Ms. Brenda Edwards
U.S. Department of Energy
Building Technologies Program
Mailstop EE-2J
1000 Independence Avenue, SW.
Washington, DC 20585–0121

September 10, 2012

Re: Notice of Proposed Rulemaking for Residential Furnace Fans

Docket Number: **EERE-2010-BT-STD-0011**
RIN: **1904-AC22**

Dear Ms. Edwards,

Thank you for the opportunity to comment on the recently released Preliminary Technical Support Document (PTSD) for Residential Furnace Fans. Northeast Energy Efficiency Partnerships (NEEP) is heartened to see several of the comments/recommendations that we submitted during the previous Framework Document stage reflected in the Department's PTSD. We would like to voice continued support for several aspects of the PTSD while also raising, and in some cases reiterating, important issues that we urge the Department to consider before developing its Proposed Rule.

Even with a relatively high prevalence of boiler-type heating systems in the region, ducted Furnace systems (natural gas, oil, electric, propane) employing furnace fans make up a significant portion of heating systems in the region. Across New England and the Mid-Atlantic approximately 42 percent of housing units operate these types of systems. According to an Appliance Standards Awareness Project (ASAP) analysis, electrical consumption attributable to residential furnace fans (in homes with furnaces) accounts for approximately 12 percent of total residential electricity use. The combination of their broad use and their individual annual energy needs creates a significant energy footprint at the local, regional and national levels. When considering the millions of furnace fans in use throughout the region, every small improvement to the efficiencies of furnace fans will add up to important energy savings for residents of the Northeast United States.

The preliminary technical analysis estimates promising and cost-effective energy savings associated with potential minimum efficiency standards. According to the analysis, the U.S. could save 1.69 Quads of energy (cumulatively over the 30 year Analysis) with an associated $10 Billion Net Present Value at efficiency levels that maximize life cycle cost to consumers. With 58 percent of furnaces in the region 10 years or older, the Northeast/Mid-Atlantic will likely see the savings accrue sooner than other regions.

Furnace fan efficiency, or lack thereof, has been a major concern to many Northeast states for nearly a decade. Without a federal standard, little attention was paid by manufacturers to driving efficiency improvements in these products. Several states in our region recognized the fact that furnace fans were not yet a product covered by the federal appliance standards program and pursued the opportunities associated with improved furnace fan efficiencies. Between 2005 and 2008, Massachusetts, Rhode Island, New Hampshire, Vermont, and Maryland each passed legislation to develop state-level minimum efficiency standards for these products[1]. None of the states was ever able to implement such standards, as the 2007 Energy Independence and Security Act directed DOE to develop standards for furnace fans, effectively preempting state implementation. During the same

[1] Limiting Electricity ratio (furnace fan energy/total furnace energy) values to between 2-2.3% (for various furnace technologies)

time, ratepayer funded energy efficiency programs sought to achieve savings through furnace fan efficiency by requiring certain furnace fan efficiencies to qualify for incentives and other promotions.[2]

The effort to set strong energy efficiency standards for Residential Furnace fans is of paramount importance for Northeast states, as we seek to meet some of the most aggressive energy reduction goals in the country. Strong federal energy efficiency standards for this product category will help meet these goals by reducing consumption of electricity, as well as lowering peak electricity demand, significantly reducing pollution and creating new economic opportunities.

We applaud the hard work that the Department has put into the development of this Technical Support Document, and, in general, support the many aspects of the PTSD. We did, however, wish to raise some particular concerns that we feel, if addressed, will lead to stronger Proposed Rule from the Department. We see this standards-setting process as a vital mechanism in transforming the market towards high efficiency HVAC products.

