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Dear Ms. Schmeltz:

Wisconsin Energy Conservation Corporation (WECC) appreciates this opportunity to comment on the proposal to revise the ENERGY STAR Central Air Conditioner and Air Source Heat Pump Specification (Specification). WECC operates programs serving customers and market providers in Wisconsin, Minnesota, Michigan and Indiana. We have developed excellent, mutually-beneficial relationships with almost all of the heating and cooling distributors and many contractors in Wisconsin. We are currently building relationships with market providers in the other states mentioned. With their continuing support we are achieving excellent market penetration of ENERGY STAR residential heating and cooling equipment, lighting and appliances through the programs we operate.

In this letter we provide comments specifically on the requirements that EPA is proposing to address installation issues in addition to the energy efficiency criteria for residential heating and cooling equipment. The proposed installation criteria include proper sizing of equipment, matched assembly of split systems, and independent verification that airflow and refrigerant charge meet manufacturer's specifications.

EPA has recognized that "efficiency program sponsors are the likely first implementers of verification programs." WECC agrees that the design of efficiency programs and spending by efficiency programs will have significant effects on whether and when the benefits sought by proper installation may be achieved. We believe that some of the primary ways the Focus on Energy program in Wisconsin and other programs may most effectively – and cost-effectively – support proper installations will involve three specific approaches:

1. Help customers find businesses that are actively selling ENERGY STAR products and completing quality installations;
2. Retain flexibility to permit efficiency programs to make timely adjustments for local market conditions and to allow for product and market changes; and
3. To accept changing priorities [define what the drivers of such changes may be].

We explain our views of each of these approaches in the next few pages.

1. ENERGY STAR™ should help customers more easily recognize businesses who actively sell ENERGY STAR air conditioners by sharing use of the ENERGY STAR Partner name.

It appears that EPA intends to call administrators – like WECC, or programs – like Focus on Energy, “ENERGY STAR PARTNERS.” We do not believe this would help us or customers. WECC understands EPA endorses products and not businesses and that EPA might have concerns over enforcement issues if many businesses were to use the “ENERGY STAR Partner” name.

However, we wonder how customers will be able to buy ENERGY STAR products if businesses that actively support and sell ENERGY STAR are not clearly differentiated?

We suggest that the *most important* potential partners would be the HVAC contractors who are already actively selling ENERGY STAR air conditioners and providing installation and service over the life of each unit. Contractors have considerable control over the choices available to customers. Starting with those already selling ENERGY STAR units provides significant advantages.

Since it appears that efficiency programs may be taking the lead in the enforcement role, we will briefly describe key approaches that have made our programs effective. We developed the Efficient Heating and Cooling Initiative by employing a completely market-driven approach. We continue to work with every type of market provider from manufacturers, through distributors to the contractors who sell and install HVAC equipment to residential customers.

At last count more than 1,000 contractors are participating in this program, and we work with 40 distributors and manufacturers. More importantly, we are able to rely on not just the \$4 million budgeted by Focus on Energy for this Initiative, but also significant funds provided to customers by manufacturers who match our incentives.

