ENERGY STAR®
Central Air Conditioners & Air-Source Heat Pumps

Draft 1 Version 5.0
Stakeholder Meeting
May 05, 2014

Abigail Daken, U.S. EPA
Agenda

• Welcome and Introductions
• ENERGY STAR Program Overview
• Overview of Specification Revision Process
• Reasons Driving CAC/ASHP Specification Revision
• Draft 1 Document Discussion
  – Performance Criteria
  – Regional Label
  – Other Changes
• Timeline and Next Steps
What is ENERGY STAR

- ENERGY STAR is a voluntary government-backed program dedicated to helping individuals protect the environment through superior energy efficiency.

- ENERGY STAR is the national symbol of energy efficiency, making it easy for consumers and businesses to identify high-quality, energy-efficient products.

- ENERGY STAR distinguishes what is efficient/better for the environment without sacrificing features or performance.

- Products that earn the ENERGY STAR meet strict energy performance criteria set by EPA.
ENERGY STAR

- Started in 1992; voluntary program
- GOAL: Reduce greenhouse gas (GHG) emissions through large win-win-win opportunities with today’s energy efficient technologies and practices.
- Provide credible information to buyers
- Work with the marketplace to capitalize on motivations of individuals

![Projected GHG Emissions from Key Sectors through 2030](Source: AEO 2008)
70+ Product Categories Are Covered by ENERGY STAR in the US

- **Lighting**
  - Residential lamps
  - Residential light fixtures

- **Home Envelope**
  - Roof products
  - Windows/Doors

- **Heating & Cooling**
  - Central AC
  - Heat pumps
  - Boilers
  - Furnaces
  - Ceiling fans
  - Room AC
  - Ventilating fans
  - Water Heaters

- **Office Equipment**
  - Computers
  - Monitors
  - Printers
  - Copiers
  - Multi-function Devices
  - Servers
  - Storage
  - UPS

- **Commercial Food Service**
  - Dishwashers
  - Refrigerators
  - Freezers
  - Ice Machines
  - Fryers
  - Steamers
  - Hot Cabinets
  - Griddles
  - Ovens
  - Vending machines

- **Appliances**
  - Clothes washers
  - Dishwashers
  - Refrigerators
  - Dehumidifiers
  - Air cleaners
  - Water coolers

- **Home Electronics**
  - Battery chargers
  - Cordless and IP phones
  - TV
  - Set Top boxes
  - Home audio
Development Process

Specification Development Cycle

1. STAKEHOLDER MEETINGS
2. ENERGY & ENVIRONMENTAL ANALYSIS
3. STAKEHOLDER NOTIFICATION
4. MARKET, INDUSTRY & DESIGN RESEARCH
5. TEST METHODOLOGY DEVELOPMENT (AS NECESSARY)
6. RELEASE DRAFT SPECIFICATION
7. RECESS SUBSEQUENT DRAFTS WITH INTERIM DECISION MEMOS (AS NECESSARY)
8. POST DRAFTS AND STAKEHOLDER COMMENTS TO WEB SITE
9. FINALIZE SPECIFICATION
10. FINAL DECISION MEMORANDUM
11. SPECIFICATION TAKES EFFECT
12. MANUFACTURERS JOIN PROGRAM AS PARTNERS AND BEGIN LABELING PRODUCTS
13. OFFICIALLY LAUNCH SPECIFICATION WITH INDUSTRY AND STAKEHOLDERS
14. MONITOR MARKET PENETRATION
15. OPEN SPECIFICATION FOR REVISIONS (AS NECESSARY)
Guiding Principles for When to Revise ENERGY STAR Specifications

• Significant increase in market penetration of ENERGY STAR qualified models
• Change in the Federal minimum efficiency standards
• Technological advancements
• Product availability limitations
• Issues with consumers realizing expected energy savings
• Performance or quality issues
• Issues with test procedures
Reasons for Specification Revision

• Current specification, Version 4.1, has been in place since April 1, 2006. EPA considers specifications for revision at least every three years.

