being considered for ASHRAE 90.1 2028.

Having the same requirements for both retrofit and new construction projects in California and aligning them as much as possible with the above two standards will help make for a coherent baseline, will reduce the ability of permit applicants to attempt to “game” the system in how they describe their project, and will also reduce possible confusion resulting from different and complicated requirements depending on project type and scope. CPSA and PHTA support this needed simplification.

Impacts on Community Facilities

CPSA and PHTA remain concerned that, without further refinement, the proposal could have unintended consequences for community-serving facilities. Increased costs and implementation challenges may result in delayed heater replacements, reduced operating hours, or, in some cases, facility closures.

Many of the pools affected by this proposal provide essential public health and safety services, including swim instruction, rehabilitation programs, and community recreation. Ensuring continued access to these facilities is a paramount consideration, tied as it is to public health and safety outcomes. Maintaining the operational viability of these facilities should remain a key consideration as the proposal is finalized. An exemption for swim schools and the other types of facilities listed above would have a minimal impact on California's desired energy conservation and greenhouse gas emission outcomes and allow these types of facilities to continue to serve their communities.

Technology Readiness and Risk of Counterproductive Outcomes

While CPSA and PHTA support continued progress toward more energy-efficient technologies, current alternatives are not yet ready for large-scale aquatic applications.

Advancing requirements ahead of technological readiness risks unintended consequences, including systems that fail to meet performance expectations, increased operational challenges, and reduced compliance. Ensuring that code requirements align with proven, scalable technologies will be critical to achieving intended outcomes.

CPSA and PHTA appreciate the progress made to date and the CASE Team's continued engagement with stakeholders. The revisions incorporated thus far represent meaningful steps toward a more workable framework.

However, additional refinements are necessary to ensure that the proposal is technically feasible for retrofit applications, economically realistic for facility operators, and sufficiently flexible to accommodate site-specific constraints. In particular, clearly defined compliance pathways and careful consideration of real-world installation conditions will be critical to successful implementation.

We respectfully encourage the CASE Team and the California Energy Commission to continue working with stakeholders to address these issues prior to finalizing the proposal and welcome the opportunity for continued engagement.

Sincerely,



John Norwood
Norwood Associates, LLC
(for CPSA)
jnorwood@nalobby.net



Gregory Ceton
Senior Director, Standards and Codes
Pool and Hot Tub Alliance (PHTA)
gceton@phta.org