COALITION FOR ENERGY EFFICIENT ELECTRIC TANKLESS WATER HEATERS

December 2, 2011

Ms. Abigail Daken
ENERGY STAR Water Heater Program Manager
U,S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, NW
Washington, DC 20460

RE: Comments on the Energy Star Water Heaters V2.0: Draft 2

Dear Abigail:

Thank you for providing us the opportunity to comment on Draft 2 of Version 2.0 of the Energy Star product specification for residential water heaters. As we have stated to you in our discussions and previously submitted comments, the Coalition for Energy Efficient Electric Tankless Water Heaters (CEEETWH) believes electric tankless water heaters provide a significant savings for consumers in both energy and water. We continue to appreciate the U.S. Environmental Protection Agency's (EPA) willingness to work with our industry to fashion an appropriate product specification for point-of-use (POU) electric water heaters.

Prior to detailing our specific comments, we would like to confirm that these comments represent the views of the following member companies:

- American Heat
- The Bosch Group
- Ecosmart US, LLC
- Eemax, Inc.
- Hubbell Heaters

1. **Revised Definition of POU Unit (Pages 1-2, Lines 42-50)**

We very much support the revised definition for POU units that appears in Draft 2. As we have discussed, we have engaged other outside stakeholders, including the utility industry and the environmental community, in discussions regarding an appropriate kW limit for residential units. Our consensus agreement with such stakeholders on 25kW as an appropriate limit has led to the introduction of legislation in the U.S. Senate and the U.S. House of Representatives to amend the relevant section of the Energy Policy and Conservation Act to reflect this new limit. We believe EPA is rightly defining "POU unit" in this draft to allow for a future legislative change.

2. Revised Product Specification for POU Electric Units (Page 4, Lines 159-160)

CEEETWH also appreciates EPA's revised product specification for POU electric units. We support EPA's revision of the flow rate to protect consumers from a scalding risk with higher input rate units. We also support EPA's decision to remove the booster requirement from this specification. Such a feature may be important to some consumers but, as EPA notes in Draft 2, "it is a feature easily discernible by consumers at the time of purchase, and not needed in most cases." Finally, we also appreciate EPA's revision of the warrant requirements which appropriately recognize the market conditions, costs, and parts involved in this technology. We request the change from a "heat exchanger" to a "heating chamber" to better define the electric tankless technology. Also, we request a change from a 6 to a 5 year heating chamber warranty to be consistent with industry standards.

3. Note on Cost-Effectiveness of POU Units and Appropriateness of POU Units for Energy Star Program (Pages 4-5, Lines 162-182)

As stated above, for the last 2 years we have appreciated EPA's willingness to consider the energy and water savings potential of POU electric units. We believe each draft of the revised product specifications for residential water heaters has rightly understood that POU electric units offer energy and water savings for millions of consumers who may not have access to gas lines or who are rightly making a decision to locate their water heater at a point near the fixture being used in their home that will reduce or eliminate standby energy losses, save water, and save the energy to heat the lost water.

As to the cost-effectiveness for residential consumers of POU electric units, we have discussed EPA's cost-models with staff and developed several savings models which, using appropriate assumptions, highlight four consumer-use scenarios. We have submitted these models to EPA but also attach them to this comment as Appendix A for your reference. All four scenarios show payback periods for consumers of anywhere from immediate payback to within a reasonable time-period of purchase. To assist EPA in evaluating these models, we have also surveyed industry and provided our estimate of the occurrences of each scenario. Importantly, we believe any reasonable evaluation of the payback model for POU electric units shows a favorable or similar comparison to the payback models for gas tankless water heaters or heat-pump water heaters—both technologies that are already included in the Energy Star Program. Accordingly, we believe EPA should be consistent across technologies in the same category and evaluate POU electric units fairly.

