DOCKETED	
Docket Number:	19-BSTD-09
Project Title:	Heat Pump Water Heater Demand Management Systems
TN #:	232503
Document Title:	Tristan de Frondeville Comments - SkyCentrics Comments - SkyCentrics Comments on Joint Appendix JA13 Qualification Requirements for Heat Pump Water Heaters
Description:	N/A
Filer:	System
Organization:	Tristan de Frondeville
Submitter Role:	Public
Submission Date:	3/23/2020 4:14:14 PM
Docketed Date:	3/23/2020

Comment Received From: Tristan de Frondeville Submitted On: 3/23/2020 Docket Number: 19-BSTD-09

SkyCentrics Comments - SkyCentrics Comments on Joint Appendix JA13 Qualification Requirements for Heat Pump Water Heaters

Additional submitted attachment is included below.



March 23, 2020

Commissioner J. Andrew McAllister, Ph.D. California Energy Commission Dockets Office, MS-4 Re: Docket No. 19-BSTD-09 1516 Ninth Street Sacramento, CA 95814

RE: SkyCentrics, Inc. Comments on Joint Appendix JA13 Qualification Requirements for Heat Pump Water Heater Demand Management Systems

Dear Commissioner McCallister:

SkyCentrics, Inc. (SkyCentrics) appreciates the opportunity to provide comments on the California Energy Commission's ("CEC" or "Commission") Joint Appendix JA13 Qualification Requirements for Heat Pump Water Heater Demand Management Systems ("JA13"). Heat pump water heaters ("HPWHs") play an essential role in two important California policy priorities: a) reducing the carbon footprint of our buildings as the State moves from gas water heaters to electric water heaters; and b) helping to manage the integration of increasing amounts of renewable energy as HPWHs shift load and serve as thermal energy storage devices. The Commission's adoption of alternative compliance measures for HPWH demand management systems advance the policies that will ensure that California building codes support California's desire to lower carbon emissions more quickly and cost effectively. We look forward to working with the Commission to overcome the challenges ahead to create a decarbonized grid and lower GHG emissions.

About SkyCentrics

SkyCentrics is a third-party Demand Response provider providing last mile connectivity to appliances and building loads using the open standards OpenADR, CTA-2045, and Volttron, founded in 2013 and headquartered in San Francisco, California. The company provides Demand Response (DR) services to utilities throughout the United States, as well as enabling other Demand Response providers and aggregators to connect to appliances that provide CTA-2045 ports through our OpenADR cloud and our cloud REST API. Homeowners and building owners get web, mobile and voice controlled apps to monitor and schedule their homes and loads, and utilities and aggregators are enabled to orchestrate millions of loads to support the grid.

Impact of Residential Loads on the Duck Curve, benefits of a universal open standard port, and why the commission should join WA State HB 1444 and use NEEA AWHS v7

SkyCentrics has participated in the Building Decarbonization Coalition's HPWH Working Group, representing a successful collaboration amongst stakeholders supporting California's market transformation goals for residential water heating. SkyCentrics encourages the Commission to rely on the HPWH Working Group by adopting the docketed Appendix JA13 with a minor modification, as further described below.

SkyCentrics worked inside of the HPWH Working Group on the demand management specifications under consideration by the CEC to enable HPWHs to either be controlled remotely, or respond to pre-loaded time-of-use schedules providing daily grid benefits. This specification was developed over a many-month process in collaboration with California utilities, water heater manufacturers, demand response technology and service providers, and many other stakeholders. The goal was to have a specification that provides that demand-flexible HPWHs can deliver daily load shifting and thermal storage over their lifetime, and that HPWHs can do this by either locally storing and following a Time of Use (ToU) schedule, or responding remotely to control signals and schedules.

Since the first HPWH Draft Appendix JA13 specification, there have been several suggested edits to aid Appendix JA13 in remaining current. These edits have been minor, and they do not change its intent. SkyCentrics would like the commission to focus on the critical connectivity optionality provided by NEEA AWHS v7.0.