1. **Northeast stakeholders support the use of the proposed efficiency rating metric, Fan Efficiency Rating (FER). The rating balances accuracy with complexity and reflects a sensitivity concerning additional testing burden that would be placed on the manufacturer community.**
   - Like all other appliance standards and their test procedures, we stress the importance of testing an appliance or piece of equipment in an environment most reflective of real world applications. In the case of furnace fans, which must work to move air through non-standard ductwork, the test procedure must develop appropriate assumptions/reference systems about the nature of the ductwork the HVAC equipment and fan will be operated in conjunction with. We support the Department's departure from the antiquated external static pressures (ESP) that have been used as part of the Furnace and Central Air Conditioner test procedures. ESPs used in the test procedure are more indicative of field conditions, not idealized lab scenarios.
   - In developing a rating system that reflects efficiency across a range of typical operations (heating, cooling, circulating) we support the measurement of power draw at the three airflow settings described by the Department. In order to properly account for the efficiencies associated with variable speed motors, it is crucial that the efficiency metric continue to take multiple airflow settings into account.
   - We support the Department's intention of testing furnace fans in the HVAC products that they will be operated with. *In situ* testing enables the rating metric to account for system effects on airflow delivery and, ultimately, energy performance. The proposed product class structure correctly allows for differentiation of products with higher thermal efficiency, such as condensing furnaces.
   - Northeast stakeholders suggest that one small improvement to the FER rating would simply be taking the inverse of the proposed W/1000cfm rating (1000cfm/W) so that improved efficiency is reflected in growing values.

2. **We remain concerned with DOE's judgment that furnace fans incorporated as part of Central Air Conditioner and Heat Pump products shall not be covered under this standards-setting process.** It is our perspective that such products should in fact fall under the scope of

[2] Massachusetts energy efficiency programs required certain efficiencies of fans (electricity ration) as part of their furnace rebate offerings.

this rulemaking since their existing efficiency ratings (SEER/HSPF) do not effectively address efficiency of the fan.

> *"DOE did not prioritize furnace fans used in CAC blower-coil units, SDHV air handlers, and through-the-wall air handlers because the electrical energy consumption of these furnace fans is included in the SEER and HSPF metrics that DOE uses to regulate residential CAC and heat pump products."* [3]

- As we stated in comments during the Framework Document;

  > *"Although the Seasonal Energy Efficiency Rating (SEER) metric utilized to measure the efficiency of central air conditioners does include the energy used by the fan, and thus accounts for its efficiency in a sense, the metric does not properly account for, or reward, the efficiency gains available in the furnace fan."*

  Because furnace fan energy can be a small percentage of overall energy use of a central air conditioner, it's very possible that a manufacturer may disregard the furnace fan as being insignificant when working to meet the system wide efficiency requirements. A stand-alone efficiency requirement would ensure that appropriate attention be paid to the cost-effective efficiencies available in the furnace fan component.

3. **Northeast stakeholders urge the Department to finalize the Test Procedure Rulemaking before they complete/publish their proposed rule (Notice of Proposed Rulemaking) for minimum efficiency standards.** Assessing the Proposed rule without clarity/finality around the test procedure would prevent stakeholders from offering useful feedback.

4. **We suggest that the effective date of these standards be three years following the publication of the Final Rule, not the five that the Department has indicated in the PTSD**. Although the Department has used five years for other HVAC products, there is no statutory language that directs the Department on this particular rulemaking. We suggest that lag time be just one of many (i.e. stringency of efficiency standards) determining factors in the standard setting process. In the case of furnace fans, it is unclear what necessitates a five year implementation window.

5. **We strongly recommend estimating the value of capacity reduction due to Appliance Standards as part of the NOPR**. Reducing the need for electricity capacity is an important benefit that minimum efficiency standards bring to the country and various regions. The NOPR will provide estimates of the expected reduction in electricity capacity due to the furnace fan standards. There is a dollar value associated with the deferral or elimination of this capacity. We urge the department to include a financial benefit estimate associated with these capacity reductions as part of the final Technical Support Document.

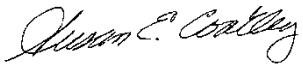
   NEEP and other Northeast stakeholders included this comment during the Framework stage; however, we would like to reiterate our position that this exercise is very important if the Department wants to accurately reflect all value inherent in new standards for furnace fans.

6. **Northeast stakeholders support the Department's use of the constant torque ECM motor-driven furnace fan, referred to as X13, in establishing a distinct Candidate Standard Level (CSL) as part of the Furnace fan analysis. These motors represent a widely available, less expensive alternative to a full blown ECM motor**.

[3] Residential Furnace Fans Preliminary Technical Support Document, Chapter Three

In order to develop a sound Proposed Rule for Residential Furnace Fans, we urge the Department to largely maintain the path that they are currently on, while making a few adjustments. We in the Northeast are hopeful that the Department will seize this exciting opportunity to maximize cost-effective energy savings associated with these products. Feel free to contact us with clarifications or comments. Thank you again for your consideration.

Sincerely,



Susan E. Coakley, Executive Director