

## DOCKETED

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**On Title 24, Part 6**

*Additional submitted attachment is included below.*



March 5, 2017

California Energy Commission  
Docket Unit, MS-4  
Re: Docket No. 17-BSTD-01  
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Re: Proposed Changes to the Building Energy Efficiency Standards in the California Code of Regulations, Title 24, Part 6 – “Title 24-2019 45 Day Express Terms and February Public Hearings [Docket No. 17-BSTD-02]”

Dear Mr. Ownby:

What follows is the submission of the A. O. Smith Corporation (“A. O. Smith”) in response to the Proposed Changes to the Building Energy Efficiency Standards in the California Code of Regulations, Title 24, Part 6 – “Title 24-2019 45 Day Express Terms and February Public Hearings [Docket No. 17-BSTD-02]”.

A. O. Smith is the largest manufacturer and seller of residential and commercial water heating equipment, including hydronic systems, in the United States with a history of manufacturing water heating and hydronic systems since 1938. It is with this considered experience that we welcome the opportunity to comment on the California Energy Commission’s (“Commission”) proposed changes under Title 24, Part 6 of the California Code of Regulations regarding building energy efficiency standards.

#### Overview

In general A. O. Smith is pleased to see that the Commission is, with its proposed amendments to the 2019 edition of Title 24, Part 6, embracing a more technology neutral approach as it relates to domestic water heating. More broadly A. O. Smith also supports the Commission’s focus on promoting energy efficiency in the built environment. A. O. Smith also observes that holistically speaking the proposed amendments are consistent with the Commission’s broader initiatives relating to the goal of making buildings zero-net-energy (ZNE) buildings. Two specific examples include the new requirement that all newly constructed low-

rise residential buildings have solar photovoltaic systems (“solar PV”) as well as the addition of highly efficient heat pump water heaters (“HPWH”) as a compliance option for both new construction and in replacement applications. Another example includes the ability to pair solar PV systems with on-site battery storage.

Notwithstanding these examples, the proposals addressing domestic water heating continues a pattern from the Commission that advantages the utilization of tankless and/or compact distribution water heating systems over storage tank technology of equal or greater efficiency. While A. O. Smith does offer these types of product offerings to its customers, it has maintained a fundamental position that the customer should make the ultimate decision on what type of water heating system is appropriate for their circumstances as opposed to regulations making that choice for them. A. O. Smith continues to be puzzled by Commission’s continued actions to structure its building codes to advantage a specific technology that is manufactured overseas, while placing domestic manufacturers at a disadvantage.

Finally, A. O. Smith is concerned that some of the amendments may be in direct conflict with federal law, which if adopted would lead to unnecessary and costly litigation and result in greater business uncertainty. Along those lines, as outlined more specifically below, A. O. Smith urges the Commission to reevaluate, and in some instances, revise or withdraw, some of its amendments with a focus on providing manufacturers, builders, and consumers with greater business certainty ahead of the proposed January 1, 2020 effective date of the proposed 2019 amendments.

#### Mandatory Features and Devices – Section 150.0

##### *150.0(j)(1)-(2)(A)(i-iii)*

In general A. O. Smith appreciates the value that pipe insulation provides in certain applications, however, making piping insulation of a certain size/thickness and lengths may have the effect of adding additional installation costs in excess of the minimal efficiency gain as well as slowing the delivery of new housing units when storage tank water heaters are utilized. Moreover A. O. Smith notes that the California Plumbing Code already requires piping insulation and therefore the Commission’s proposal may well conflict with those provisions.

##### *150.0(n)(1)(A)*

A. O. Smith is supportive of clarifying that a dedicated outlet be installed closer to the water heater. This action will assist in the transition and installation of water heating equipment that contains more advanced electronic controls, as well as allowing for future upgrades within a home to higher efficiency water heating equipment.

##### *150.0(n)(1)(D)*

While the requirement to install a gas supply line with a capacity of at least 200,000 Btu/hr is not a new requirement under the 2019 amendments, the provision is yet another example of a requirement that on its face advantages the installation of gas tankless water heaters. The size of a gas supply line, and the cost associated with its installation, should be made by the homeowner in conjunction with the builder. This is particularly true when products

of equal or greater efficiency can be installed on smaller gas lines requiring lower Btu inputs. California's building code should not continue to force all homeowners to subsidize the costs of installing a 200,000 Btu/hr gas supply line in homes.

