

April 28<sup>th</sup>, 2017



Mr. Ryan Fogle  
U.S. Environmental Protection Agency  
William Jefferson Clinton Building  
1200 Pennsylvania Avenue, NW  
Washington, DC 20460

**RE: ENERGY STAR® Draft Version 1.1 Specification, Version 2.0 Specification, and Test Method for Uninterruptible Power Supply (UPS).**

Dear Mr. Fogle,

Northwest Energy Efficiency Alliance (NEEA) is a non-profit organization working to encourage the development and adoption of energy-efficient products and services. NEEA is supported by the region's electric utilities, public benefits administrators, state governments, public interest groups and efficiency industry representatives. This unique partnership has helped make the Northwest region a national leader in energy efficiency. NEEA has a history of championing energy efficiency work on computers that dates back to 2004 when NEEA funded the 80 Plus utility incentive program for efficient internal computer power supplies. The 80 Plus program achieved broad industry support and paved the way for the establishment of ENERGY STAR on-mode power requirements. NEEA applauds the efforts by U.S. EPA, industry and advocacy stakeholders to update the ENERGY STAR Uninterruptible Power Supply Test Method and Specification.

NEEA supports the key points made by the Natural Resources Defense Council (NRDC), the Appliance Standards Awareness Project (ASAP), and the California Investor Owned Utilities (CA IOUs)—Pacific Gas and Electric Company (PG&E), Southern California Gas Company (SCGC), San Diego Gas and Electric (SDG&E), and Southern California Edison (SCE). We summarize these points and provide additional input to U.S. EPA below.

**We support U.S. EPA's approach of introducing both a minor and a major revision of the UPS specification.**

This approach will reduce test burden for manufacturers qualifying new UPSs, capable of operating at 115 V and 60 Hz that use NEMA 1-15P or 5- 15P plug, that already meet the Version 2.0 program requirements.

**We generally support the specification levels proposed in Versions 1.1 and 2.0.**

Given the current compliance rate of near 100%, NEEA supports U.S. EPA’s efforts to tighten the requirements with the goal of encouraging additional product innovation and energy savings. However, we would like to better understand why some efficiency levels are proposed to decrease from Version 1.1 to 2.0. The levels in question are specific to P > 10,000 W VFD and VI UPSs; therefore, the decrease appears to be unrelated to the shift to the DOE test method<sup>1</sup>, which applies only to UPSs capable of operating at 115 V and 60 Hz that use NEMA 1-15P or 5-15P plug.

	Minimum Average Efficiency Requirement Without Metering and Communications	
P > 10,000 W	VFD	VI
Version 1.1	0.97	0.95
Version 2.0	0.92	0.94
% reduction	5%	1%

**We share NRDC’s concerns about the loading assumptions for calculating energy efficiency.**

For the reasons stated by NRDC and the CA IOUs, U.S. EPA should include a test-only requirement for 0%, 5% and 10% load points for all covered UPS classes, to collect data in support of potential efficiency requirements at these load points in the future. It is notable that 98% of the annual energy use of a modern CEC-compliant desktop computer could happen between 3 and 10% of UPS load. This represents a significant gap relative to VFD loading assumptions. We believe that test conditions should best represent real-world use cases in general to properly frame product design trade-offs and to optimize real-world energy savings.

**We support NRDC recommendation to change the loading assumption for VI and VFI UPSs to reflect 0.25 at 25% load.**

We support NRDC’s argument based on recent findings (Kooimey, Taylor, April 2017)<sup>2</sup> that most servers remain either idle or “comatose” resulting in significant use at the low end of the power range.

**We agree with the CA IOUs that UPSs have potential for demand response (DR) programs.**

We agree with U.S. EPA’s proposal to remove the communications and metering incentive in Version 2.0 because the added power draw for connectivity is small compared to the total draw, as stated by the CA IOUs, and because metering in datacenter models is widespread and unlikely to be removed, as noted by U.S. EPA in Version 2.0 notes. While the DR potential for UPSs is unproven, as noted in the Ecodesign Preparatory study on Smart Appliances (Lot 33)<sup>3</sup>,

<sup>1</sup> 81 FR 89806 (December 12, 2016)

<sup>2</sup> <http://anthesisgroup.com/wp-content/uploads/2017/03/Comatsoe-Servers-Redux-2017.pdf>

<sup>3</sup> [http://www.eco-smartappliances.eu/Documents/Ecodesign%20Preparatory%20Study%20on%20Smart%20Appliances%20\\_Tasks%201%20to%206.pdf](http://www.eco-smartappliances.eu/Documents/Ecodesign%20Preparatory%20Study%20on%20Smart%20Appliances%20_Tasks%201%20to%206.pdf)

this equipment category holds promise for utility ancillary service programs along with battery energy storage systems. CA IOU comments illustrate conditions in which UPSs could offer DR services without negatively impacting the user. We provide another example in which an IT professional buys an oversized UPS in anticipation of increased future capacity needs. In the near term, the IT professional dedicates the spare capacity to the provision of utility ancillary services and receives utility bill credits for these services.

CA IOU comments on Version 1.1 and 2.0 UPS specification development refer to comments submitted to U.S. EPA by CA IOUs on October 14, 2016 pertaining to the connected criteria for Electric Vehicle Supply Equipment (EVSE).<sup>4</sup> We agree with the CA IOU recommendation that U.S. EPA should proceed cautiously when establishing connectivity criteria for covered products. We believe that U.S. EPA should develop connectivity requirements within the context of a cross-product strategy for encouraging the adoption of:

1. connected devices capable of DR, remote management, and energy reporting where appropriate, and
2. a consistent approach to grid communications, control functions, and connectivity-related information reporting.

If properly vetted, ENERGY STAR connectivity requirements have the potential to encourage the adoption of grid-responsive devices that can reduce the need for expensive peak load generation capacity and support increased levels of grid-connected variable energy resources like wind and solar, a win-win for U.S. consumers and global society at large.

In conclusion, NEEA views the UPS test method and specification update an important step in our collective efforts to mitigate the effects of climate change and encourages U.S. EPA to carefully consider our comments. We appreciate the opportunity to participate in the UPS specification development process.

Sincerely,



**Nick Leritz**

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<sup>4</sup> Posted on ENERGY STAR website on October 5, 2016 as “CA IOU Comments”, Comment #2 within document. ([https://www.energystar.gov/products/spec/electric\\_vehicle\\_supply\\_equipment\\_pd](https://www.energystar.gov/products/spec/electric_vehicle_supply_equipment_pd))