CEE Working Together, Advancing Efficiency

May 29, 2007

Richard Karney
ENERGY STAR Product Manager
US Department of Energy
Forrestal Building
1000 Independence Avenue SW, EE2J
Washington, DC 20585

Dear Mr. Karney,

The Consortium for Energy Efficiency (CEE) appreciates the opportunity to provide comments on the ENERGY STAR water heater specification (Draft Criteria Analysis). These comments were developed by CEE's Natural Gas Committee and are supported by the organizations listed below.

The DOE draft suggests several laudable objectives that are shared by CEE. These include addressing the last major residential end use that is without ENERGY STAR support and bringing more efficient technological options into the market. Water heating in particular is an area where the market has not sufficiently induced more efficient options on its own. There are promising technologies that can improve water heating efficiency, and CEE supports DOE's efforts to make these technologies more available to consumers on a large scale. Nineteen CEE members currently run programs for water heating, and they desire an ENERGY STAR water heating program that can represent the same value in this area as it provides to programs in other areas.

In other product areas ENERGY STAR has represented a meaningful difference in energy performance without compromise in amenity, reliability, or other aspects of performance; technology neutrality, where feasible, encouraging the best suited technologies to compete on the basis of energy performance; cost effectiveness on a national average basis; and relative accessibility in terms of multiple vendors and retail channels.

Energy efficiency programs have used the ENERGY STAR label effectively based on these attributes to support current as well as emerging technologies. ENERGY STAR has been used in conjunction with CEE Tiers, for example, to accelerate the market introduction of "advanced" (very efficient, commercially available but not easily procured) and "emerging technologies" (technically feasible but not yet commercialized) in areas such as refrigeration, clothes washing and air conditioning.

Program investments in ENERGY STAR help establish an excellent platform to rapidly increase market demand for advanced and emerging technologies by credibly validating claims of product and energy performance that are typically only made by those that stand to gain. When this platform is coupled with a tiered incentive strategy that is broadly supported by efficiency programs, markets have experienced an impressive 1-2 punch resulting in a relatively rapid market adoption of advanced and emerging technologies.

We propose building a solid ENERGY STAR platform for residential water heating

We propose building a platform for an ENERGY STAR residential water heating program based upon the top level of performance for existing, mainstream water heaters. Once established as a valuable identifier in the marketplace, ENERGY STAR can be leveraged to draw emerging technologies into the market. It is therefore CEE's recommendation to define minimum performance levels that are achievable by readily-available and market-tested technologies to build the equity of the platform. This equity could then be leveraged to advance more efficient technologies through a CEE sponsored tier structure.

As a basis for an ENERGY STAR residential water heating program, we support encouraging consumers to purchase the best-performing natural gas storage water heaters that are currently available and other water heating alternatives of roughly equivalent efficiencies when deemed reliable.

CEE supports DOE's continued efforts to bring more advanced water heaters to market. These efforts will dovetail with CEE's on-going development of a tiered water heater initiative (performance tiers are being considered for potential use in 2008 efficiency programs). Once the program is established in the marketplace, CEE would encourage DOE to review the base performance level for gas tank type water heaters on a relatively accelerated schedule once new technologies at higher tiers have gained market acceptance. ENERGY STAR has a strong track record of ratcheting up energy savings in this way when coupled with tiered incentive programs.

CEE recommends adoption of a 0.62 EF performance level for residential gas storage water heaters.

The most broadly available technology of energy efficient water heaters are gas storage water heaters with an Energy Factor (EF) of 0.62. Nineteen CEE members currently run rebate programs in support of water heating technologies. The most common opening level of rebates is for gas storage water heaters with an EF of 0.62 (for more detail on member programs, please see the attached "CEE Member Water Heater Incentive Summary").

CEE believes that an ENERGY STAR performance level of 0.62 EF or higher for gas storage water heaters will best support the needs of efficiency programs. The level will enable the marketing platform on which tiers of higher efficiency can be built, encouraging the manufacturer and promotion of higher performing equipment over time.

Some CEE members use 0.64 EF as the opening level for their programs. These members would prefer that the base level for ENERGY STAR water heaters be 0.64 (see note in supporting organizations below). In either case, the overall point remains the same: the entry level for ENERGY STAR water heaters should be a technology that is available in the market today.

CEE supports the inclusion of whole-home gas tankless water heaters with appropriate consumer and contractor support.

