



Lennox International Inc.  
2140 Lake Park Boulevard  
Richardson, Texas 75080-2254

Mailing Address:  
P.O. Box 799900  
Dallas, Texas 75379-9900

Telephone: 972.497.5000  
Facsimile: 972.497.6668  
LennoxInternational.com

David Winningham  
Engineering Team Leader  
Telephone: 803-738-4085

May 16, 2014

Abigail Daken  
Product Manager, ENERGY STAR for HVAC  
United States Environmental Protection Agency  
Washington, DC 20460

**Submitted via:** CAC-ASHP@energystar.gov

**Re: Draft 1 Version 5.0 ENERGY STAR Central Air Conditioner and Air-Source Heat Pump (CAC/ASHP) specification**

Lennox International Inc. (Lennox) hereby submits comments on the proposed *Draft 1 Version 5.0 ENERGY STAR Central Air Conditioner and Air-Source Heat Pump (CAC/ASHP) specification* criteria published on April 16, 2014 (hereafter, the “Proposed Specification”).

Lennox is a leading provider of climate control solutions for heating, air conditioning, and refrigeration markets. Lennox is a publicly-traded company that has thousands of employees, and it manufactures equipment addressed by the Proposed Specification. Lennox is also a member of the Air-Conditioning, Heating and Refrigeration Institute (AHRI), which has worked extensively with EPA and DOE to develop reasonable, practical energy efficiency regulations and programs.

Lennox offers the following general comments regarding the ENERGY STAR program and the Proposed Specification. Below that, Lennox provides responses to specific items raised by EPA and are identified by topic.

**A. General Comments on the Current ENERGY STAR Program.**

Lennox participated in the Draft 1 Version 5.0 stakeholder meeting held by EPA on May 5, 2014 regarding the Proposed Specification. Lennox agrees with the purpose of the ENERGY STAR program to help “businesses and individuals save money and protect our climate through superior energy efficiency”;<sup>1</sup> and Lennox supports the need for leading-edge, energy-efficient products with Lennox’s focus on innovative products that lead the industry in energy efficiency.

---

<sup>1</sup> See <http://www.energystar.gov/about/>.

The ENERGY STAR program has benefits as a means by which stakeholders can promote increased energy efficiency. The success of the program relies on setting reasonable thresholds for energy performance criteria that are easily understood by consumers, dealer-contractors and the entire distribution chain. Regarding the CAC/ASHP criteria, Lennox is concerned with the excessive number of “tiers” of energy standards that exist for this product class when taking into account both ENERGY STAR and the related Consortium for Energy Efficiency (CEE) program, as well as new federal efficiency standards. While the ENERGY STAR brand is familiar to consumers and has significant market value, if the program cannot be readily understood by consumers, requiring additional explanation in the sales process, EPA, manufacturers and dealers-contractors have collectively “lost the customer” and the opportunity to market, sell and install higher efficiency products. As previously stated, the ENERGY STAR program was created to help “businesses and individuals save money and protect our climate through superior energy efficiency.” These goals cannot be accomplished if the program becomes over-burdened with complexity, unnecessary procedural requirements, and undue costs.

Lennox recommends that EPA take the following actions regarding the Proposed Specification:

- Eliminate the proposed ENERGY STAR regional requirements by consolidating CAC and ASHP thresholds to a national ENERGY STAR requirement that is set above DOE regional standard thresholds
- Consolidate single package CAC and ASHP thresholds to a national ENERGY STAR requirement above DOE thresholds
- Align heat pump HSPF with current CEE Tier 2 thresholds

The significant benefits regarding these Lennox recommendations include:

- Simplifying energy efficiency tiers to improve consumer and dealer-contractor understanding of the ENERGY STAR program to avoid confusion
- Eliminating ENERGY STAR regional requirements and associated labeling/enforcement complications
- Reducing complexity within energy efficiency incentive programs that are linked to the ENERGY STAR (and CEE) programs
- Minimizing the number of efficiency levels that are established by the ENERGY STAR and CEE programs, which will simplify participation requirements for stakeholders in both programs and allow both programs to work effectively

Lennox contends that the key to a successful ENERGY STAR program within the HVAC industry is one that is clear and easy to understand by the consumer and encourages manufacturer and HVAC supply chain participation without undue burden.

