

10/27/04



## ENERGY STAR® 2006 Guidelines Response to Request for Comments

### **General**

As demonstrated by our participation and two-year selection for EPA's Manufacturing Partner of the Year Award, Lennox believes the current ENERGY STAR® program for Central Air Conditioners and Air-Source Heat Pumps has demonstrated benefit and value to all parties involved. Manufacturers, distributors, dealers and consumers benefit directly from the awareness and assistance in providing affordable energy savings. Indirectly, we all benefit from the energy conservation and resulting reduction in emissions at the electric generating plants.

As the minimum standard is raised to 13 SEER, we strongly support the continuance of the ENERGY STAR program. The program's past success hinged on providing value to the customer and valued brand recognition, and to have continued success the program must operate in a form that continues to add value to all facets involved -- manufacturing, distributing, selling, installing and purchasing central air conditioning and heat pump equipment. With that in mind, we would offer the following comments in response to your September 29, 2004 program draft.

- ◆ The January 2006 proposed implementation for the new program as prescribed by the EPA brings an ongoing timing concern with respect to planning and preparation. Typically, 18-30 months is required for redesign of a single line of split system equipment. Considering the magnitude of the product line changes, the 18-month span of time between the DOE final rule and the effective date of January 2006 presses manufacturers with both a short time period, and also the challenge of changing all their lines of split system and packaged air conditioning and heat pump product. Compounding the situation is the fact that the outside firms relied on for major tooling and equipment are also overwhelmed by the whole industry changing their entire product offering simultaneously. We would ask that the EPA be mindful when adding higher requirements in a short timeframe. In addition to the product design and manufacturing challenges, the industry must simultaneously gear up for the major shift associated with moving inventory, training on new product lines, and making sure that our contractor base is well-equipped to sell higher efficiency. On top of the 13 SEER challenge in January 2006, the phase-in of increased product requirements should be carefully integrated.

- ◆ In the event that multiple facets of the program are introduced, we ask that a reasonable amount of time be given between each phase to allow both manufacturers and distributors to work through product, marketing, distribution, and format of introduction so that we can continue to be proactive in our efforts to support the ENERGY STAR program. We would ask for continued involvement in establishing those timelines.
- ◆ It is our firm belief that ENERGY STAR, in maintaining high visibility in consumer awareness, is positioned to continue a leadership role in establishing national guidelines for both labeling product and quality installation efforts.

### **Equipment specifications**

- ◆ We are in agreement with the proposed minimum levels for packaged equipment of 14 SEER, 11 EER, 8 HSPF.
- ◆ For split systems, we would recommend changing from the proposed 14 SEER, 12 EER, 8.5 HSPF to a minimum standard of 14 SEER, 11.5 EER, 8.0 HSPF. There are several reasons for this recommendation. Based on the old data contained in Appendix A, the 12 EER level proposed standard eliminates about one-half of the units listed at 14 SEER. We expect many of the eliminated units are small and large tonnages. Changing to 11.5 increases the likelihood that cost effective units in all tonnages will be available and that complete model families (versus individual models) will meet the new requirements. The 12 vs. 11.5 EER difference in energy demand is minimal, on the order of 4%. Without this adjustment, a manufacturer's choices are to add material to increase SEER and correspondingly EER, further decreasing the cost effectiveness of ENERGY STAR equipment. With an 8.5 HSPF requirement, heat pumps have an additional handicap on top of the EER level issue listed above. We expect that most systems would have the additional cost burden of exceeding the 14 SEER level to meet the 8.5 HSPF. Changing the specification will significantly increase the number of models eligible for ENERGY STAR qualification, increasing the probability an ENERGY STAR-listed system will be offered and installed in 14 SEER applications.
- ◆ With respect to Equipment Requirement A on Evaporator Access/Maintainability, we recommend deleting, or holding it in abeyance until several questions can be answered and it can uniformly be applied. A leakage test procedure and leakage level go/no go standard must be developed and implemented in order for manufacturers to objectively determine compliance with the proposal for "airtight" construction. Writing a standard is feasible, and Lennox would certainly be willing to participate in developing such a standard, but until it is in place, this provision is subjective and unenforceable. Realistically, it is unlikely manufacturers would make any

significant changes to improve equipment “airtightness” for an ENERGY STAR listing if there is no standard to be measured against.

While not always the most convenient due to the physical restrictions encountered in installations, coils are cleanable today for those that choose to do so. The option of supplying on-board diagnostics will add cost to the product, making it less competitive with non Energy Star products of equal efficiency. There will be a base cost for supplying sensors and logic and a notification of status, and the final cost will be determined by the degree of accuracy to which the system must sense and activate. We question the value of this cost addition to the consumer and doubt whether they will they recognize enough value to pay more for it.

