



May 29, 2007

Richard Karney, PE
ENERGY STAR Product Manager
U.S. Department of Energy

R. Kyle Murray
SVP, Marketing
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Dear Mr. Karney,

BBT North America (BBTNA) would like to extend our congratulations to the U.S. Department of Energy for preparing to include water heaters in the ENERGY STAR program. Adding this large residential energy use to a program that has such powerful market impacts will surely lead to improved energy efficiency in U.S. homes. We agree with DOE when it states that water heating is the only major residential energy end use that ENERGY STAR does not address.

BBT North America is a manufacturer of gas tankless water heaters under the very recognizable and respected Bosch brand. Our comments are therefore geared toward this advanced technology.

1. We are in agreement with the proposed minimum Energy Factor of 0.80 as this is an already accepted baseline as determined in the Energy Policy Act of 2005 for federal tax credit qualification.
2. We strongly recommend that the requirement of a water heater to produce 3.5 gallons per minute at a 77°F rise be eliminated altogether for the following reasons:
 - a. *A 77°F rise is far more than most U.S. homes need*
This number comes from DOE's analysis of storage tanks and in no way pertains to tankless models. It has simply been carried over to an alternative technology for which it is not suited. Whereas storage tanks are typically kept at higher temperatures than what is required to either get more hot water out of it (by mixing in more cold water) or to kill Legionella bacteria, a tankless water heater has neither of those issues. DOE's acknowledged average groundwater temperature in the United States is 58°F. A 77°F rise therefore produces water at 135°F, which will cause 3rd degree burns in less than 30 seconds. Furthermore, enormous populations of Americans live in the warmer climates of Florida, Texas, Arizona, California, etc. where groundwater temperatures average 65°F and often reach 80°F.
 - b. *3.5 gallons per minute is more than most homes need*
The Federal Energy Policy Act of 1992 mandates that all faucet fixtures in the U.S. be at or below 2.5gpm at 80psi of water pressure,



or 2.2gpm at 60psi. This flow rate, of course, includes a mix of hot and cold water. If the tankless water heater is set to deliver hot water at an output temperature of 120°F at 3.5gpm, and we assume an inlet temperature of 58°F and an average shower temperature of 106°F, then only 78% of this flow would be hot water meaning the actual flow delivery at the tap would be 4.5gpm. This flow rate is far more than the 2.5gpm limit on faucet fixtures and higher than the vast majority of other water-using appliances.

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c. *This requirement will price most Americans out of the tankless market*

A tankless water heater that can deliver 3.5gpm at a 77°F rise has an MSRP of approximately \$1,200 or higher, not including installation. This water heater is overkill for a majority of American homes that are either 1-bathroom homes or 2-person households. As such, it unnecessarily pushes the market toward wasting energy by burning more BTUs than are necessary. The largest market segment for tankless water heaters are the empty nesters, i.e. a 2-person household after the children have grown and moved away. There is no reason for this couple to purchase a \$1,200 water heater when a tankless model with an MSRP of \$599 would satisfy all of their domestic hot water requirements.

d. *This requirement has the unintended effect of requiring electricity*

All gas tankless water heaters capable of producing 3.5gpm at a 77°F rise currently on the market require electricity, usually for ignition, power venting, and operating an on-board computer system. There are currently models on the market that have a 0.80 Energy Factor and can produce enough hot water for a 1-bathroom home (or any large home with only two residents) without any need for electricity. This is an important feature for those Americans who may experience long power outages due to hurricanes or snowstorms.

e. *Key Product Criteria Precedent*

As is the case with other appliances and heating and cooling equipment, efficiency and not size is the Key Product Criteria required in achieving Energy Star. Mandating a BTU size / delivery capacity for tankless water heaters in addition to an efficiency standard, when similar criteria is not applied to boilers, air conditioners, furnaces, clothes washers, etc. will confuse the customer and send mixed messages.

3. We agree with the minimum ten-year warranty as it is important to all stakeholders that only reliable products are included in the ENERGY STAR program.



Thank you again for your efforts. We look forward to working together to succeed in decreasing the energy consumption of American homes while maintaining the integrity of the ENERGY STAR brand.

Sincerely,

A handwritten signature in black ink that reads "R. Kyle Murray". The signature is written in a cursive style.

R. Kyle Murray
SVP, Marketing

Cc: Josh Butzbaugh

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