Northeast Energy Efficiency Partnerships, Inc.

July 31, 2008

Ms. Brenda Edwards, EE–41
Office of Energy Efficiency and Renewable Energy,
Energy Conservation Program for Consumer Products
U.S. Department of Energy
1000 Independence Avenue, SW.
Washington, DC 20585–0121

Re: Proposed Rules: Energy Conservation Program for Consumer Products; Central Air Conditioners and Heat Pump Energy Conservation Standards.

Docket Number: EERE-2008-BT-STD-0006
RIN: 1904-AB47

Dear Ms. Edwards:

Thank you for the opportunity to comment on the recently released Framework Document on Residential Central Air Conditioners and Heat Pumps. Northeast Energy Efficiency Partnerships (NEEP) and the undersigned states strongly encourage the Department of Energy (DOE) to promulgate the most stringent possible rule governing the efficiency standards of these appliances. The effort to set strong energy efficiency standards for central air conditioners and heat pumps is of paramount importance for Northeast residents as they face some of the highest energy costs in the nation; costs that drain the economy. Strong energy efficiency standards on residential central air conditioners and heat pumps will sharply reduce consumption of electricity, lower peak electricity demand, significantly reduce pollution and create new economic opportunities.

Please note that in addition to the comments below, the undersigned also strongly endorse the comments submitted by the American Council for an Energy Efficient Economy.

**Peak load establishes the marginal retail rates consumers pay in the Northeast**.

The dynamics of the electricity market in the Northeast demand aggressive efforts to reduce peak load. The Northeast generally has a policy environment that sees retail electricity prices set as a function of separate generation, transmission and distribution costs, with the generation and transmission components representing the largest portion of these costs. These costs are largely driven by wholesale market prices "on the margin," which are in turn driven by peak load.

Evidence across the Northeast indicates that electricity prices on the margin are determined by a small number of hours on a very small number of days, generally the mid-afternoon periods of hot, humid summer days. For example, in a Connecticut Energy Advisory Board (CEAB) filing to the Connecticut Department of Public Utility Control, 79 super-peak hours across the entirety

of the July 2004-June 2005 period saw delivered energy prices at 50 percent ($25/MWh) higher than the average for that period[1].

**Reducing energy consumption in residential central air conditioners is key to lowering peak demand**

Reducing energy consumption related to residential air conditioners represents a major component in the effort to lower peak demand. Consequently, the DOE must set standards that accurately reflect the situation in the region. As the DOE works to establish the framework for determining appropriately stringent standards for the Northeast, NEEP and the undersigned states would like the DOE to amend the framework document with the following actions:

1. Require a minimum Energy Efficiency Ratio (EER) in addition to a minimum Seasonal Energy Efficiency Ratio (SEER) in a revised standard.
2. Amend the testing procedure to more accurately reflect actual operating conditions.
3. Set separate standards for ductless mini-splits.

## Action 1: DOE should use Energy Efficiency Ratio (EER) in addition to the Seasonal Energy Efficiency Ratio (SEER) to measure efficiency.

As noted above, a small number of super-peak hours establishes infrastructure requirements for generation and transmission and establishes the marginal price upon which retail rates for all customers are based. To relieve the stress on both the transmission system and ratepayers, efficiency policy should focus on lowering peak demand through energy efficiency and demand response activities; a finding highlighted in the CEAB filing mentioned above.

As a result of its considerably increasing market penetration and its operation coincident to peak, residential air conditioning has been identified by public policy makers in the northeast as a key contributing factor to creating these small numbers of super-peak hours. The priority for macro-economic relief due to rising retail electricity rates should therefore focus on improving the instantaneous efficiency, not only the overall seasonal efficiency of air conditioning. The EER with the correct testing parameters[2], measures the instantaneous efficiency of air conditioning; SEER, as tested by typical methods including those utilized by DOE in evaluating efficiency of air conditioners under its appliance efficiency standards program does not. The undersigned strongly support inclusion of an EER requirement to explicitly address peak load.

**Recommendation: DOE should include EER in determining the appropriate efficiency standard.**

## Action 2: DOE should amend the testing procedure to more accurately reflect actual operating conditions.

[1] Docket No. 05-07-14 PH01, September 5, 2005 filing by Mary Healy, CT Consumer Counsel on behalf of the CT Energy Advisory Board. The filing was related to federally mandated congestion charges.

With respect to the existing test procedure and its application, NEEP also observes the following five flaws with respect to the existing test procedure and recommends corrective actions for each.

A. Test procedures currently allow third party coils to be evaluated via computer simulation rather than laboratory/bench testing. This potentially affords advantageous results to parties utilizing such coils.

**Recommendation: Test procedures should require laboratory/bench testing of third party coils.**

B. Motors installed on equipment tested are not required to be and are oftentimes not the motors actually shipped. This results in efficiency ratings that are potentially higher than what will actually be achieved in the field.

**Recommendation: Testing should be required for the motors that will be in actual operation.**

C. Current test procedures for SEER utilize a weighted average efficiency based on multiple fan speeds in the effort to estimate efficiency over the entirety of the cooling season, however, since high-speed operation generally occurs at periods of electric system and equipment utilization peaks, measuring EER should be done at high fan speeds.

**Recommendation: EER testing should be conducted during high speed operation.**

D. Current testing allows for evaluation of equipment without air handler fans running despite the fact that air handler efficiency is a significant component of overall system efficiency. This situation may penalize units that have high efficiency fans.

**Recommendation: Procedure should include provisions for testing while air handler fans are running.**

## Action 3: DOE should set separate standards for ductless mini-splits.

NEEP strongly recommends that DOE reevaluate the following statements:

- "Residential-size multi-split systems compete primarily with ducted systems" and
- "DOE is considering maintaining the status of ductless split systems and not creating a separate product class with separate standards."[3]

In the Northeast a significant number of homes have been and even now are being built with hydronic (steam and forced hot water) and electric baseboard heat that does not utilize ductwork.

Also in the Northeast, significant numbers of homes that do utilize ductwork were built with heating systems only and not central air conditioning. In the case of homes with hydronic and electric baseboard heat, cooling is generally provided now by use of room air conditioners. Such

[3] Framework, p. 28.

homes are a target for conversion to ductless mini-split systems, especially where the electric baseboard heat and room air conditioner situation is encountered. Clearly this application does not compete with ducted systems.

In the case of ducted heating systems designed and installed as stand-alone heating systems without central air conditioning, addition of central air conditioning by way of installation of an outdoor condenser and an "A-coil" in the furnace is common.

These applications represent a significant portion of the growth in penetration of central air conditioning in the northeast and thus the growth in peak load. Unfortunately significant design and installation issues exist in such retrofit systems. The distribution (duct) systems that were designed and installed for heating are simply not close to optimal for use with air conditioning. In these applications, installation of ductless mini-splits is frequently pursued because the efficiency losses related to attempting to utilize existing duct systems are avoided. In both of these applications, overall efficiency is greatly enhanced by use of the ductless mini-split and for these reasons it is important that they be treated as a separate category of air conditioner, with separate efficiency standards.

**Recommendation: DOE should establish a new category for ductless mini-split systems and pursue a separate standard setting process for these products.**

**Conclusion**

Peak electricity demand will continue to strain the electricity grid in the Northeast and result in high prices to retail customers. Reducing electricity use from residential central air conditioners will continue to be an important part of the strategy to lower overall peak demand. Establishing the proper framework for evaluating the proposed standard on residential air conditioners will help ensure that the eventual standard will maximize energy savings in the region.

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