## **1. Status of the Program.**

While the Proposed Specification is focused on the ENERGY STAR 5.0, Lennox previously voiced concern with the overall effectiveness of the EPA ENERGY STAR program as it relates to CAC/ASHP equipment.

Prior to 2010, the ENERGY STAR program worked seamlessly with the AHRI certification program. However, in 2010 EPA made significant changes to the ENERGY STAR requirements for CAC/ASHP and furnace products, which resulted in a dramatically increased burden to manufacturers. These changes resulted in greatly decreased manufacturer participation.

2010 ENERGY STAR program changes included:

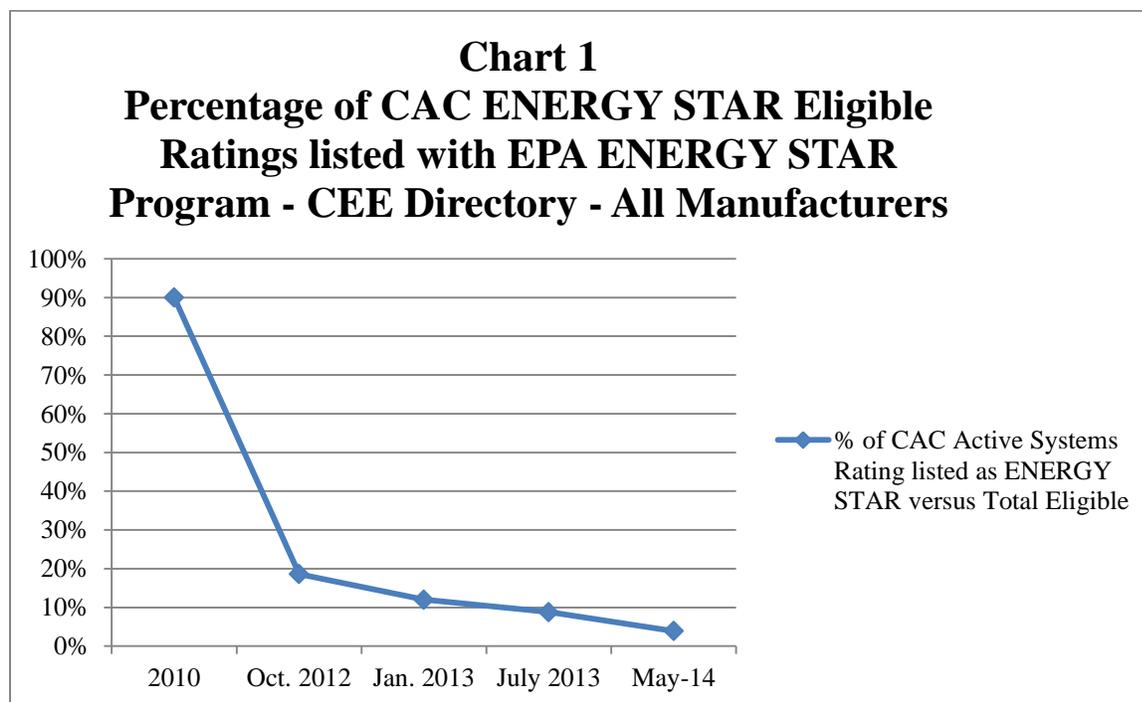
- Submission of test reports for ENERGY STAR ratings
- Third-party lab certification specifically for ENERGY STAR
- Third-party audit testing specifically for ENERGY STAR ratings
- Increased test selection and test sample size
- Audit procedure performance tolerances

Lennox identified its concerns regarding these changes, other concerns, and suggestions for improvement to the ENERGY STAR program, in our comments to the *ENERGY STAR Central Air-Conditioner and Air-Source Heat Pump Version 5.0 Specification Framework*, submitted to EPA on August 2, 2013.

