



November 26, 2007

Mr. Richard Karney
Program Manager, Energy Star
U. S. Department of Energy (DOE)
1000 Independence Avenue, SW
Washington, DC

Subject: AGA Comments on ENERGY STAR[®] Residential Water Heaters:
Second Draft Criteria Analysis and Proposal

Dear Mr. Karney:

The following are the comments of the American Gas Association (AGA) on the subject Second Draft Criteria Analysis. These comments follow previous comments presented on the original draft (May 29, 2007), a summary of oral comments at the DOE stakeholder meeting of June 5, 2007 (June 8, 2007), and formal comments on the stakeholder meeting (July 13, 2007).

AGA, founded in 1918, represents 200 local energy utility companies that deliver natural gas to more than 64 million homes, businesses and industries throughout the United States. AGA's members account for more than 92 percent of all natural gas delivered by the nation's natural gas utilities. Natural gas meets almost one-fourth of the United States' energy needs. AGA collects, analyzes, and disseminates information and data on the natural gas industry, promotes the safe and efficient delivery and use of energy, and serves as a national voice for the gas utility industry.

- **AGA supports DOE's continuing efforts to develop ENERGY STAR[®] criteria for residential water heaters.** DOE's efforts in this area are an appropriate means of implementing voluntary programs (i.e., as distinguished from mandatory standards) for addressing national concerns of energy efficiency and associated issues of carbon emissions associated with global climate change. AGA encourages DOE to continue to apply its objectives in developing these criteria, including avoiding criteria that "compromise the functionality or performance of the qualified products,"

providing for “ample consumer choice, both in terms of number of models and a wide range of manufacturers,” and avoiding reliance “on proprietary technologies of one or a small set of manufacturers.” Adherence to these and other objectives stated in the draft criteria is needed to maintain the value and integrity of the ENERGY STAR[®] label.

- **AGA supports DOE’s proposed exclusion of electric resistance storage water heaters from the criteria.** As stated in previous AGA comments, electric resistance storage water heaters have no proper role in ENERGY STAR[®] criteria or programs due to their inherent high levels of consumption of primary energy and contribution to emissions. In addition, AGA agrees with DOE’s observations about the low potential energy savings from criteria set above the current federal minimum standard for these projects. While full fuel cycle savings may be as much as three times any site based EF rating increase, the award of an ENERGY STAR[®] for such savings, involving primary energy consumption well over that of comparable gas storage water heaters, would be inappropriate and, in fact, incentivize increased energy consumption. Issues of efficiency of these products should be left to the NAECA minimum efficiency standards process.
- **AGA likewise agrees with DOE on its decision exclude electric tankless water heaters from the ENERGY STAR[®] criteria.** Supporters of this technology at the stakeholder meeting presented interesting ideas of incorporating these products in hybrid water heating systems (including installation in optimized designs involving gas storage water heaters). However, applying the ENERGY STAR[®] label to the products themselves would be inappropriate as DOE suggests. Furthermore, incorporation of these technologies within hybrid water heating systems requires clearer definition and demonstration before it can be effectively referenced in energy design requirements or guidelines.
- **While AGA supports DOE’s inclusion of gas storage water heaters in the ENERGY STAR[®] criteria, DOE’s specific criteria and approach are flawed.**
 - **DOE’s proposal for a threshold energy factor (EF) of 0.65 is not technically justified since available products shown in the GAMA directory include only power vented storage water heaters.** The replacement market for residential gas water heaters, approximately 85% of the total market, is dominated by

unpowered, atmospherically vented water heaters. To retrofit these installations with power vented water heaters, consumers would have to provide electrical supply in many instances at a prohibitively high cost where no electrical supply currently exists. It is unrealistic to assume that any practical level of incentives would be sufficient for consumers to rewire water heater closets and other installation locations to support power vented units. In addition, many installation locations are used for atmospherically vented water heaters are not feasible for installation of power vented units. AGA's original comments on the draft criteria encouraged DOE to recognize the unique utility of unpowered, atmospherically vented water heaters within the ENERGY STAR[®] criteria, and AGA encourages DOE to reexamine the 0.65 EF minimum in this light and the availability of products.