- ◆ With respect to Equipment Requirement B, Evaporator Measurement access, we recommend it be reconsidered and deleted or held in abeyance until it is sufficiently defined for reasonable compliance. Is it necessary that the measuring “spot” be on the HVAC equipment? In the case of blower coils and horizontal slab coils, it is frequently more conveniently placed, and more accurate readings obtained, in the ductwork. If the “spot” has to be in the coil cabinet, common horizontal slab coils may require larger cabinets to provide an adequate area, and again the added cost, and negative impact on Energy Star equipment sales needs to be evaluated.

Also, asking the field to locate and drill a hole adds risk for error in possible perforation of the refrigeration or water drainage system. What is the perceived value of a pressure measuring point on the inlet side of the evaporator? For coils close coupled to the outlet of furnaces, extreme care must be exercised in drilling the hole, and also in sampling across the outlet of the furnace/coil opening to obtain a representative, average reading of temperatures and static pressure due to the obstructions and turbulence caused by the high velocity air and numerous components.

- ◆ With respect to Item C, Automated Refrigerant Flow Metering Devices, we don’t understand, nor find any explanation, for some of the related requirements. As such, we recommend they be deleted. We don’t understand why the TXV must be factory installed, be located within the evaporator housing, and it must be protected by a full jacket of insulation. Installation both inside and outside the cabinet, by field personnel, without a full-insulated jacket is common industry practice on indoor coils. Installation in outdoor sections of heat pumps without insulation is also common practice. We aren’t aware of any significant problems with these practices. Unless the EPA has data showing the necessity, these requirements on TXV installation should be deleted as they only add cost to the consumer, without any associated increase in value.

As discussed above, Items A, B, and C will increase the price of Energy Star equipment to the consumer. This increase is in addition to the increase inherent for a higher SEER product, and the significant increase for the Quality Installation discussed below. If not subsidized by other sources, these cost increases must be minimal, and of acceptable perceived value to the purchaser for ENERGY STAR sales and installations to be a significant part of the 14 SEER market.

### **Installation Criteria**

Adding installation and verification provisions needs careful analysis for its impact on the customer perception of the value of the program. The additional cost for installation, reporting and verification must be minimized, and in as many cases as possible, absorbed by outside funding such as local utility incentives to be successful.

This concern is extended to HVAC contractors who subscribe to the ENERGY STAR Installation Guidelines. By complying with the Guidelines, a contractor could potentially put his sale at risk by offering this higher-priced service. We must keep in mind that a consumer anticipates a "quality installation" based on the professionalism and salesmanship of the contractor he has chosen to perform his work. Guidelines that are costly in equipment and time may have a negative impact on contractor profitability as shown in the following example.

#### **EXAMPLE**

Contractor A has proposed to the customer a higher efficiency ENERGY STAR product, along with the fact that his company offers the finest installation possible. The product may cost a little more, but the contractor has sold the benefits of lower energy bills.

Contractor B has proposed not only a higher efficiency product, but also sells himself as an ENERGY STAR Quality Installation participant. For this added benefit he must add \$XXX to the proposed amount. If he cannot show a sufficient payback to the customer, he will have lost the job to Contractor A, a non-participant in the program.

Assuming that only better contractors are allowed to be ENERGY STAR quality dealers, every effort should be made to set program criteria that capitalizes on their inherent good practices and quality reputation rather than forcing them to increase their cost and price to sell ENERGY STAR systems.

We feel it is also necessary to look long and hard at the reward for the contractor to embrace installation criteria. He is being asked to fix existing installation problems that were most likely caused by the hands of others. While manufacturers can take full advantage of the marketing prestige and impact a partnership with ENERGY STAR inevitably brings, the contractor does not

currently have the availability of such a partnership. A separate or subsidiary program that involves education, training, and added benefits would greatly impact how the HVAC community adopts the criteria.

With all of the above in mind, Lennox offers the following comments regarding the components of ENERGY STAR's installation practices:

- ◆ With regards to Installation Criteria 1, design and installation, it is acceptable as written. The load calculation should be acceptable with simple, yet accurate tools, such as the forthcoming Easy or EZ version of Manual J or equivalent. The concept of oversizing is easier to talk about than to define. Gross oversizing undoubtedly has a negative impact on efficiency and humidity control. However, systems must allow for some oversizing in order to have the flexibility to maintain reasonable temperature settings, which are the operator's preference. The set point range can be expected to vary at least from 72 to 78 degrees, which is approximately a 35% difference in load at 95 degrees outdoors. Is a system with the capability to maintain the 72 setpoint oversized?
- ◆ Installation Item 2, providing adequate refrigerant charge and airflow, should be left to the standard practice and judgment of the better dealers being targeted as ENERGY STAR installers, unless the additional testing, duct modifications and reporting plus verification are paid for by someone other than the consumer. These dealers will check the charge and equipment performance as part of their startup procedure. They are also likely to inspect the ductwork design and airflow as part of their analysis of the job, and if modification is needed, offer it to the owner as an option with additional cost.

