

**DOCKETED**

<b>Docket Number:</b>	22-BSTD-01
<b>Project Title:</b>	2025 Energy Code Pre-Rulemaking
<b>TN #:</b>	249039
<b>Document Title:</b>	A. O. Smith Comments - Comments to 2025 Pre Rulemaking Multifamily DHW CASE Proposal Central HPWH Clean Up
<b>Description:</b>	N/A
<b>Filer:</b>	System
<b>Organization:</b>	A. O. Smith
<b>Submitter Role:</b>	Public
<b>Submission Date:</b>	3/3/2023 3:56:55 PM
<b>Docketed Date:</b>	3/3/2023

*Comment Received From: A. O. Smith  
Submitted On: 3/3/2023  
Docket Number: 22-BSTD-01*

**Comments to 2025 Pre Rulemaking Multifamily DHW CASE  
Proposal Central HPWH Clean Up**

*Additional submitted attachment is included below.*



March 3, 2023

California Energy Commission

Re: Docket #: 22-BSTD-01

Project Title: 2025 Energy Code Pre-Rulemaking

1516 Ninth Street

Sacramento, CA 95814

Email: Jingjuan “Dove” Feng - Dove Feng - [jfeng@trccompanies.com](mailto:jfeng@trccompanies.com)

Cc: [info@title24stakeholders.com](mailto:info@title24stakeholders.com)

**RE: A. O. Smith Comments to Multifamily Domestic Hot Water Codes and Standards Enhancement (CASE) Proposal - Central Heat Pump Water Heater Clean-up**

A. O. Smith appreciates the opportunity to submit comments on the 2025 proposals pertaining to central heat pump water heaters (CHPWHs) for domestic hot water in multi-family applications. More specifically, the California Energy Commission (CEC) is requesting feedback on a proposal from the 2025 Energy Code Pre-Rulemaking Codes and Standards Enforcement (CASE) team, which would make modifications to the prescriptive compliance pathway for CHPWHs systems as presented during the Utility Sponsored Stakeholder meeting on February 17, 2023 entitled “Multifamily Domestic Hot Water Codes and Standards Enhancement (CASE) Proposal - Central Heat Pump Water Heater Clean-up.” The Company’s comments are specific to that presentation by Dove Feng of TRC Companies.

**About A. O. Smith**

A. O. Smith Corporation, with global headquarters in Milwaukee, Wisconsin since 1874, applies technology and energy-efficient solutions to products manufactured and marketed worldwide with operations in the U.S., Canada, China, India, Mexico, the Netherlands, Turkey, and the UK. Listed on the New York Stock Exchange (NYSE: AOS), the company is one of the

world's largest manufacturers of residential and commercial water heating equipment and boilers, as well as a leading manufacturer of water treatment and air purification products. Along with its wholly owned subsidiaries, A. O. Smith is the largest manufacturer and seller of residential and commercial water heating equipment, high efficiency residential and commercial boilers, and pool heaters in North America.

## **Overview**

As presented, the 2025 Energy Code Pre-rulemaking multifamily domestic hot water systems topic covers measures related to hot water distribution, heat pumps systems, and electric readiness. The central HPWH clean-up proposal works off changes made in the 2022 code cycle, which created an alternate compliance pathway for central HPWH systems, which included prescriptive requirements including basic equipment, plumbing, control, and design documentation requirements to ensure minimum performance of the system.<sup>1</sup> As proposed, the 2025 code cycle measure would, among other things, amend the current prescriptive compliance pathway by allowing alternative domestic hot water (DHW) plant design and control approaches; develop requirements for single-pass and multi-pass equipment and encourage use of equipment with low-GWP refrigerant; and establish minimum system efficiency requirements leveraging the calculation process developed by the Northwest Energy Efficiency Alliance (NEEA)'s Advanced Water Heating Specification V8.0 for commercial HPWH systems.<sup>2</sup>

A. O. Smith appreciates the extensive work the CEC has done to date on incorporating heat pump water heating technology into the energy codes. The Company agrees with the CEC that central HPWHs will play a vital role in two key California policy priorities – reducing the carbon footprint of its buildings as California transitions its large installed base of gas-fired water heaters to electric as well as helping with demand side management. Consistent with that position, A. O. Smith has communicated to the CEC, as well as its sister agencies in the State, that the primary focus in decarbonizing domestic hot water in buildings should be on incentivizing broad market adoption of HPWH technology that is cost-effective, while providing sufficient time and space for manufacturer to innovate in bringing technologies to the marketplace. Specifying one type of technology and system design is, in A. O. Smith's view, counter-productive to broader market transformation. Notwithstanding its support of central HPWH technology options for the California market, A. O. Smith has concerns and questions with the CASE team central HPWH clean-up proposal as further explained below.