- **Use of the 0.65 EF minimum to cover unpowered, atmospherically vented gas water heaters is not technologically feasible, and promotion of this level is not in the interest of consumer safety.** Issues of proper venting in atmospherically vented water heaters and vent corrosion due to high “wet times” in vents is well documented in the NAECA minimum efficiency comments of GAMA and AGA covering residential water heaters. DOE should not be incentivizing manufacturers to press for atmospherically vented products with these EF ratings since it would encourage installations prone to vent corrosion and failure. Manufacturers, in responding to criteria based on 0.65 EF and higher, could be inclined to push the technology to these levels to while maintaining the inherently lower manufactured cost and competitive pricing provided by atmospherically vented products. This would not be an appropriate incentive introduced by ENERGY STAR[®]. In addition, ENERGY STAR[®] criteria based on these higher cost products are not likely to lead to rapid change in the appliance stock, therefore producing a reduced impact from ENERGY STAR[®] on the market.
- DOE's proposal to “sunset” the 0.65 EF criterion in three years is neither technologically feasible nor necessary. This proposal presumes that “high-performance gas storage water heater” technology will be available by the end of three years and that the sunsetting of the 0.65 EF will facilitate drawing this technology into

the market. However, throughout this discussion of the “high-performance gas storage water heaters” or “advanced non-condensing gas storage” systems, neither DOE nor energy efficiency advocates have provided specific technology descriptions or identified products meeting this description. The idea of sunsetting criteria before available substitutes are identified and made commercially available runs directly against DOE objective of providing for “ample consumer choice, both in terms of number of models and a wide range of manufacturers.” Furthermore, DOE is fully authorized to revise ENERGY STAR[®] criteria as “high-performance” technology products become available from a number of manufacturers, making the concept of sunsetting a current efficiency threshold unnecessary.

- **As a substitute to DOE’s current proposal, AGA supports the Consortium for Energy Efficiency’s (CEE) proposal for a 0.62 EF minimum for gas storage water heaters.** In addition to CEE’s rationale, AGA would encourage DOE to put this proposal into context of how this apparently modest increase over the current federal minimum efficiency for gas water heaters would be, in fact, equivalent to approximately a 10% increase relative to electric storage water heaters over the full fuel cycle. This fact, plus the opportunity to incentivize purchase of higher efficiency products that are currently available would lead to near-term energy savings.
- **Finally, the DOE proposal is incomplete in that they do not address the relevant size range of residential gas storage water heaters.** The criterion as proposed and as discussed is only associated with a 50 gallon storage water heater. As such, one might infer that only 50 gallon units could qualify. However, full size residential gas water heaters typically range from 40 to 75 gallons (and frequently larger). DOE should consider specifying criteria in terms of the conventional volume adjusted formula to cover all of the relevant sizes. AGA recommends the following specification of this formula:

$$\text{EF} = 0.70 - 0.0019 (\text{gallons})$$

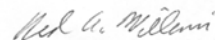
AGA notes that this formula computes an EF of 0.62 for a 40 gallon gas storage water heater instead of for a 50 gallon water heater.

However, the use of 40 gallons as the baseline is appropriate based on normal sizing guidelines and comparisons to electric storage water heaters with equivalent first hour rating (i.e., to a 50 gallon electric storage water heater).

- **DOE's proposal for whole-house gas tankless water heaters still does not address issues raised by AGA.** AGA appreciates DOE's dilemma in trying to develop criteria that are both meaningful in terms of efficiency and responsive to sizing issues and use of multiple tankless unit in systems. However, DOE's response of simply raising the EF criterion and decreasing the throughput, gallons per minute (gpm), do not appear to address the uncertainties associated with these real installation issues. DOE is assuming baseline installations and draw patterns that will not apply to many individual consumer situations. While these uncertainties might be argued for all water heating products, the complicating practical sizing approach of using multiple tankless units (and use of recirculating loops) adds significantly to the uncertainty of how an ENERGY STAR[®] labeled product might be installed and what the actual energy savings might be. In addition, DOE notes comments concerning discrepancy between the results of the current test procedures for these products and field performance. AGA suggests that these issues have not been sufficiently resolved for DOE to apply the ENERGY STAR[®] to these products without raising credibility issues about presumed energy savings. While it is clear that gas tankless water heaters should play a role in the ENERGY STAR[®] program, these issues need to be sorted out more clearly. AGA recommends breaking out this product from the current discussion and implementation of criteria until better consensus is achieved.

This concludes the comments of AGA on the subject Second Draft. We greatly appreciate the opportunity to participate in this activity and look forward to continuing discussion of the ENERGY STAR[®] criteria.

Sincerely,



Ted A. Williams
Director, Codes & Standards
Technical Support

cc: J. Ranfone, AGA