

DOCKETED	
Docket Number:	23-ERDD-01
Project Title:	Electric Program Investment Charge (EPIC)
TN #:	254549
Document Title:	A O Smith Comments on Draft Solicitation on Low-GWP Refrigerants
Description:	N/A
Filer:	System
Organization:	A. O. Smith Corporation
Submitter Role:	Public
Submission Date:	2/16/2024 4:44:46 PM
Docketed Date:	2/16/2024

*Comment Received From: A. O. Smith Corporation
Submitted On: 2/16/2024
Docket Number: 23-ERDD-01*

A O Smith Comments on Draft Solicitation on Low-GWP Refrigerants

Additional submitted attachment is included below.



February 16, 2024

California Energy Commission
1516 Ninth Street
Sacramento, California 95814

RE: A. O. SMITH CORPORATION COMMENTS TO THE CALIFORNIA ENERGY COMMISSION REQUEST FOR COMMENT ON THE DRAFT SOLICITATION REGARDING DEVELOPING NEXT GENERATION, ALL ELECTRIC HEAT PUMPS USING LOW GLOBAL WARMING POTENTIAL REFRIGERANT

Dear Commissioner McAllister and California Energy Commission Staff:

A. O. Smith appreciates the opportunity to submit comments to the California Energy Commission's (CEC / Commission) Request seeking public comment on developing next generation, all electric heat pumps using low global warming potential (GWP) refrigerant. We appreciate the CEC continuing to invest in new and emerging technologies that will move California and the rest of the world towards our climate goals. A. O. Smith looks forward to continuing to work with the CEC on developing low GWP water heating technologies.

I. About A. O. Smith

A. O. Smith is a global leader in applying innovative technology and energy-efficient solutions to products manufactured and marketed worldwide. Our company is one of the world's leading manufacturers of residential and commercial water heating equipment and boilers, as well as a 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.

II. Responses to topics for which CEC is seeking comment.

What type of considerations should CEC consider ensuring participation and project success, and why? Please provide relevant comments regarding other considerations not explicitly listed above.

Water heater manufacturers are anticipating significant industry transformation due to the Department of Energy's (DOE) pending revision to its energy conservation standards for consumer water

heaters (“NAECA IV”) which is expected to take effect in 2029.¹ NAECA IV is expected to dramatically increase the production volumes of heat pump water heaters (“HPWHs”) from a modest 100,000 annual units to into the millions, necessitating substantial capital investments and requiring considerable attention and focus for HPWH manufacturers to prepare for its implementation in the coming years.

Efforts will be concentrated on reducing the costs of current HPWHs to align more closely with those of existing electric resistance water heaters, while still meeting minimum efficiency standards. Additionally, because of NAECA IV, the industry faces the significant challenge of accommodating the space constraints posed by the hundreds of thousands of 40- and 50-gallon electric lowboy water heaters currently in use, which do not readily accommodate HPWHs. This consideration raises questions about HPWH’s capacity for the rapid adoption of next-generation refrigerants during this time. Given this consideration, A. O. Smith agrees with the four-year timeline outlined in the draft solicitation.

What are the near-term and medium-term technical targets (e.g. costs, efficiency, ramp rate, emissions, etc.) to advance low GWP heat pump technologies to a higher TRL. What should be the starting and target TRLs for these groups?

The current stage of development (TRL) for low GWP heat pump water heaters vary depending upon the refrigerant pathway chosen. The current stage of development for hydrocarbons in group 1 is a TRL of 3. After approximately 4 years the target TRL for these group 1 products should be at a TRL of 7 or 8. However, and as noted previously, heat pump water heater manufacturers are currently focused on preparing for NAECA IV regulations which will involve significant investment in heat pump water heater production capabilities. Consequently, there might be a limited willingness among manufacturers to adopt new refrigerants until the NAECA IV transition has been completed.

III. Conclusion

We appreciate the opportunity to comment on the requirements under consideration for the Building Decarbonization Program’s competitive grant draft solicitation.

Please do not hesitate to contact me if you have questions.

Respectfully submitted,

Catherine Rivest

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¹ See the notice for the NAECA IV Rulemaking here: <https://www.regulations.gov/document/EERE-2017-BT-STD-0019-0063>