DOCKETED	
Docket Number:	24-FDAS-02
Project Title:	Load Flexibility Policy & Planning
TN #:	257583
Document Title:	A O Smith Comments to RFI and Consultant Report for Load Flexibility Signaling Options
Description:	N/A
Filer:	System
Organization:	A.O. Smith
Submitter Role:	Public
Submission Date:	7/3/2024 11:40:52 AM
Docketed Date:	7/3/2024

Comment Received From: A.O. Smith
Submitted On: 7/3/2024
Docket Number: 24-FDAS-02

A O Smith Comments to RFI and Comment on Consultant Report for Load Flexibility Signaling Options

Additional submitted attachment is included below.

July 3, 20234

California Energy Commission
Re: Docket #: 22-FDAS-02
Project Title: Load Flexibility Policy & Planning
1516 Ninth Street
Sacramento, CA 95814

RE: A. O. Smith Comments to RFI and Comment on Consultant Report for Load Flexibility Signaling Options

A. O. Smith Corporation ("A. O. Smith" or "Company") appreciates the opportunity to submit comments on the California Energy Commissions ("CEC" or "Commission") Request for Information ("RFI") pertaining to Expanding Flexible Demand in California through Statewide MIDAS Data Delivery. The Company is currently working on demand responsive water heaters that are compliant with AHRI Standard 1430 and which can receive additional signals using Universal Control Modules that are installed external to the product through a CTA-2045 port. The Company recognizes the need for using water heaters as grid resource. However, we urge the Commission to remain cognizant that ensuring a good consumer experience (i.e. no cold-water events or increased utility bills) is of paramount importance. The Company looks forward to working with the commission to develop a standard and program that will provide benefits to both the consumer and the electric grid.

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, 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.

General Comments

The Company supports CEC's efforts to create a universal signal to allow for a regular update of current utility electric prices and GHG emissions. Achieving this goal will need more than just compliance with the requirements of CTA-2045 and the application of CTA-2045 through AHRI standard 1430. These existing industry standards were developed as a tool to respond to grid needs during the extreme weather days that posed the highest burden on the grid but lack to nuance required to perform real time operation of the unit based on current prices or greenhouse gas ("GHG") emissions. Compliance with AHRI 1430, however, ensures that water heaters can receive basic demand signals and can be equipped with a Universal Control Module ("UCM") that can meet the need of the proposed

communication methods. Given this the Company requests that CEC ensures that any future flexible demand appliance standard ("FDAS") for water heaters does not establish new prescriptive design requirements for water heating products that conflict or exceed the current requirements necessary to be in compliance with AHRI Standard 1430, but also allows the flexibility for the compliance with the use of a UCM.

Additionally, current controls are designed to process simple grid signals such as: load up, advance load up, shed, deep shed, and grid emergency. Most devices with advanced logic also allow for the user to set time and/or price parameters for when the water heater should and should not run. Establishing a baseline for the water heater to process real time price data or GHG data will require additional data and requirements on how the water heater should respond. For example, without knowing what future prices for the day will be, it is unclear how the water heater would determine whether the current price signal is low and thus the water heater should load up, or if the price signal is high and thus the water heater should shed. Due to this, any real time price signal sent to load flexible products needs to include at minimum a 24-hour projection of future prices and/or GHG emissions to allow for the control logic to determine how to best respond to the signals it is receiving.

Finally, when developing a universal signal for the state, CEC should not incentivize water heater behavior that would run counter to the goal of this standard, particularly regarding grid stability. Broadcasting price data that will impact the operation of grid resources inherently creates a situation where all products may simultaneously turn off when low price rises to a high peak price, or when a high peak price drops to a normal price signal. This simultaneous response could in an instant, place massive strain on the grid. Without a mechanism to phase products on and off in a manner that will avoid grid shocks, this standard may have the unintended consequence of creating more problems than it solves. Additionally, these shocks may have the potential to lead to unexpectedly high bills for consumers, resulting in significant customer dissatisfaction.

Response to Selected RFI questions

2. Do you see any opportunities for CEC to mitigate the challenges associated with a 24/7/365 signal that have historically limited broadband/Wi-Fi as a preferred communication pathway?