In the draft criteria analysis, DOE notes that the test procedure that measures EF was designed for tank-type water heaters and as a result may overstate the efficiency of tankless water heaters. Thus, CEE supports the seemingly higher bar (relative to that of gas tank type units) of 0.80 EF for this technology. This level will also help provide insurance against potential behavioral and use concerns DOE raised in the draft criteria analysis.

CEE is developing a field test protocol to enable consistent in-field collection of measured savings for this technology as well as collect information on changes in consumer behavior if any. CEE believes the potential for behavioral concerns can largely be mitigated through a consumer education program. Such a program should involve all market players to consistently educate end users on operating differences for the technology and the potential energy implications. CEE would encourage the central development of educational collateral for incorporation into local efficiency programs and other ENERGY STAR Partners. This consumer education program together with organized training sessions and contractor-driven educational materials for plumbers can also address the maintenance concerns that DOE raised that are associated with hard water. CEE would further recommend that manufacturers be required to set up maintenance and installation hotlines for consumers and contractors as a basis to qualify as an ENERGY STAR Partner.

Finally, installation of these models has the potential to become complex and costly. CEE encourages the minimum qualifying warranty period be raised to meet the expected maximum payback period.

CEE recommends that a requirement for performance and reliability demonstration be required prior to enabling Heat-pump water heater inclusion in the program.

The 2.0 EF level set by the DOE for drop in heat pump water heaters would roughly place the performance of such units on a comparable plane to a 0.62 EF gas fired water heater (when primary energy consumption is considered). Given the potential savings that this technology promises over conventional electric resistance water heaters, it may provide an attractive option for electric service only customers with latent heat loads.

In the past, the reliability of heat-pump water heaters has been poor. This history raises the concern of tarnishing the ENERGY STAR Water Heater Program as well as other ENERGY STAR uses. CEE supports the DOE recommendation for a minimum six-year warranty and further recommends that the terms be unconditional, including labor, parts and replacement if necessary.

In addition, to ensure that manufacturer risk of failure is greater than to the ENERGY STAR brand, CEE recommends that the ENERGY STAR label be held for this category until a major manufacturer demonstrates suitable field performance to the satisfaction of previous sponsors of the technology, commits to market the product under its flagship label, and commits to mass

production. For example, the ENERGY STAR label should not be awarded until a manufacturer commits to a long-term annual production of at least 50,000 units.

DOE recommended organized training sessions and contractor-driven educational materials as ways to increase the number of contractors who stock and service heat pump water heaters. CEE strongly supports this approach as an additional means to ensure customer satisfaction with this technology when the other conditions above are satisfied.

Solar Water heaters

CEE has little experience with Solar Water Heaters, though some members are beginning to run pilot programs in support of this technology. If DOE can demonstrate that performance and reliability are consistent with that of traditional tank type units and that the economics are within reason, CEE would support the inclusion of Solar Water Heaters in the program. We support a minimum warranty of 15-years and further recommend that the warranty be unconditional, covering labor, parts and replacement.

DOE recommended organized training sessions and contractor-driven educational materials as ways to increase the number of contractors who stock and service solar water heaters. It also recommended consumer education to make consumers aware of how to maintain these systems. CEE strongly supports these program elements as a way to ensure customer satisfaction.

CEE recommends inclusion of indirect water heaters

Several CEE members offer rebates on indirect water heaters that are attached to ENERGY STAR gas boilers. These units have been shown to yield substantial energy savings. We acknowledge that these savings are not easily measured with widely accepted test procedures. We believe however, that once industry and DOE have agreed on an integrated appliance test procedure, this technology should be included in the ENERGY STAR Water Heater Program, with a performance level consistent to that of other water heating technologies.

Thank you for your consideration of these comments. Please contact CEE Program Manager Kara Rodgers at (617)-589-3949 ext. 202 or krodgers@cee1.org with any questions.