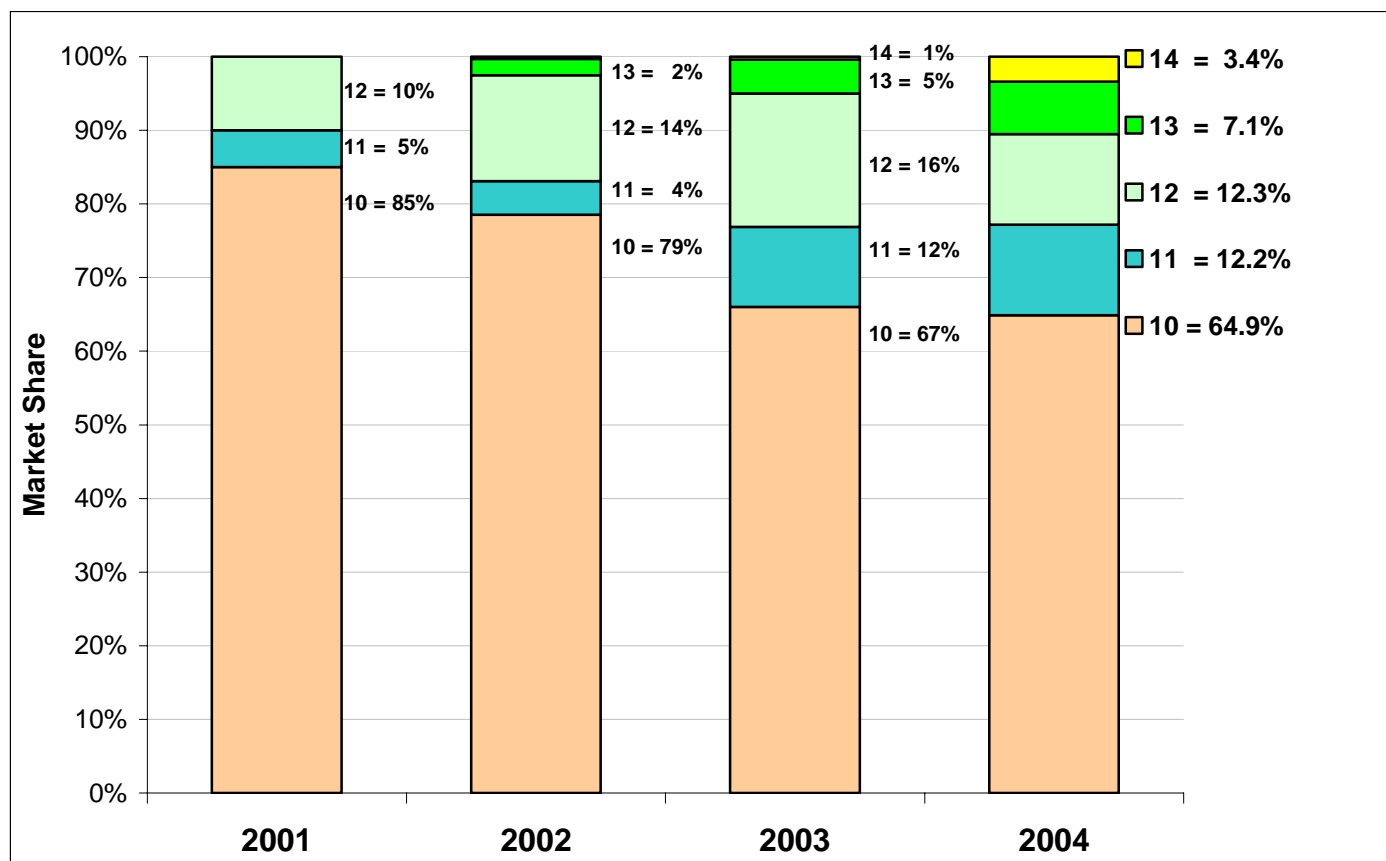
Another critical aspect of the program’s design is to influence the stocking practices of equipment distributors. We meet with all the distributors annually to discuss the program offers for the following year. The first part of our cooperative arrangement includes planning far enough ahead so we can inform the distributors and manufacturers of our planned incentive levels and minimum efficiencies we will require *before the distributors need to order their stock* for the next heating and cooling seasons.

Second, in addition to offering cash-back rewards for consumers who purchase qualifying equipment, *we provide consumer educational sales tools for contractors* to use at the point of sale.

Third, we help contractors reduce the number of callbacks and equipment failures from poor installations. We do this by *supporting contractor education delivered at the distributors’ facilities*. During the first full year of this effort more than 1,000 contractors received training helping them ensure proper installation.

These three efforts have helped make distributors confident enough that they will reduce their stock of 10 SEER air conditioners and standard efficiency furnaces and boilers. We have made great progress in reducing the market share of SEER 10 units from 85 percent in 2001 to 65 percent in 2004. SEER 13 central air conditioners started at two percent in 2002 and reached seven percent by 2004, while SEER 14 units appeared with one percent in 2003 and grew to more than three percent in 2004. The total percentage of units with SEER greater than 10 grew from 15 percent in 2001 to 35 percent in 2004.

Figure 1: Air Conditioner Market Share (percent of total by SEER level)



Source: Energy Center of Wisconsin, Furnace and Air conditioner Tracking System reports, 2001 - 2005.

Some programs in states with warmer climates and larger budgets appear to expect all participants to purchase air conditioners that at least meet – or even exceed – ENERGY STAR minimum standards. We are proud of the 35 percent market share of efficient air conditioners in Wisconsin. And, while we believe our results are at least comparable to other programs in hotter climates, ENERGY STAR air conditioners are simply not sold by a majority of contractors, nor have they made up the majority of units purchased by Wisconsin program participants.

Based on the prevalence of failures to provide proper airflow, refrigerant charge and correctly sized units reported by numerous studies, our programs in Wisconsin and other states have very

large opportunities to improve operating efficiencies. These opportunities also include the large numbers of existing air conditioners and new air conditioners with SEER lower than required by the ENERGY STAR proposal. We believe our efforts to improve installations must also address the installation of non-ENERGY STAR units.