> One pathway that CEC should explore is the use of a whole home energy management gateway ("Gateway") that is able to serve as the "brains" of the house and integrate all load flexible products together. This would drive an invested consumer in keeping all products connected as it will have a much larger impact on their utility bills. This approach would also simplify the requirements as only one product would need to be able to receive the MIDAS signal, and would be able to inform the decisions of all load flexible devices in the dwelling.

3. Given the report's conclusion that broadcast delivery of MIDAS data is more cost-effective than point-to-point delivery for the volume of appliances envisioned under FDAS, what are the main concerns with a statewide FDAS signaling system that relies on a broadcast, and what cost-effective solutions might mitigate these concerns?

As stated previously, having a broadcasted signal would mean that every appliance would respond to a change in price signal at the same time. Typically, products would all be programmed to load up when there is an imminent price increase, shed while prices are high, and load up once that price dropped back down to post peak levels. Without individual control over the products, there is limited ability to phase products on and off to provide a gradual increase or decrease in demand as opposed to creating spikes and valleys.

5. What message content options (e.g. GHG, price, or some combination) do you suggest being sent using the default FDAS Rate Identification Numbers discussed in Chapter 2, and why?

The CEC should focus first on prioritizing tangible information to the consumer that will lower their operating cost. Given this, the priority should be price, while GHG emissions could be a future state. However, one would infer that GHG emissions and price would follow a similar daily profile. While a future state could be inclusive of both GHG emissions and price, this is most likely unnecessary if the primary goal is to reduce grid peaks.

7. Assuming a statewide broadcast signal were to be deployed, would a default appliance setting that automatically initiates response to MIDAS signals at installation allow for ease in initiating flexibility of the appliance? What issues or concerns would you anticipate with such a plug-and-play functionality?

Initiating and responding to real time price signaling will be inherently more complex than a product initiating a DR command from the utility, as with AHRI Standard 1430. For a product to effectively receive and respond to MIDAS signals it will need to have some level of historical utility data for the consumer as well as which utility program/TOU structure that consumer is enrolled in. One potential solution will be to send a certain level of historical data along with projected future prices to the unit to allow for the controls to optimize operation. It will also be important for the consumer to understand their rate structure and pricing so that they can configure their control preferences in a way that will save energy and money.

9. The consultant report suggests that a gateway architecture cannot support plug-and-play flexibility. Is this accurate from your perspective? If not, describe how a gateway solution could enable both intrabuilding load optimization and plug-and-play flexibility for appliances without sacrificing cybersecurity.

A gateway architecture can support plug-and-play flexibility through a home energy management gateway with a flexible plug- And-play port. The use of a gateway is the optimal solution when it comes to load flexible homes. With this approach appliances can automatically join the gateway using a standard, such as Matter, so that no consumer interaction is required. The gateway can then accept a plug-and-play port with ethernet, Wi-Fi, cellular or radio connection to the MIDAS server.

12. How do you foresee electricity price, GHG, and grid signals being used in an appliance, e.g., an electric storage water heater's logic command and controls, whether through broadcast or internet connections?

> Industry has a good working knowledge on how to incorporate pricing and grid signals within a storage water heater. This area becomes less understood once GHG emissions are added into the mix. It is unclear and potentially incorrect for a manufacturer to determine how the product should respond to GHG emission signals, especially in a situation where GHG emissions and prices conflict. More work needs to be done to explore this area and develop a user interface in which the user, not the product, determines which signal they want to respond to and at what cost. There needs to be a consistent industry standard that can be applied to provide an interpretation of what the expected actions of an appliance should be when receiving specific price and GHG signals. The success of this program will ultimately boil down to the consumer experience, and if there are differences in product responses across the industry or unexpected utility bill increases, this program will run the risk of losing consumer confidence and buy in.

Conclusion

A. O. Smith appreciates the opportunity to provide comments in response to the CECs RFI pertaining to Expanding Flexible Demand in California through Statewide MIDAS Data Delivery. Please feel free to contact me if you have questions and the Company stands ready to work with the Commission moving forward.

Best Regards,

Kyle Bergeron
Manager, Government and Regulatory Affairs
A. O. Smith Corporation
Global Headquarters
11270 West Park Place
(414) 389 7297
Kyle.bergeron@aosmith.com