### Performance Requirements – Sections 150.1

#### *150.1(b)(1) and Thermal Storage*

Under this Section, an offset is granted to the required solar electric generation system Energy Design Rating (“EDR”) to a permitted building if there is an approved community shared solar electric generation systems (“community solar”), or other renewable electric generation system paired with on-site battery storage. While A. O. Smith agrees with commenter Air-Conditioning, Heating, and Refrigeration Institute (“AHRI”) that thermal storage systems should receive parity with battery storage systems, A. O. Smith encourages the Commission to adopt a proposed specification for the utilization of grid-interactive electric water heating for load management to the 2019 amendments as outlined by commenter National Resources Defense Council (“NRDC”). There are a number of benefits to thermal storage programs including, but not limited to, greater energy efficiency, better integration of renewable energy resources onto the grid, as well as meaningful reductions to customers’ monthly electric bills, all at a much lower installed costs than battery storage. Under the NRDC proposal, an electric water heating system could qualify for a water heating load management credit(s) available in the compliance option for electric water heating systems using either resistive or heat pump technologies with load management and daily load shifting capabilities. There are more than two hundred electric distribution utilities that have demand response programs with water heaters, and several more, including investor-owned-utilities (IOUs) that have initiated load management programs with grid-interactive water heaters. A. O. Smith strongly recommends that the Commission adopt an incentive program that values thermal energy storage programs that utilize grid-interactive water heaters.

### Prescriptive Requirements – Section 150.1

#### *150.1(c)8.A(i, iii, and iv)*

A. O. Smith generally supports the Commission’s inclusion of electric heat pump water heaters (“HPWH”) as an alternative compliance option. A. O. Smith is not certain, however, in the legality of requiring the pairing of those products with solar PV systems in newly constructed low-rise buildings. Moreover, considering the Commission’s proposed amendment requiring that *“all low-rise residential buildings shall have a photovoltaic (PV) system meeting the minimum qualification requirements as specified in Joint Appendix JA11, with annual electrical output equal to the dwelling’s annual electrical usage”* (See 150.1(14)), A. O. Smith is unclear why the Commission would require that a HPWH be tied to a solar PV system in certain Climate Zones. The Commission has already recognized HPWHs as a highly energy efficient water heating technology. However, requiring that an installer pair it with a solar PV system would serve as a deterrent to builders sensitive to cost. A. O. Smith believes that the pairing of the solar PV requirement sends the wrong signal to the marketplace about the benefit of heat pump water heaters and again, takes choice out of the hands of builders, installers, and consumers to select from alternative technologies, all of which address the Commission’s objectives.

In addition, A. O. Smith is unclear why the requirement is also modified by the word “single” when in the amendment to 8(A)(i) the Commission modifies /contemplates “*One or more*” tankless water heaters. For certain homes a consumer may want and/or need to have one or more HPWHs or high efficiency storage tank type water heaters. This is another example of the Commission sending a market signal through the building code that advances the interest of one technology over another. A. O. Smith recommends the Commission eliminate the pairing requirement for HPWHs and solar PV systems in all Climate Zones; as well as provide parity to storage tank type water heaters (e.g. add “*One or more*” for storage water heaters or eliminate the modifier entirely).

#### *150.1(c)8.A(ii)*

Under this Section A. O. Smith questions both the legality of the proposed amendments as well as the policy rationale underlying it. Pursuant to the comments submitted by the Bradford-White Corporation as well as AHRI, A. O. Smith does not support the Commission’s proposal to eliminate from commerce in the State of California, gas or propane storage water heaters with inputs of 105,000 Btu per hour or less and rated storage volumes of less than 55 gallons. On its face this amendment is a quintessential case of the Commission taking consumer choice away and advancing one technology (e.g. tankless) over tank type water heaters. There are numerous highly efficient gas and propane water heaters below 55 gallons that fit the needs of many families in California. While the Commission rests its justification for this amendment on the Quality Insulation Installation (QII) requirement for all new low-rise buildings, that in no way justifies the prohibition of selling a certain category of water heating equipment that is compliant with federal law. A. O. Smith recommends the Commission simply eliminate the gallon size restriction.

In addition to the Section’s requirement as discussed above, the insertion of new criteria by which a storage tank water heater must comply versus a tankless water heater, is yet again another example of a structural (i.e. code) provision that advances the interest of one technology over another. Under the proposed amendment, storage tank water heaters would have additional installation requirements whereas tankless water heaters would not. As the Commission knows, compact hot water distribution systems, as defined in the Reference Appendix, have a bias toward point-of-use (i.e. tankless) hot water solutions given piping length restrictions. While a builder could certainly design a compact system that utilizes a storage tank water heater – and some may – taken together with other elements of Title 24 what incentive(s) do they have to do so? In addition, the amendment’s option regarding hot water piping insulation is equally curious given the Commission’s proposal under Section 150.0(j) regarding all piping insulation on cold water (from a storage tank) and hot water lines. If insulation is required why is this an option under (ii)? Lastly, and perhaps more confounding is the option to utilize a drain water heat recovery system (DWHR). A. O. Smith is well aware, and well versed on DWHR systems, which is a promising technology. However, in the United States this is a nascent technology, and given the Commission’s own findings on the number of installations in the State, it does not appear to be appropriate to include this option at this time in the 2019 amendments.<sup>1</sup> In addition, the CASE Report addresses a number of potential impediments to