• New federal minimum efficiency standards will take effect in January 1, 2015. Some levels will meet or be close to the current ENERGY STAR levels.
## Energy-Efficiency Criteria for Qualified Residential ASHPs and Central Air Conditioners (Changes in Blue)

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Proposed ES V5.0 vs 2015 DOE Criteria

- **SEER**
  - South: 14
  - Southwest*: 12
  - North: 12

- **EER**
  - South: 14
  - Southwest*: 12
  - North: 12

* DOE SW EER requirement is 12.2 < 45,000 Btu/hour, 11.7 for larger systems
Draft 1 – CAC Split Systems

• Regional requirements – South and North
• Significant energy savings available to consumers in hot climates
  • About 30% of model availability at the proposed levels for South as per AHRI Directory
• 2015 federal standards require regional requirements for CAC split systems
• Regional specification also facilitates cooperation 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
CAC-SS Product Availability in Southwest

Active models in scope, from April 2013 AHRI directory. Triangles are mini-splits. Blue shapes meet proposed requirements.
CAC-SS Product Availability in South

Active models in scope, from April 2013 AHRI directory. Triangles are mini-splits. Blue shapes meet proposed requirements.
Active models in scope, from April 2013 AHRI directory. Triangles are mini-splits. Blue shapes meet proposed requirements.
Draft 1 – Regions

• South Regional States - Same as DOE South and Southwest
  – Alabama, Arkansas, Delaware, Florida, Georgia, Hawaii, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, District of Columbia, Arizona, California, Nevada, New Mexico

• North Regional States – Same as DOE North Region
Draft 1 - Regional Labeling

• Regional certification mark for North
• Require ENERGY STAR (regional) mark on a rating certificate available for download from the manufacturer (or their Certification Body)
  – Certificate includes model numbers of the full system, performance ratings and capacity (both cooling and heating for ASHP)
  – For example, AHRI Directory Certificate
  – Serves as proof to consumers and utilities for rebates
Regional Label Questions

1. Are there any issues with providing a performance rating certificate for download?

2. Does the rating certificate including the ENERGY STAR logo adequately resolve any concerns of incorrect ENERGY STAR unit being installed in the wrong region?
Split Heat Pump Product Availability

Active models in scope, from April 2013 AHRI directory. Triangles are mini-splits. Blue shapes meet proposed requirements.
### SEER and HSPF correlation

#### High Heating 47 F HSPF (bin)

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Draft 1 – ASHP Split System

Proposed ES V5.0 vs 2015 DOE Criteria

- **SEER**
- **EER**
- **HSPF**

- **EPA**
- **DOE**
Draft 1 – ASHP Split Systems

- National requirement, similar to 2015 federal standards
- Substantial savings in both hot climates (South) and cooler climates (North)
- About 15% model availability per AHRI Directory
Proposed ES V5.0 vs 2015 DOE Criteria

SEER

EER

(DOE applies to SW only)

EPA

DOE
Proposed ES V5.0 vs 2015 DOE Criteria

SEER

EER

HSPF

EPA  DOE
Draft 1 – Single Package

• National Requirement
• CAC levels offer increased energy savings for consumers
  – About 14% model availability per AHRI Directory
• ASHP levels slightly increased
  – Product availability below 10% per AHRI Directory
Questions

3. What is the percentage shipment of single package units versus split system units?

4. Is the demand trend for single package units increasing or decreasing? Why?
Draft 1 - Other Changes

• Definitions revised to be consistent with the definitions in the federal test method
• Sampling requirements revised to be consistent with the DOE sampling requirements as defined in 10 CFR Part 429, Subpart B § 429.16
• Test method reference updated to directly refer to the CAC/ASHP federal test method, 10 CFR part 430 Subpart B, Appendix M
# Specification Development Timeline

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<tr>
<td>May 5, 2014</td>
<td>Stakeholder Webinar</td>
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Questions?
Thank You