The specification as proposed is overcomplicated with redundancy on these issues. TXVs are required on the basis of saving energy if the refrigerant charge or the airflow or both are incorrect. While the statistics from large databases are cited as evidence of the need for TXVs and independent charge verification, they may not be totally relevant. It must be recognized that they are based on a) field measurements of unknown precision, b) on systems in use varying lengths of time, and c) installed and serviced by contractors of unknown overall quality. The projected energy savings from the cited improper charge are based on the generalized results of a few systems, and we doubt any contractor would guarantee the owner a 12% annual energy saving.

While 400 cfm/ton is often cited as a desirable average airflow, it isn't necessarily correct for all installations. It is not uncommon for higher airflows to be selected in dry climates, and lower airflows in climates with higher dehumidification loads. Again, the dealer should be given the maximum flexibility to perform a cost effective installation. For example, if 400 cfm/ton becomes a requirement, many northern air distribution systems originally

designed as heating-only applications would have to be replaced to add cooling in order to be labeled as ENERGY STAR.

- ◆ Installation Item 3, duct system sealing in new construction, should be limited to ductwork located outside the conditioned space. It is doubtful that the cost of sealing ducts located in the conditioned space will provide any meaningful savings or value to the owner. Large savings from duct leakage are generally only valid where the ducts are in the unconditioned space. While we agree with the value of sealing ducts in non-conditioned spaces, contractors won't guarantee an 18% savings to the builder. Where sealing is not required by code, it will be necessary to incent its installation in order to get most builders to require it.
- ◆ Installation Item 4, recording data -- we are in a position to doubt the value received by the customer outweighs the cost incurred to report this data list.
- ◆ Installation Item 5, contractors providing commissioning report to homeowner -- again, based on consumer behavior, we doubt that the commissioning report would be of interest, or value, to the vast majority of owners, and recommend deleting it and the inherent expense.

The installation criterion needs to be adopted and supported by the contracting community to become a successful and viable part of the ENERGY STAR program. We recommend that the Quality Installation portion of the program be kept separate from the product labeling requirements, with a possible phase-in technique that allows all to be comfortable with every aspect of performance.

### **Verification Criteria**

- ◆ Verification is another component requiring additional funding. While many Measurement & Verification (M & V) companies are available as feasible options, it is our opinion that minimal burden be placed on both the contractor and homeowner/consumer.
- ◆ With respect to the question of who should be defined as the "official" M & V specialist for the ENERGY STAR program, we offer the following:
  - ◆ **Program Sponsors/Utility Companies:** This is the most logical placement of M & V. Those who fund the programs have the most to gain and report by insuring that installations have been performed properly. This currently is common practice in the State of Texas where the audits are performed on contractor submissions as part of the IOU Distributor Programs.
  - ◆ **Third Party HERS rater:** While this practice is currently well received throughout the nation in the new construction market, we are concerned about widening the arena to include residential replacement. Contractors,

in general, are very possessive of their customer base. Allowing a competing contractor to perform an audit on a hard-to-earn customer could potentially be a detriment and will not be looked upon as a benefit.

- ◆ **NATE Self Certification:** Lennox is a strong supporter of the NATE program, and would be interested in learning about and/or contributing to the structure of the proposed self-certification proposal. We the value of NATE is its national recognition and has demonstrated a high level of HVAC competence.

### **Labeling Qualified Systems**

The various proposals submitted by the EPA for product/installation labeling will be relevant to the final guidelines as set forth by ENERGY STAR program. We recommend retaining a label to be used on equipment and literature, and recommended that the final labeling program be discussed at the time a clear direction is determined on the QI and verification issues.

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Lennox Industries will continue to support the efforts of the ENERGY STAR program, and appreciates the chance to offer assistance in making recommendations for a successful joint venture.

In addition, we would like to offer the EPA the opportunity to discuss the proposed 2006 changes with our contractor community. A dealer forum could be conducted with ease in two types of climatic markets in both the Northeast and Southeast United States (or other markets if so desired). Our dealer base would be glad to participate and can offer insights that even we may have overlooked in our comments. Please let us know if we can orchestrate these sessions in the upcoming months.

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