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<sup>1</sup> See Drain Water Heat Recovery Requirement – CASE Final Report, July 2017 (Measure Number: 2019-RES-DHW2-F, p. 9)

the technology's adoption least of which is ensuring that the State's "greywater" regulations are harmonized with the proposed DWHR proposal and that statewide energy savings on the proposal were not calculated.<sup>2</sup>

Finally, A. O. Smith could not find in the Docket a single instance explaining why DWHR recovery systems should not be applied to tankless water heating systems. As commenter Bradford-White has pointed out, is the hot water draining from fixtures serviced from a tankless water heater less important than the hot water from a storage tank water heater? Again, this appears to be another example of a structural (i.e. code) provision that advances the interest of one technology over another and that may have the unintended consequence of advancing tankless water heating systems that would not be able, or required, to harvest drain heat recovery (counter to the policy rationale of the proposed option). Moreover, continued adoption of tankless water heating systems in low-rise residential buildings, may exacerbate the State's water scarcity issues by advancing a technology that wastes more water versus a storage tank water heater. It is for these reasons that A. O. Smith recommends Commission remove the DHWR system as a compliance option in the 2019 amendments.

#### Prescriptive Requirements – Section 150.2 - Additions and Alterations

##### *150.2(b)(1).H*

Consistent with A. O. Smith's comments above, as well as commenter AHRI, A. O. Smith recommends that the Commission decouple the HPWH solar PV system requirements. HPWHs stand on their own given the technology's inherently high energy efficiency savings the adoption of which would be discouraged by requiring consumers to install an expensive solar PV system.

##### *150.2(b)(1)H.(iii)(d)*

Under this Section the Commission is proposing that electric resistance "only" storage type water heaters be restricted to products that are less than or equal to 60 gallons. As the Commission knows under current federal law electric resistance storage water heaters greater than 55 gallons are prohibited in commerce unless the water heater meets the federal definition of a grid-enabled water heater. While A. O. Smith infers from the amendment's use of the modifier "only" that electric resistance storage type grid-enabled water heaters would be allowed under the amendment, A. O. Smith recommends that the Commission seek to clarify this by simply referencing the applicable federal law covering these products.

#### Demand Response – Section 110.12(a)

As a company that is leading the way in advancing grid-interactive water heating and hydronic systems, A. O. Smith supports the Commission's recommendation on demand response and load management. However, A. O. Smith urges the Commission to ensure that in any ensuing final amendments that a technology neutral approach is taken regarding communication protocols for connected devices and appliances. While this may, and certainly should, include OpenADR 2.0(a) and (b), it should also include protocols like CTA-2045, which

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<sup>2</sup> *Id.* at pp. 3 - 5.

is being implemented by manufacturers, utility partners, and third-party aggregators. In addition, A. O. Smith urges the Commission to more clearly delineate which buildings are covered under the requirement. Lastly, and consistent with the comments submitted by NRDC on grid-interactive electric water heating for load management, it becomes more imperative that the Commission clarify the scope, technology, and applicability of Section 110.12, which would go a long way in providing manufacturers business certainty in relation to their product's technology offerings in the California market.

## **Conclusion**

In its overview of its 2019 amendments the Commission states that *“the benefits anticipated from adopting these amendments to Title 24 Part 6 support a myriad of State policy goals, including goals of improving California’s economy, reducing pollution and carbon emissions, improving energy security, reducing consumption of imported fuels and nonrenewable resources, maximizing the benefit provided by California’s energy infrastructure and minimizing the need for additional energy infrastructure spending”*. It goes on to describe the important role that energy efficiency plays in meeting these stated goals. A. O. Smith agrees with the Commission regarding the role that energy efficiency plays in meeting the State’s policy objectives. However, and as discussed above, the Commission can achieve its stated objectives and goals **while at the same time** provide a level playing field for domestic water heating and hydronic equipment manufacturers. A. O. Smith’s recommendations, along with those of other similar situated manufacturers and interested commenters, reflect a consensus on how, working with the Commission, to achieve those shared goals.

Once again, A. O. Smith appreciates the opportunity to provide its comments and stands ready to work with the Commission moving forward.

Sincerely,



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