The Northwest Energy Efficiency Alliance (NEEA) released a revised version of the Advanced Water Heating Specification (AWHS), Version 7.0.2 SkyCentrics urges the CEC to update the references in the requirements for residential HPWHs to allow compliance with **ONLY version 7.0 of the NEEA AWHS.** NEEA expressed on a call last week that they specifically waited on the release of version 7.0 to try to 'harmonize' with JA13, and as we show below, there are compelling arguments why the commission should choose 7.0 rather than the language of 'either 6.0 or 7.0,' as recommended by some. Both of these versions contain identical minimum performance requirements, but version 7.0 adds a requirement for HPWHs to comply with a CTA-2045A port and application layer requirements. Here are the reasons why we believe the commission should choose only version 7.0

In its recent load management workshop on January 14, 2020, the Commission and stakeholders recognized the importance of encouraging intelligent, flexible, connected, and dynamic loads to build a decarbonized grid. The value of connected, intelligent, flexible and responsive loads was made clear when SDG&E showed in their presentation that the timing of peaks on some of their circuits did not align with system peaks. While appliances that can be scheduled for Time of Use have been shown as a valuable intermediate step towards fully connected, intelligent and responsive loads, the SDG&E presentation showed that a fixed schedule in an appliance, responding to a fixed ToU rate would actually worsen the load profile on that circuit. This shows that when HPWH are complying with the minimum

requirement, namely Time of Use scheduling, they may actually be counterproductive to the grid and utility requirements. With NEEA v7.0, all the compliant water heaters will have the low cost optionality to host a CTA-2045 module which would give those water heaters on those 'anormal' circuits the ability to respond differently and automatically to their anormal circumstance.

Appliances are unique in that they have typically not had communications or even scheduling capabilities. Instead, they come on cyclically and/or during random times of the day. As soon as Time of Use rates are in place, appliances will need to be scheduled to avoid expensive times. As shown above, more importantly, they should have the option to be connected without having to buy a new appliance, ideally through a product purchasable at retail or through the mail, if not 'out of the box.'

The fact that some appliances recently have had 'out of the box' Wi-Fi and thus scheduling and remote control capabilities has obscured the global problems with Wi-Fi, especially as it relates to water heaters. We list these issues:

- 1. Utilities find Wi-Fi to be a non-reliable communication path to a grid resource.
 - a. Even though the cost is 'free', the operational cost of calling customers to encourage them and help them re-connect their device to their Wi-Fi has been costly.
- 2. Low income households will be left out.
 - a. Landlords generally buy the least expensive products. Currently, JA13 does not mandate connectivity, but NEEA AWHS 7.0 does require the option through a CTA-2045 port. **This optionality is critical for low income communities.** They will be able to participate in special utility programs because the utility will subsidize the communications, whereas without it, it could be years if not decades before they have a water heater that can participate in these programs. This is clearly a bias against low income communities, which we know the commission is trying to avoid during its de-carbonization efforts.
- 3. Alternative, more reliable communications to Wi-Fi such as cellular is essentially not possible without a CTA-2045 port.
 - a. Although the smart home and Wi-Fi connected thermostats have been available for years, water heaters with Wi-Fi have penetrated 1-2% of the market. This is because consumers have slowly adopted controlling their thermostats over their phones, but they have little interest in similarly controlling their water heaters. It is fair to say that there won't be cellular water heaters for years if not decades. However, with a CTA-2045 port, the commission would be 'future proofing' the water heaters so that as reliable, low cost cellular becomes available, the pool of water heaters in the field could be retrofitted through the mail or through retail sales with a cellular CTA-2045 module. NEEA AWHS 6.0 will not enable this future proofing in any way, and the commission will have lost 2-3 years waiting for the next code cycle.

- 4. Preventing stranded assets
 - a. There is no other way to guarantee the ability of an appliance to always be connectible throughout its lifetime. Even the largest of Internet of Things companies have ended their support of their connected products. A standard port means that a new module can be sent through the mail to a customer for easy installation, bringing that appliance back online to support the grid and the customer's ability to take advantage of electrical rates that support Time of Use or dynamic real-time pricing.

Conclusion

SkyCentrics appreciates the opportunity to provide comments in support of the Commission on JA13 as it promotes the effective integration of water heater technology as a grid resource. SkyCentrics encourages the Commission to continue to move quickly and efficiently on the completion of JA13 in regards to HPWHs, using the resources already available to the CEC by the Building Decarbonization Coalition and others. As was discussed on a call last week that was well attended by the stakeholders mentioned above, NEEA AWHS v7.0 will provide the future proof grid benefits that the commission is seeking to encourage and accomplish by this ruling. SkyCentrics appreciates the opportunity to submit its comments and stands ready to work with the Commission moving forward.

Respectfully,

Tristan de Frondeville CEO SkyCentrics, Inc. 214 Grant Avenue, Suite 325 San Francisco, CA 94108