---

<sup>1</sup> <https://title24stakeholders.com/measures/cycle-2025/multifamily-domestic-hot-water/>

<sup>2</sup> Id.

## **System Design**

As a general position, A. O. Smith supports codes and standards that provide a level-playing field by which manufacturers can compete to offer products and systems that provide the underlying utility of the system (i.e., delivery of hot water), while also providing pathways to bring cost-effective and innovative products to their customers. As the CASE team appreciates, central HPWHs are larger systems that are typically custom designed by specifying engineers to support a specific commercial or multifamily application. However, the CASE team proposal if adopted without modification would, in the Company's view, tilt the playing field utilizing the prescriptive compliance pathway to central HPWHs that only use CO<sub>2</sub> as a refrigerant. This observation is based both on the "Primary path" and "Alternative path" proposals. Given that there is no legal requirement for central HPWH systems to use a particular type of refrigerant, the Company is confused as to why the CEC would – at this time – choose one system design and/or configuration over another given the nascent state of the central HPWH market.

A. O. Smith would recommend that the proposed Primary path allow for hot water circulation return to primary storage, which allow for more affordable and cost-effective central HPWH systems.

## **Alternative path – NEEA Advanced Water Heating Specification**

As proposed the CASE team proposal for the alternative pathway relies heavily on the system design configurations and system COPs ("SysCOP") that are outlined in the Northwest Energy Efficiency Alliance ("NEEA") Advanced Water Heating Specification ("AWHS") version 8.0, which became effective on March 1, 2022.<sup>3</sup> Specifically the alternative pathway would allow central HPWHs systems that are certified as meeting Tier 3 (e.g. SysCOP of 2.5) or higher in the AWHS and are on NEEA's qualified product list ("QPL"). In its presentation the CASE team referenced that the market share of central HPWH is relatively small, but that central HPWH installations are increasing.<sup>4</sup> A. O. Smith agrees with this assessment and would also point out that central HPWH systems were not included NEEA's AWHS version 7.0 Tier 3 specification a mere three years ago.<sup>5</sup> Since that time however, manufacturers have brought to market central HPWHs systems and are continuing to innovate. However, the dataset of central HPWH systems that meet AWHS v8.0 Tier 3 is severely limited as demonstrated by the CASE team presentation.<sup>6</sup> Moreover, central HPWH manufacturers, including A. O. Smith, have found anomalies with the Ecosim® commercial HPWH system modeling software when modelling system configurations with swing tanks and overall sizing, which may be impacting manufacturers' SysCOPs and therefore arbitrarily restricting central HPWH systems from meeting the Tier 3 SysCOP of 2.5.

A. O. Smith would recommend that Tier 2 of the NEEA AWHS version 8.0 under the proposed Alternative path replace Tier 3. This change would afford greater opportunity for

---

<sup>3</sup> Advanced Water Heating Specification Version 8.0—Commercial pp. 16-19.

<sup>4</sup> See Utility Sponsored Stakeholder Meeting on February 17, 2023, | Central HPWH, slide 15.

<sup>5</sup> See Advanced Water Heating Specification Version 7.0 (effective date June 30, 2020).

<sup>6</sup> See Utility Sponsored Stakeholder Meeting on February 17, 2023, | Central HPWH, slide 28.

alternative system configurations to be certified to NEEA's QPL, which would give multifamily developers more options for building designs and broaden central HPWH system choices and market adoption of the technology, while keeping consistent with the CEC's policy priorities of continuing to cost-effectively reduce the carbon footprint of new buildings in California.

### **Systems Costs**

A. O. Smith would welcome a dialogue with the CASE team regarding incremental first cost pricing of central HPWH system made during its presentation.<sup>7</sup> In both the Low-Rise Loaded Corridor and Mid-Rise Mixed Use (5-Story) pricing, our estimated design building pricing are 20 to 50% lower. Without knowing what central HPWH systems are being used for the preliminary first cost estimates it is difficult to discern where the pricing estimates came from.

### **Conclusion**

A. O. Smith appreciates the opportunity to provide comments in response to the T24 2025 Energy Code Pre-rulemaking Multifamily Domestic Hot Water Codes and Standards Enhancement (CASE) Proposal - Central Heat Pump Water Clean-up. Please feel free to contact me if you have questions and the Company stands ready to work with the Commission moving forward.

Best Regards,



Joshua C. Greene  
Corporate Vice President, Government, Regulatory, and Industry Affairs  
A. O. Smith Corporation  
Global Headquarters  
11270 West Park Place  
Milwaukee, WI 53224  
(301) 325-1315  
[jcgreene@aosmith.com](mailto:jcgreene@aosmith.com)

---

<sup>7</sup> See Utility Sponsored Stakeholder Meeting on February 17, 2023, | Central HPWH, slide 30.