In addition to the payback discussion, we offer the following observations on some of the other comments appearing in the note:

- *"The choice whether to purchase POU heater for residential use is complex."*

  Based on our industry's interactions with consumers every day, we do not agree with this assessment. Most consumers make their decision based on the number of fixtures in their home and the available power. Additionally, many purchase decisions are made by professional plumbers who are already familiar with the energy and water savings potential of these units.

- *"Heat pump may likely provide better savings than a POU design."*

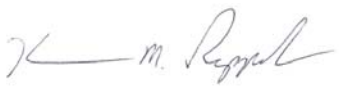
In order to validate this statement, the full picture for a residential consumer must be evaluated. For example, a heat pump will likely be located as a centralized water heater which would prevent any energy or water savings from a POU location and the elimination of standby loss. Other considerations such as: the necessity of running hot water lines throughout the house, the cost of the heat pump, noise, and the cost of siphoning heat from the home's heating system must also be evaluated.

- *"Additional use cases in commercial settings may be analyzed in the upcoming commercial water heaters specification development effort."*

  We agree with this statement as POU electric units do offer substantial opportunities for energy and water savings in commercial settings for many of the same reasons that savings are available in the residential setting. We look forward to working with EPA once the process for the commercial product specification begins.

We reiterate our appreciation for EPA's hard work in gathering the data and information required to revise this standard. We believe the definition and product specification for POU units in Draft 2 will offer consumers an important option for energy and water savings. Thank you for your consideration of these comments and please feel free to contact us if you have any questions.

Sincerely,



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Payback Analysis - Electric Tankless Water Heaters

Cost Assumptions		
Cost Category	**Data**	**Source**
ETWH Original Product Cost (10kW)	$ 266	Survey of costs - see next tab
ETWH Original Product Cost (15kW)	$ 357	Survey of costs - see next tab
ETWH Original Product Cost (25kW)	$ 590	Survey of costs - see next tab
Low Std tank heater orginal Cost (50 gal.)	$ 250	EPA and D&R
High Std tank heater orginal Cost (50 gal.)	$ 500	EPA and D&R
ETWH Installation - 1 unit	$ 200	Example of actual installation
ETWH Installation - 2nd and additional units	$ 100	Example of actual installation
Tank installation Cost	$ 300	EPA and D&R
Cost for one 8 AWG wiring for ETWH (per ft)	$ 0.86	Lowes.com
Cost for two 8 AWG wiring for ETWH (per ft)	$ 1.71	Lowes.com
Cost for 1-phase disconnect box	$ 12.00	Menard.com
Cost for 3/4 pipe & couplings (ft)	$ 3.64	Lowes.com
Life expectancy of tank (yrs)	13	EPA and D&R
Life expectancy of ETHW (yrs)	20	EPA and D&R
Distance from central source to POU (ft)	50	EPA and D&R

Energy Usage/Savings Assumptions		
Category	**Data**	**Source**
Efficiency tank (EF rating)	0.904	EPA and D&R
Efficiency ETWH (EF rating)	0.970	EPA and D&R
Typical daily hot water usage (gal.)	64	EPA and D&R
Inlet water temp (F)	58	EPA and D&R
Set point of tank heater (F)	135	EPA and D&R
Energy cost national ave ($/kWh)	$ 0.1068	EPA and D&R
Annual energy consumption (kWh/yr)-storage	4,857	EPA and D&R
Annual energy cost - storage	$ 519	EPA and D&R
Annual energy consumption (kWh/yr)-tankless	4,527	EPA and D&R
Annual energy cost - tankless	$ 484	EPA and D&R

Benefits not in the above calculations
The actual cost of the water savings
The added space required by a tank vs ETWH
The landfill implications of a tank vs ETWH

Scenario 1 - Home Addition/Remodeling

Home is being remodeled and/or getting an addition and extra hot water is needed for a bathroom. Install an ETWH vs upgrading the size of the existing tank heater. ETWH: Low does not have an ETWH case, Medium = 15kW (lav & shower), High = 25kW (lav, shower, tub)