EPA recently published on November 5, 2013 ENERGY STAR Most Efficient 2014 criteria and through a February 28, 2014 letter responded to AHRI regarding approaches to the ENERGY STAR certification and verification of eligible products. The 2014 Most Efficient criteria aligned with CEE's top tier. The February 2014 letter announced impactful steps to more closely align the AHRI certification program and EPA's requirements for ENERGY STAR (assuming that these changes are appropriately reflected in the final 5.0 CAC/ACSHP program). Lennox supports both of these actions as significant steps in reforming the ENERGY STAR program.

While these are significant steps, Lennox recommends further dialogue to align the EPA ENERGY STAR and AHRI certification and verification programs to further reduce the burden and increase the opportunity for manufacturer (and ultimately consumer) participation. Chart 1 below shows the level of AHRI manufacturer participation in the ENERGY STAR program. Lennox has tracked the participation in the ENERGY STAR program as presented in our August 2013 comments from information available in the CEE directory, where ENERGY STAR product ratings are shown. All products listed in the CEE directory meet the ENERGY STAR criteria. Participation level is determined by comparing all products listed as ENERGY STAR

rated products versus all ratings in the CEE directory. Data was updated in May 2014 to determine the initial impact of the recent EPA changes. The most recent data shows manufacturer participation continues to decline, and manufacturers presently seek the ENERGY STAR label for less than 5% of eligible products. From this information, it is clear that the CAC/ASHP manufacturers continue to have concerns regarding the benefit versus burden of the ENERGY STAR program, and continued actions are required to enhance participation in the ENERGY STAR program within the HVAC industry. Lennox understands that it may take time to fully determine the impact of needed improvements to the ENERGY STAR program, but the continued very low level of participation indicates further fundamental changes are required.



**2. ENERGY STAR and CEE Alignment.**

The current combined ENERGY STAR and CEE tier systems are unnecessarily complex with too many threshold levels. This fractures the market into subcategories that add a significant burden to HVAC manufacturers and inhibits product innovation. Additionally, manufacturers will limit product development to a certain number of efficiency levels. Manufacturers and distributors will limit the number of models they offer to minimize the costs associated with an increased number of SKUs driven by multiple product tiers.

Furthermore multiple, inconsistent tiers inhibit manufacturers from participating in all tiers and may cause some manufacturers to drop out of these programs entirely, impeding the development of higher-efficiency products and adversely impacting consumers and installing contractors.

CEE has stated that “Having one set of specifications that can be promoted by all efficiency programs in the US and Canada makes it easier for contractors, distributors, and manufacturers to engage and hence allows for a larger impact on the market.”<sup>2</sup> Lennox agrees that alignment between CEE’s tiers and EPA’s ENERGY STAR performance requirements further increases benefits to the market. Both the ENERGY STAR and CEE programs can, and should, be relevant to promoting improved energy efficiency, and properly-aligned performance requirements are necessary to achieve this goal. Lennox has also raised with CEE the need for better alignment with ENERGY STAR; both programs would benefit from overall coordination, both now and on an ongoing basis.

## **B. ENERGY STAR 5.0 Proposed Qualification Criteria.**

### **1. Regional Specification.**

Lennox does not support regional CAC/ASHP specifications for the ENERGY STAR program and recommends that a national approach be taken.

While Lennox appreciates EPA’s recognition that there are issues associated with a regional specification for ENERGY STAR, there are larger issues associated with a regional specification. With the advent of regional requirements in the new DOE Minimum Efficiency Performance Requirements (MEPS),<sup>3</sup> manufacturers are designing products specifically to meet, and be optimized for, these new minimum efficiency levels. Lennox offers a variety of higher efficiency products and product match-ups that meet ENERGY STAR and CEE efficiency tiers. These products are also designed specifically to meet these threshold levels because marketing rebates and other incentives are tied to these levels.

If a regional approach is taken to new ENERGY STAR criteria, manufacturers will be significantly burdened by the increase in the quantity of threshold levels when considering both ENERGY STAR and CEE tiers. Manufacturers would be faced with designing new product families to optimize products at these increased segment thresholds, or spreading products over these thresholds, resulting in sub-optimized performance-to-value relationships. Either of these approaches could result in an increased cost of the product to the consumer due to reduced

---

<sup>2</sup> See Letter from Lauren Liecau, Residential Program Manager, CEE to HVAC Industry Members, July 19, 2013.