It seems logical to us that our goal would be to encourage customers to request quotes from and use contractors that complete quality installs on all equipment *and also* sell at least some minimum quantity of ENERGY STAR air conditioners. It would be useful to refer to such contractors as “ENERGY STAR Partners” in our promotion efforts. However, if EPA will not permit us to use that term we hope we can work out another ENERGY STAR term to help customers clearly recognize these excellent contractors.

2. EPA should retain flexibility in the ENERGY STAR specifications to allow efficiency program implementation to accommodate local market conditions and market changes over time.

WECC hopes to create value for customers and contractors by actively supporting proper installations with a *reasonable level* of verification. In this section we explain how we would continue to produce improved efficiency by helping customers find contractors who already sell ENERGY STAR air conditioners and who reliably complete quality installations, for both ENERGY STAR and non-ENERGY STAR equipment.

WECC has, for almost four years, been working with market providers in the Wisconsin HVAC industry to train and support contractors to sell the value of ENERGY STAR equipment and perform quality installations. As we just described, our close cooperation with manufacturers, distributors and contractors has allowed all parties to accomplish much more than any of us could have on our own.

Our priorities are based on three critical perspectives developed through this involvement:

- 1) Quality installation issues need to be addressed across all equipment, both ENERGY STAR qualified, and other equipment that does not meet ENERGY STAR minimum requirements;
- 2) It is better to cooperate in training contractors to build in quality than to rely on testing all installations for flaws; and
- 3) History and recent painful experiences have taught us it is unlikely sufficient budget will be available for efficiency programs to serve the role of policemen for verification of a large proportion of installations over the long-run.

Flexibility in Verification - Airflow

It is clear to us that the numbers and kinds of verification that may be justified to improve savings will vary by markets and features of equipment installed.

First, we are not convinced that those among the 1,038 contractors who have completed training and will sell and install ENERGY STAR central air conditioners in Wisconsin will have as many problems as contractors in various studies. Evaluations of our program provide some expectations that trained contractors selling efficient air conditioners are already addressing quality installations and submitting reports with their test data for our verification.

Granted there are some contractors who are not doing enough. Those contractors might benefit from a program such as Check Me being used elsewhere on every air conditioner installation. A critical question now is how may we justify spending limited public benefits funds to subsidize verification and assistance for these contractors on every air conditioner installation?

We believe it is better for us to spend our limited budget to provide training to more contractors so they will build in quality. We believe that customers will look for such contractors – if we clearly identify them. We do not have enough money to verify every contractor's work on every air conditioner.

Of course, some verification is needed to monitor the effectiveness of the training we and the industry provide. However, spending verification to encourage competition and market forces to take over is better than indefinite third party verification that may not have enough financial support.

Second, it is not clear if the optimal specifications for third party verification are known for the kind of equipment that is available now and will be entering the market in 2006 or beyond. For example, **testing airflow after installation is not always the solution**. Sometimes the solutions to inadequate airflow should be done regardless of the test. For instance, a filter with less static pressure that helps reduce maintenance,¹ could be both a good idea regardless of conditions soon after installation and a might prevent airflow problems then or later. We also question what good it is to test after an installation is completed and find inadequate airflow, when some options have been foreclosed (and the customer is not willing to pay for remediation)? Is it not better to design and build in the solutions?

Furthermore, proper airflow is not clearly definable generically, especially with equipment already promoted by our program. While some brands of equipment require 400 cfm/ton to deliver the design efficiency, other equipment is designed and preset by the manufacturer to deliver and maintain 350 cfm/ton. A goal of 400 cfm/ton is not always optimal because optimal airflow depends on the sensible heat ratio needed. It is a challenge to even know the flow rate intended by the manufacturer. And, some literature even lists performance for a variety of airflow levels. So, what does it mean to install per manufacturer specifications?

¹ Airflow is important not only at the time of installation with a new filter but also once the filter is dirty but not yet replaced.

In fact, we are now seeing – and may see even more equipment – that is designed to deliver different airflow depending on the sensible and latent loads detected in actual operation. Thermostats now sold can sense humidity and change the amount of air delivery on furnaces with ECM motors.

Knowledge of – and training in – proper procedures for setting up each specific type of equipment is more useful than testing for one specific airflow. Further, the market share of new furnaces (for both existing and new houses) with ECM motors that are designed to automatically maintain proper airflow has already increased to 20 percent in Wisconsin. Combining these furnaces with two stage condensers has yielded SEER 14 and above air conditioners that do not fit well into old airflow verification regimes.

Flexibility in Verification - Sizing

The emergence of variable cooling output by air conditioners also makes the issue of specifications for proper sizing less than clear. For instance, if manual J shows a 1.5 ton air conditioner is needed, what is the energy savings of installing a 1.5 ton single stage air conditioner versus just installing a two stage air conditioner with 1.5 tons in the first stage? The advantage of “proper sizing” (which usually is assumed to mean reducing air conditioner size) is further complicated by the ability of thermostats or other controls to remove the disadvantages. Even utility load management programs that reduce the impact of oversized air conditioner can affect the benefits of proper sizing.