Sincerely,

Marc Hoffman
Executive Director

Supporting Organizations

Alliant Energy
Bay State Gas

Berkshire Gas
Energy Trust of Oregon
KeySpan
MidAmerican Energy Company
Northeast Energy Efficiency Partnerships
Northeast Utilities
Northern Utilities
Nstar Electric & Gas
Pacific Gas & Electric
Questar
Vectren Energy Delivery
We Energies

Organizations that Support 0.64 EF Gas Storage Water Heaters

Wisconsin Focus on Energy

Member Water Heating Incentive Summary

Sponsor	Incentives
Alliant Energy	Gas Storage Water Heaters • Iowa: ≥ 0.62 EF, $50 • Minnesota: ≥ 0.62 EF, $25
Aquila (Iowa)	Gas Storage Water Heater • ≥ 0.62 EF, $40 GFX Drain Water Heat Recovery • $300 Tankless Water Heater • $100 Integrated Space & Water Heater • $500
Bay State Gas	Indirect fired storage tank units (30-75 gallons) connected to a natural gas heating system • No Performance level specified, $300 rebate Tankless Water Heaters (On demand) **≥** 0.82 EF, $300 rebate (w/electronic ignition)
Berkshire Gas Company	Indirect-fired gas water heater (attached to an ENERGY STAR-qualified forced hot water boiler) • No specified performance level, $300 Gas Tankless Water Heater • **≥** 0.82 EF (w/ electronic ignition), $300
Efficiency Vermont	Prescriptive Electric Water Heat Fuel Switching • Electric water heater replaced with a cost-effective fossil-fuel system, $500 per unit ($200 for natural gas, direct-fired units) Custom incentives for cost-effective system replacements
Energy Trust of Oregon	Gas Storage Water Heaters • ≥ 0.62 EF, $25 Tankless Water Heaters • ≥ 0.80 EF, $200
Gaz Métro	Tankless Water Heaters • $450

Member Water Heating Incentive Summary

KeySpan Energy Delivery, New England	Indirect-fired Water Heaters • Attached to ENERGY STAR Rated boiler, $300 Tankless Water Heaters • ≥ 0.82 EF , $300 Solar Water Heaters SRCC Rated, up to $1,500
MidAmerican Energy	Gas Storage Water Heaters • 0.64 EF, $50 rebate (< 40 gal) • 0.62 EF, $50 rebate (40 – 59 gal) 0.85 TE, $50 rebate (≥ 60 gal)
Northern Utilities	Indirect fired storage tank units (30-75 gallons) connected to a natural gas heating system • No Performance level specified, $300 rebate Tankless Water Heaters (On demand) **≥** 0.82 EF, $300 rebate (w/electronic ignition)
NSTAR Electric & Gas Corporation	Indirect fired storage tank units (30-75 gallons) connected to a natural gas heating system • No Performance level specified, $300 rebate Tankless Water Heaters (On demand) • **≥** 0.82 EF, $300 rebate (w/electronic ignition)
Pacific Gas & Electric	Gas Storage Water Heaters • ≥ 0.62 EF, $30 rebate
Puget Sound Energy	Gas Storage Water Heater • ≥ 0.62 EF, $40 rebate
San Diego Gas & Electric	Natural Gas Storage Water Heater • ≥ 0.62 EF, $30 rebate (30 gallons or greater)

Member Water Heating Incentive Summary

Southern California Gas Company	Gas Storage Water Heater • ≥ 0.62 EF, $30 rebate Boilers (Water Heating only) • ≥ 300k btu, ≥ 84% Thermal Efficiency, $1500 rebate • ≤ 299k btu, ≥ 82% AFUE, $1500 rebate Water Heater and / or Boiler Controllers • Non Digital graph model for a multifamily building with ≥ 30 units, $750 rebate • Digital graph model for a multifamily building of ≤ 29 units or less, $750 rebate
Vermont Gas	Storage Water Heaters 40/50 gallon • >0.61 EF, $100 rebate Indirect-fired Water Heaters • Heated by an >87% AFUE boiler, $100 rebate Tankless Water Heaters • ≥ 0.80 EF, $100 rebate Drain Water Heat Recovery Devices • Custom screening applications, $200 rebate
Vectren Energy Delivery	Residential Natural Gas Water Heater • 0.62 EF 30 gallons or more, $50 rebate • Commercial Natural Gas Water Heater 75,000 Btu/hr or greater, 88% thermal efficiency, $150 rebate
Wisconsin Focus on Energy	Direct Vent Water Heaters • 0.64 EF, $50 • 0.80 EF, $100 • Flue Closure incentive $75 Fuel Conversion electric to gas • $300 incentive Solar Water Heaters • Contact Kari Heinrich, Project Manager
Xcel Energy (Minnesota)	Storage Water Heaters • 0.62 - 0.63 EF, $40 • ≥ 0.64 EF, $60 Tankless Water Heaters • ≥ 0.85 EF, $100

Member Water Heating Incentive Summary