<sup>3</sup> See 10 CFR 430.32(c).

volume or sub-optimum designs to meet these thresholds. If ENERGY STAR levels are different than CEE tiers, this could further complicate manufacturer product lines and exacerbate these problems. Table 1 below outlines the current thresholds for CAC products which include multiple threshold levels. Table 2 shows the Proposed Specification levels, which even further increases the number of levels. This illustrates the need for coordination with CEE and the need to minimize the key levels.

<b>Table 1</b>		
Current CEE and ENERGY STAR Split Central Air Conditioner Specifications		
Level	SEER	EER
CEE Tier 1 and ENERGY STAR	14.5	12
CEE Tier 2	15	12.5
CEE Tier 3 (Advanced) 2013 – Utility Incentives	16	13
ENERGY STAR Most Efficient CEE Tier 3 (Advanced) 2014	18	13

<b>Table 2</b>		
CEE and ENERGY STAR Split Central Air Conditioner Specifications – ENERGY STAR 5.0 Draft w/Regional Requirements		
Level	SEER	EER
CEE Tier 1 and ENERGY STAR Northern	14.5	12
CEE Tier 2	15	12.5
ENERGY STAR - Southern	15.5	13
Utility Incentives	16	13
ENERGY STAR Most Efficient CEE Tier 3 (Advanced) 2014	18	13

A regional ENERGY STAR approach will lead to confusion among consumers and within the distribution supply chain. For instance, consumers and dealers would need an understanding of the “regions” to be certain that any given product is actually ENERGY STAR rated.

Compounding these issues are labeling and enforcement complications associated with regional requirements adding to the manufacturer, distributor and dealer-contractor burden and consumer confusion.

EPA has stated that a regionalized specification for split system CAC also facilitates cooperation with the ENERGY STAR New Homes program and with the new ENERGY STAR Verified HVAC Installation program, by increasing the number of installations in the North for which ENERGY STAR CAC will be appropriate. Lennox understands the importance of quality installation practices and endorses EPA efforts toward this goal. But Lennox does not agree that a regional requirement is a fundamental component in reaching these objectives. The additional burden and complexity of regional requirements far outweigh the benefits of a small reduction in the Northern efficiency requirements. Instead, ENERGY STAR CAC/ASHP requirements should be based on a national approach that would be much simpler to implement, and much easier for customers and dealer-contractors to understand.

Lennox strongly recommends a national ENERGY STAR standard, which would be more stringent than all the DOE regional standards (as further described below).

If the EPA determines that regional requirements are the preferred path, Lennox urges the EPA to align the regional requirements with current CEE levels and not introduce new tier levels. This could be accomplished by aligning EPA ENERGY STAR Northern threshold with CEE Tier 1 and the Southern threshold with CEE Tier 2. While this does not address the complexities associated with labeling and enforcement, it does provide a compromise position providing full alignment with CEE and minimizing the threshold levels.

## **2. Performance Criteria.**

Consistent with discussion above Lennox proposes changes to the EPA Proposed Specification as outlined in the following bullets and Table 3:

- Eliminate regional requirements by consolidating CAC and ASHP thresholds to a national requirement above DOE regional standard thresholds
- Consolidate single package CAC and ASHP thresholds to a national requirement above DOE thresholds
- Align heat pump HSPF with current CEE Tier 2 thresholds