EER - Flexibility

Utility load management programs also affect whether specifying higher EERs produces savings that are worth the incremental cost. Specifying higher EERs is meant to improve the performance of air conditioners at higher temperatures than recognized in the SEER rating. Improvements in high temperature efficiency are especially important in reducing the utility generating plant capacity needed to meet peak loads.

In Wisconsin, temperatures above 90° F are both rare and of short duration. Thus, additional savings to customers who install higher EER units are likely to be quite small. Because utility load management programs are able to control air conditioner use for the short duration of high temperatures, the benefits of high EER are not necessarily worthwhile in Wisconsin.

WECC recognizes and supports the benefits of nationwide pressures to improve the efficiency (including high temperature efficiency) of air conditioners. WECC believes the efficiency of air conditioners available at reasonable cost has improved and will improve even more in the next year or two. Further, manufacturers who recently said two-stage air conditioners were not even in a three year product development horizon, have within the last month made two-stage air conditioners available.

There are now air conditioners with SEER up to 18. These new air conditioners may use one-half to one-third the energy of old existing air conditioners. Once more is known about the air conditioner efficiencies that will soon be available, it might be possible that the overwhelming benefits (environmental and economic) of high SEER air conditioners may become more of priority than improving the EER performance given the above discussion on EER benefits.

WECC urges EPA to either least leave the door open to future proposals (e.g., waiver requests) or to schedule within two years a formal review of the relative priorities of EER improvements relative to lost savings by requiring higher EER. EPA may already be aware that most HVAC contractors and most customers neither recognize the benefits (nor maybe even the existence) of the EER ratings.

Flexibility in Verification – Refrigerant Charging

Even the issue of verification of refrigerant charge is changing as a consequence of changes in the minimum SEER. One brand of equipment has reported to us that their whole line of equipment will have thermostatic expansion valves (TXVs) even though they previously objected to TXV requirements because they were using piston orifices at the time. Since the use of TXVs may reduce the energy waste from errors in refrigerant charge, a new question is becoming more important: is it more important to test for refrigerant charge or is it more important to ensure proper installation and operation of a TXV?

Furthermore, some refrigerants (e.g., 410a) require evacuating the system prior to charging the air conditioner because of moisture or contaminants issues. This may provide an opportunity to check for leaks that could be the source of problems reported as refrigerant charging errors. This may also reduce the importance of later verification of proper refrigerant charge for these systems.

Matching Equipment

More work has to be done on any requirement for matching equipment. If something has a qualifying ARI rating, we would need a clear basis for rejecting equipment because a system is comprised of “non-matching” equipment. If EPA intends matching equipment to mean same brand equipment, we would need legal advice and a strong basis for limiting equipment to same brand equipment.

Duct In Conditioned Space

Duct sealing in conditioned space must not be mandatory as benefits are not yet clearly a priority. In Wisconsin, savings are questionable since most ducts are within the conditioned space.

ENERGY STAR name recognition has been growing. But it has not grown to such a level that most contractors are now promoting ENERGY STAR in response to customer demands. Nor are we aware of any evidence that customers call up contractors and ask for ENERGY STAR

equipment and “a QUALITY INSTALLATION.” We accept the argument that customers expect a quality installation from any contractor they contact yet do not know what one is, or have the ability to recognize one.

We believe we must find ways to work with market providers to:

- 1) help the HVAC industry provide the value sought rather than create a need for us to police rules in the long term; and
- 2) help customers find contractors who will provide the value rather than create levels of customer demand that the market providers are not prepared to meet.

Changing the solution from requiring third party verification to requiring that ENERGY STAR air conditioners must be installed only by contractors who meet agreed-upon qualifications, and who will have demonstrated they will regularly provide a quality installation, may be more useful from the following four perspectives:

- 1) Customers need a way to identify contractors who recognize the value of a quality installation and will both sell and provide quality installations.
- 2) Quality installation is important beyond ENERGY STAR since ENERGY STAR air conditioners will not be the majority of air conditioners
- 3) It is more sustainable (from a program cost perspective) based on the value to differentiate quality contractors rather than trying to support the value of third party verification of each air conditioner.
- 4) Manufacturers could label equipment as ENERGY STAR as produced if it was always installed properly by qualified contractors.

In closing, we must emphasize that contractors are the equivalent of retailers who support ENERGY STAR product efforts. Both need to be recognized as ENERGY STAR Partners. Finally, we believe that our program can certify that participating contractors have been trained and qualified and that they typically provide a quality installation.

Sincerely,

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