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CPSA & PHTA Comments on the Final CASE Report “Solar Heating for an Existing Pool and Spa (2028 Title 24 Building Energy Efficiency

Additional submitted attachment is included below.



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July 17, 2026

David Hochschild, Chair
California Energy Commission
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Cc: Vice Chair Siva Gunda, Commissioner Andrew McAllister, Commissioner Noemí Gallardo, and Commissioner Nancy Skinner

CEC Docket Number: 25-BSTD-03

Project Title: 2028 Energy Code Pre-Rulemaking

Subject: Comments on the Final CASE Report – Solar Heating for an Existing Pool and Spa (2028 Title 24 Building Energy Efficiency Standards)

Dear Chair Hochschild and Commissioners:

On behalf of the California Pool & Spa Association (CPSA) and the Pool & Hot Tub Alliance (PHTA), we appreciate the opportunity to provide comments on the Final Codes and Standards Enhancement (CASE) Report for the proposed Solar Heating for an Existing Nonresidential Pool and Spa measure as part of the 2028 Title 24 Building Energy Efficiency Standards update. We also appreciate the continued engagement of the CASE Team and the California Energy Commission (CEC) throughout this process and the willingness to incorporate stakeholder feedback into the proposal. The proposal has evolved significantly from its initial concept, and we appreciate the modifications made in response to concerns raised by pool operators, designers, builders, and other stakeholders.

In particular, we appreciate the inclusion of a standalone condensing gas heater compliance pathway, and the continued recognition that certain facilities may lack adequate solar access. These changes represent meaningful improvements and demonstrate the value of stakeholder engagement.

However, despite these improvements, CPSA and PHTA remain concerned that the proposal, as currently structured, raises significant questions regarding feasibility, cost, and the potential impacts on community-serving aquatic facilities throughout California.

Existing Community Pools Present Unique Challenges

Unlike new construction, this proposal applies to existing pools and spas that were not originally designed to accommodate solar thermal systems or large-scale heat pump installations. Existing facilities often face site-specific constraints that make compliance significantly more challenging than the modeling assumptions suggest.

Many facilities have:

- Limited or unsuitable roof space;

- Structural limitations that preclude rooftop installations;
- Significant distances between pool equipment and viable collector locations;
- Electrical systems that would require costly upgrades;
- Insufficient space to accommodate multiple heat pump units; and
- Operational limitations that make major retrofits difficult or impossible.

Although the proposal includes a Solar Access Roof Area (SARA) exception, solar access alone does not determine feasibility. A facility may have adequate solar access while still lacking the structural capacity, equipment space, or financial resources necessary to implement the required upgrades.

Accordingly, we encourage the Commission to consider broader feasibility exemptions that account for real-world retrofit conditions rather than relying solely on solar access determinations.

Solar Thermal Systems Are Supplemental Technologies

Solar thermal systems can reduce overall energy demand and help maintain baseline water temperatures, but they are not capable of consistently meeting the operational requirements of many commercial aquatic facilities on their own.

Certain facilities, including swim schools, therapy pools, and rehabilitation programs, must maintain water temperatures substantially above those of standard recreational pools and require precise temperature control that solar thermal systems alone cannot consistently achieve. As a result, supplemental heating systems will remain essential.

The effect of this would be to require many facilities to install and maintain dual-system configurations consisting of both a solar installation and a conventional heating system. These configurations increase capital costs, introduce additional operational complexity, and create significant space and infrastructure challenges.

Operators have also reported that some installed solar systems are underutilized or bypassed entirely because of performance limitations, reinforcing that solar thermal systems frequently function as supplemental technologies rather than primary heating systems in real-world applications.

Heat Pumps Are a Valid but Site-Dependent Compliance Option

CPSA and PHTA recognize that heat pump pool heaters are a valid and effective compliance option where site conditions, electrical capacity, equipment space, climate, and operational needs support their use. We support retaining heat pumps as one of several available pathways.

For existing facilities, however, feasibility varies considerably. Heat pump pool heaters may require substantial electrical capacity, with some installations requiring between 50 and 200 amps of additional electrical service and larger facilities potentially requiring even greater capacity. Multiple units may also be necessary to meet the heating demands of larger pools, resulting in substantial equipment footprints and space requirements.

Heat pump performance can also decline in colder temperatures and certain climate conditions, and these systems may not provide the rapid heating and recovery times required by some commercial aquatic facilities.

These constraints do not diminish the value of heat pumps where conditions support their use, but they demonstrate why no single technology can serve every existing-facility retrofit and why flexible, independent compliance pathways remain necessary.

Cost Assumptions Continue to Understate Real-World Expenses

The Final CASE Report and workshop materials estimate incremental first costs of approximately \$19,640 for a standard 60,000-gallon pool and approximately \$113,940 for an Olympic-sized pool. These costs alone are significant and may be prohibitive for many public agencies, nonprofits, swim schools, and community aquatic facilities.

Moreover, these figures still do not appear to fully account for numerous additional expenses commonly associated with retrofit projects, including:

- Structural upgrades and roof reinforcement;
- Trenching and piping;
- Electrical service and panel upgrades;
- Permitting and engineering costs;
- Operational disruptions during construction;
- Insurance impacts; and
- The costs associated with maintaining backup heating systems.