<b>Table 3: Energy-Efficiency Criteria for Qualified Residential ASHPs and Central Air Conditioners</b>						
<b>Product Type</b>	<b>EPA Proposed Level</b>			<b>Proposed Levels Eliminate Regional Requirements</b>		
	<b>SEER</b>	<b>EER</b>	<b>HSPF</b>	<b>SEER</b>	<b>EER</b>	<b>HSPF</b>
<b>CAC Split Systems - South Region</b>	<b>≥ 15.5</b>	<b>≥ 13</b>	<b>N/A</b>	<b>≥ 15.0</b>	<b>≥ 12.5</b>	<b>N/A</b>
<b>CAC Split Systems - North Region</b>	<b>≥ 14.5</b>	<b>≥ 12</b>	<b>N/A</b>			<b>≥ 8.5</b>
<b>ASHP Split Systems - National</b>	<b>≥ 15.5</b>	<b>≥ 12.5</b>	<b>≥ 8.6</b>	<b>≥ 15.0</b>	<b>≥ 12.0</b>	<b>≥ 8.5</b>
<b>CAC Single Package Equipment - National</b>	<b>≥ 15.5</b>	<b>≥ 12.5</b>	<b>N/A</b>			<b>N/A</b>
<b>ASHP Single Package Equipment - National</b>	<b>≥ 14.5</b>	<b>≥ 12</b>	<b>≥ 8.3</b>			<b>≥ 8.2</b>

The significant benefits of this national approach include:

- Simplifying energy efficiency tiers to improve consumer understanding/avoid confusion
- Eliminating regional requirements and associated labeling/enforcement complications
- Reduced complexity within the energy efficiency incentive programs that are linked to the ENERGY STAR (and CEE) programs
- Minimizing the number of efficiency levels between EPA and CEE programs, which will simplify participation requirements for stakeholders in both programs and allow both programs to work effectively

EPA expressed concern during the May 5, 2014 public meeting regarding increasing the ENERGY STAR level in the Northern region. The primary concern expressed by EPA was availability of products in distribution to meet the recommended efficiency level in the North. Lennox contends that this is not a significant issue. Most products today that cost effectively meet the 15 SEER/ 12.5 EER threshold are based upon single-stage split system products matched with a furnace or air handler that incorporates a high efficiency indoor blower to increase the SEER/EER. Lennox has such high-efficiency products widely distributed across the Northern Region, and Lennox believes most manufacturers have a well-established base of these types of products in the Northern Region. Many Northern customers are energy conscious, and Lennox does not believe that having a national ENERGY STAR standard, as outlined above, would adversely impact CAC/ASHP sales in the Northern region.

### **3. Connected Criteria.**

Lennox agrees with EPA's decision to not include connected criteria.

#### **4. Additional Metrics.**

Lennox agrees with the EPA assessment not to use additional metrics, such as 17F COP or heating capacity. Lennox understands EPA's effort to better understand the range of available products and metrics, but agrees with EPA that such differentiation is not useful for this Version 5.0 specification. Lennox would also encourage EPA not to add metrics in the future within all levels of the ENERGY STAR program that add burden and complexity to the program.

#### **5. ENERGY STAR 5.0 Implementation Timing.**

During the May 5, 2014 stakeholder meeting, EPA indicated target timing for finalizing this Version 5.0 CAC/ASHP specification is in July 2015. Lennox supports an expeditious implementation timetable for setting an effective date of these standards provided a national standard coordinated with CEE is adopted, which Lennox believes should be 6 to 9 months following finalization of an appropriate, complete set of requirements for this ENERGY STAR specification. These requirements include EPA setting appropriate energy efficiency criteria, addressing any necessary labeling issues (which would be made substantially more complex if regional ENERGY STAR tiers were to be adopted), and the suitable finalization by EPA of all the other necessary program requirements, including a suitable certification and verification program (e.g., aligned with the AHRI program). The adoption of regional ENERGY STAR standards not aligned with CEE would require a significantly more delayed implementation date, assuming manufacturers choose to participate in a regional, non-aligned program.

***In conclusion, Lennox wishes to emphasize that EPA should thoroughly review and continue to reform the current ENERGY STAR program to ease the burden and costs to manufacturers and dealer-contractors, and thereby increase program participation by manufacturers, dealer-contractors, and consumers. Additionally, Lennox recommends a harmonized approach to ENERGY STAR that is coordinated with the CEE. Furthermore, Lennox would strongly urge EPA not to implement regional performance requirements and avoid the significantly greater complications associated with regional requirements. The important goals of ENERGY STAR, a laudable voluntary program, cannot be accomplished if the program becomes over-burdened with complexity and unnecessary procedural requirements and related costs.***

Sincerely,



David Winningham  
Engineering Team Leader  
803-738-4085