



SkyCentrics

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March 4, 2021

ENERGY STAR Water Heaters Product Development
Attn: Abigail Daken
Product Manager, HVAC

Dear Abigail Daken,

Thank you very much for the opportunity to comment on the new ENERGY STAR Final Draft Version 4.0 Water Heaters Specification. I represent SkyCentrics, 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.

I respectfully would like to submit the following comments on the Final Draft Version 4.0. Please also note our table at the end of our comments.

SkyCentrics believes it is critical to remove the OR language around “OpenADR OR CTA-2045” and mandate a CTA-2045 port. The most important reason in water heaters specifically is that Rheem and AO Smith, the manufacturers of over 85% of residential water heaters, have already committed 80+ models (Rheem) and 100+ models (AO Smith) to having a CTA-2045 port to comply with Washington State law. Meanwhile, there have been virtually zero appliances ever made that have an embedded OpenADR solution. That means EPA could leverage the market transformation that is already occurring and help the OEMs have a national standard nationwide. Remember, a CTA-2045 module can have OpenADR resident or in the cloud when required, but it provides something an OpenADR requirement cannot, which is communication pathway flexibility for the future life of the appliance.

We have more detailed comments below.

The electrical grid is moving quickly to more renewables and thus needs more flexibility due to their variability. The 'new' demand response is a key element to this new dynamic grid. The new demand response is 24/7 load flexibility providing what LBNL has described as 'shed, shift, shape, and shimmy'. OpenADR has been a good solution to date for large interconnected loads in industrial and commercial applications, but the grid needs more distributed and diverse assets to rapidly scale up the amount of 'new' demand response.

The United States of America is actively moving away from fossil fuels to heat buildings and water with new highly efficient assets (electrical loads). Many of these assets come in the form of discrete appliances or loads that are not connected to a server, hub, node and/or the internet. Good examples



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of these loads and appliances are: water heaters, pool pumps, EV chargers, Inverters, residential HVAC, multi-family and commercial HVAC and water heaters and chillers (85% of commercial buildings do not have a Building Management System to connect to or to coordinate these loads), pumps, fans and compressors. OpenADR is a robust solution (especially for large interconnected loads in industrial and commercial applications) as long as there a solid connection to the load and there is sufficient infrastructure to support the 'connected' load. In cases where the load is small, distributed and diverse OpenADR is not the solution of choice.

In fact, to be clear, since OpenADR began over 10 years ago in 2010, there are virtually zero individual machines sold to the residential or small commercial market that have OpenADR resident inside them. Even in the large industrial and commercial sector, there are essentially zero machines with OpenADR inside them. Instead, you have hundreds of on-premise gateways, Building Management Systems (BMS), specialized third party OpenADR 'add-on' boxes and networking systems that are OpenADR VEN certified, and then a very few OEMs that have implemented OpenADR VEN clouds which then control their proprietary machines through a single communication pathway (physical layer) that has been chosen by them, and which cannot be changed. Generally, this has been Wi-Fi, and utilities have shown repeatedly that other than thermostats which have a compelling reason for almost daily interaction from the homeowner, no other residential loads will reliably stay on the homeowner's Wi-Fi connection.

For these reasons, we are trying to guarantee that there is an inexpensive, reliable, and flexible (easily changed) way to get to these residential and small commercial electric loads. This flexible communication pathway solution can only be inexpensively done at scale through a universal port such as the CTA-2045 port, as demonstrated by the example use case at the end of this document, where the OpenADR functionality to a commercial building load is enabled only by a \$1500 third party add-on box. Finally, OpenADR can be added to the CTA-2045 module at the appliance when cost-justified.

The most important thing to know is that thanks to the Washington state law, SB1555, Rheem has over 80 water heaters that are on the NEEA Tier 4 QPL that have CTA-2045 ports right now, and AO Smith, across all their brands, has over 100 models of CTA-2045 compatible water heaters. Essentially, the ship has sailed and the OEMs that manufacture over 80% of water heaters have already committed to CTA-2045, as has CA Title 24 JA13 for new construction. Why not leverage this advantage and support the rapid growth of CTA-2045 for the more detailed benefits stated below?

Section	Comment	Rationale
1B- Definitions	Define Cool Climate Efficiency (CCE), formally known as the Northern Climate Uniform Energy Factor.	Alignment with Washington State Residential Energy Code and NEEA's test procedure requirements for NEEA's Tier 1 – 4 hybrid heat pump water heaters.
4D – Demand Response		Given that AHRI's current work on 1430 will include language from CTA-2045-B and JA13, having alignment



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		would ease the path for manufacturers. This alignment would mandate a CTA-2045 port on water heaters.
4Da- Demand Response	Require <u>(i) ANSI/CTA-2045-A, or equivalent and (ii) the March 2018 version of the ANSI/CTA-2045-A application layer requirements</u> as the standard for all electric water heaters.	<p>Washington state policy alignment for products sold after Jan 1, 2021. RCW 19.260.080 (1)(a) requires “The product must have a modular demand response communications port compliant with: (i) The March 2018 version of the <u>ANSI/CTA- 2045-A</u> communication interface standard, or equivalent and (ii) the March 2018 version of the ANSI/CTA-2045-A application layer requirements.”</p> <p>SkyCentrics recommends that EPA set the requirement for an open-standard communications port for the optional grid-connected criterion CTA-2045, and that EPA upgrade the communications protocol of the optional grid-connected criterion from CTA-2045-A to CTA-2045-B.</p> <p>SkyCentrics recommends that EPA make clear that OpenADR can be placed in the CTA-2045 module (when the grid value of the module supports the yearly cost of the SSL certificate), and OpenADR can exist in the CTA-2045 vendor cloud when the cost at the appliance is not justified.</p>
4Df – Demand Response – Requests and Responses		SkyCentrics recommends that EPA support the CTA-2045-B standard which includes price responsiveness through 64 time/price pairs for real time price streaming and Advanced Load UP (the main improvements over CTA-2045-A)



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Sincerely yours,

A handwritten signature in blue ink, appearing to read "Tristan de Frondeville", with a long horizontal flourish extending to the right.

Tristan de Frondeville
CEO