Public agencies, schools, nonprofits, and small businesses generally evaluate projects based on near-term affordability and available capital budgets rather than long-term lifecycle analyses. For many operators, these costs could delay needed heater replacements or make compliance economically infeasible.

Real-World Operations Differ from Modeling Assumptions

The proposal's analysis relies upon several assumptions regarding pool operating schedules, heating demands, and equipment performance. However, aquatic facilities throughout California operate under highly varied conditions that are difficult to capture through statewide modeling assumptions.

Many facilities:

- Operate extended hours;
- Maintain elevated temperatures for instructional and therapeutic uses;
- Serve different populations with unique operational needs;
- Require rapid temperature recovery; and
- Experience highly variable occupancy patterns and climate conditions.

These real-world conditions may significantly affect both energy consumption and equipment performance and raise important questions regarding whether projected energy savings accurately reflect actual operating conditions.

Potential Impacts on Community Facilities and Public Access

Our greatest concern remains access and the resulting implications for pool and water safety.

CPSA and PHTA support practical and cost-effective efforts to improve energy efficiency and reduce greenhouse gas emissions. At the same time, pool and water safety are core pillars of our associations'

missions. Reliable access to properly heated aquatic facilities is essential to swim instruction, drowning-prevention education, lifeguard training, and other programs that equip Californians with life-saving water safety skills. Energy-efficiency requirements should therefore be structured so they do not unintentionally reduce access to the facilities and programs that advance these critical public safety objectives.

Community pools throughout California are already struggling with rising operational costs, aging infrastructure, and increasing maintenance expenses. Additional equipment mandates and retrofit requirements could force some operators to delay needed upgrades, reduce programming, shorten operating hours, or, in some cases, close facilities altogether.

These facilities provide essential public services, including:

- Swim lessons and water safety education;
- Rehabilitation and therapeutic services;
- Senior and youth recreation programs;
- Community gathering spaces that promote health and wellness; and
- Aquatic programming that supports public health and safety objectives.

Many of these same facilities also provide programs that serve vulnerable populations and communities that already face barriers to accessing aquatic facilities. Reductions in pool access could therefore have unintended consequences that extend well beyond energy policy considerations.

The Commission should carefully consider whether the projected energy and greenhouse gas reductions associated with this proposal justify the potential impacts on facilities that provide essential community services.

High-Efficiency Gas Systems Remain an Essential Compliance Option

CPSA and PHTA appreciate the inclusion of a standalone compliance pathway for condensing gas pool heaters. However, we recommend revising the proposed minimum thermal efficiency from 94 percent to 90 percent. A 90 percent threshold would align with the efficiency level reflected in the 2027 International Energy Conservation Code development process and the proposed ASHRAE Standard 90.1 addendum, providing greater consistency for manufacturers, designers, installers, and facility operators. The Final CASE Report models a 94 percent heater but does not clearly identify the technical or market basis for selecting 94 percent rather than 90 percent.

Feedback from operators of large commercial aquatic facilities consistently demonstrates that high-efficiency gas systems remain the only technology currently capable of reliably meeting operational demands in many settings while still increasing efficiency and reducing greenhouse gas emissions compared with traditional gas pool heaters.

These systems provide:

- Rapid heating and recovery;
- Operational flexibility;
- Reliable performance across varying climate conditions; and
- Compatibility with existing infrastructure.

CPSA and PHTA understand the proposed language to mean that a covered nonresidential pool relying solely on gas heating would be required to install a condensing gas heater meeting the specified efficiency

threshold when replacing an existing heater, unless an exception applies. A non-condensing gas heater would remain permissible only as a supplemental source under another compliance pathway. We request that the Commission confirm this interpretation and clearly explain how the requirement applies to gas-for-gas replacements and systems serving both a pool and spa.

Although the proposal principally applies to nonresidential pools, residential-type pool heaters subject to federal appliance-efficiency standards may sometimes be installed in nonresidential settings. CPSA and PHTA therefore request that the Commission evaluate and clarify whether applying a state-specific efficiency threshold to federally regulated equipment in those settings raises preemption concerns under the federal Energy Policy and Conservation Act.

Conclusion

As mentioned in our previous communications, CPSA and PHTA strongly support efforts to improve energy efficiency and reduce greenhouse gas emissions and have worked collaboratively for many years on energy code development, including California's existing pool heating requirements, the International Energy Conservation Code, and ASHRAE 90.1.

However, existing community aquatic facilities present unique challenges that warrant additional consideration.

Accordingly, we respectfully request that the Commission continue to work with stakeholders to further refine this proposal by:

- Preserving flexible and independent compliance pathways, including a standalone high-efficiency gas option, and revising the proposed gas-heater threshold from 94 percent to 90 percent to better align with national model-code development;
- Clarifying how the gas pathway applies to replacement heaters and combined pool-and-spa systems, and evaluating potential federal preemption concerns for federally regulated equipment used in nonresidential settings;
- Expanding exemptions to account for broader feasibility constraints and further evaluating real-world retrofit costs and operational impacts; and
- Ensuring that any future requirements do not unintentionally reduce access to community pools and aquatic programming.

We appreciate the Commission's continued engagement throughout this process and welcome the opportunity to continue working collaboratively to develop practical and cost-effective approaches that advance California's energy goals while preserving access to the community aquatic facilities that serve millions of Californians.

Sincerely,



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