	Low	Medium	High
Product cost ETWH		$ 357	$ 590
Installation Cost ETWH		$ 200	$ 200
Added wiring		$ 110	$ 110
Less Piping		$ (182)	$ (182)
		$ 484	$ 718
Product cost of upgrading tank (40-50 gallon)	$ 250	$ 375.00	$ 500.00
Installation cost tank	$ 300	$ 300	$ 300.00
	$ 550	$ 675	$ 800
Cost to dispose of existing tank	?	?	?
Annual Energy Costs			
Storage only		$ 519	$ 519
Storage and Tankless		$ 368	$ 443
Savings		$ 151	$ 75
Net Added cost of ETWH vs. Tank		$ (191)	$ (82)
Annual Savings %		29%	15%
Payback - years		Immediate	Immediate
No. of Opportunities per year		1,506,000	

Scenario 2 - New Contruction Distributed Water Heating

A new home is being built and the decision to put 2 POU ETWH vs a central tank type heater is being determined. Assume 2 POU clusters are being used. 15kW (Kitchen, laundry) & 25 kW (Lav, shower, tub)

	Low	Ave	High
Product cost ETWH		$ 947	
Installation Cost ETWH		$ 300	
Added wiring		$ 207	
Less Piping (50 feet per cluster)		$ (364)	
		$ 1,090	
Product cost of added tank	$ 250	$ 375	$ 500
Installation cost tank	$ 300	$ 300	$ 300
	$ 550	$ 675	$ 800
Annual Energy Costs			
Storage only	$ 519	$ 519	$ 519
Tankless only	$ 206	$ 206	$ 206
Savings	$ 313	$ 313	$ 313
Net Added cost of ETWH vs. Tank	$ 540	$ 415	$ 290
Annual Savings %	60%	60%	60%
Payback - years	1.7	1.3	0.9
No. of Opportunities per year		658,000	

Scenario 3 - New Contruction - Compact Hot Water Distribution

A new home is being built and the decision to put POU ETWH or a central tank type heater is being determined. One 25kW POU is beging used to heat water in a single well designed cluster (compact hot water distribution system). The plan does not have floor space near the cluster for a storage tank heater.

	Low	Ave	High
Product cost ETWH		$ 590	
Installation Cost ETWH		$ 200	
Added wiring		$ 98	
Less Piping		$ (182)	
		$ 706	
Product cost of added tank	$ 250	$ 375	$ 500
Installation cost tank	$ 300	$ 300	$ 300
	$ 550	$ 675	$ 800
Annual Energy Costs			
Storage only	$ 519	$ 519	$ 519
Tankless only	$ 206	$ 206	$ 206
Savings	$ 313	$ 313	$ 313
Net Added cost of ETWH vs. Tank	$ 156	$ 31	$ (94)
Annual Savings %		60%	60%
Payback - years	0.5	0.1	Immediate
No. of Opportunities per year		658,000	

Scenario 4 - Displacing Hot Water

A remote bathroom requires displacing hot water because it's taking too long to get hot water and thus water is wasted. The ETWH is installed at the POU to the cold water line. Other than energy savings benefits are comfort & convernience and not waiting for hot water. Critical in areas where water must be conserved. ETWH: Low does not have an ETWH case, Medium = 15kW (lav & shower), High = 25kW (lav, shower, tub)

		Medium	High
Product cost ETWH		$ 357	$ 590
Installation Cost ETWH		$ 200	$ 200
Added wiring		$ 110	$ 110
Less Piping		$ -	
		$ 666	$ 900
Product cost of added tank		$ -	
Installation cost tank		$ -	
		$ -	
Annual Energy Costs			
Storage only		$ 519	$ 519
Storage and Tankless		$ 443	$ 368
Savings		$ 75	$ 151
Net Added cost of ETWH vs. Tank		$ 666	$ 900
Annual Savings %		15%	29%
Payback - years		8.8	6.0
No. of Opportunities per year		18,422,502	

Analysis completed by Gary Klein and Kevin Ruppelt Oct. 2011