



ENERGY STAR[®]

Central Air Conditioners & Air-Source Heat Pumps

**Draft 1 Version 5.0
Stakeholder Meeting
May 05, 2014**

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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

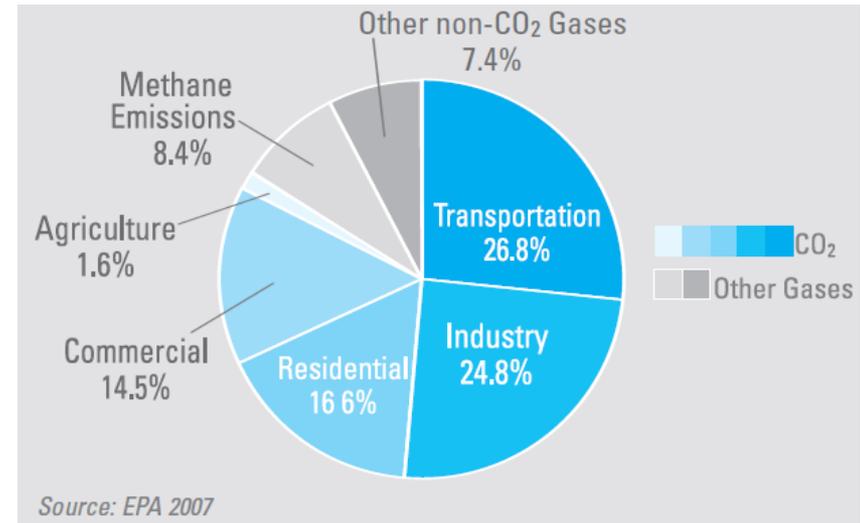


- **ENERGY STAR** is a voluntary government-backed program dedicated to helping individuals protect the environment through superior energy efficiency
- **ENERGY STAR** is the national symbol of energy efficiency, making it easy for consumers and businesses to identify high-quality, energy-efficient 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

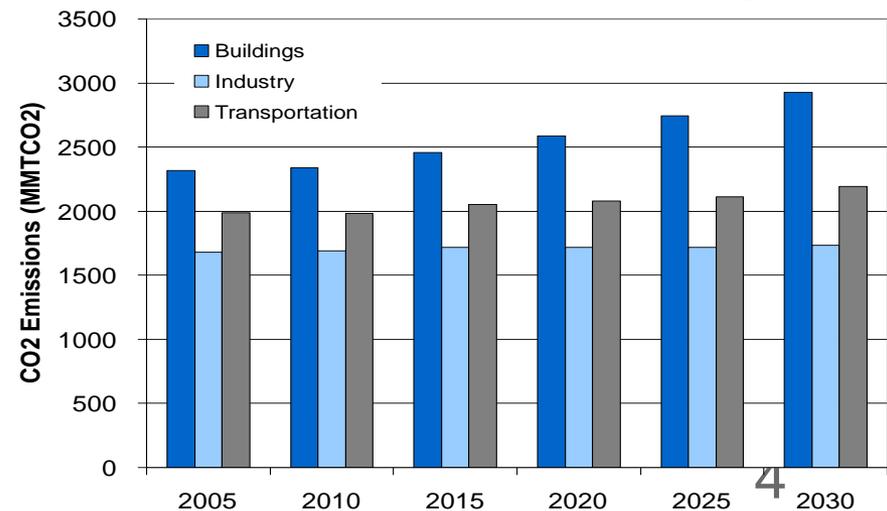
ENERGY STAR



- 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



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.

Draft 1 – Performance Criteria



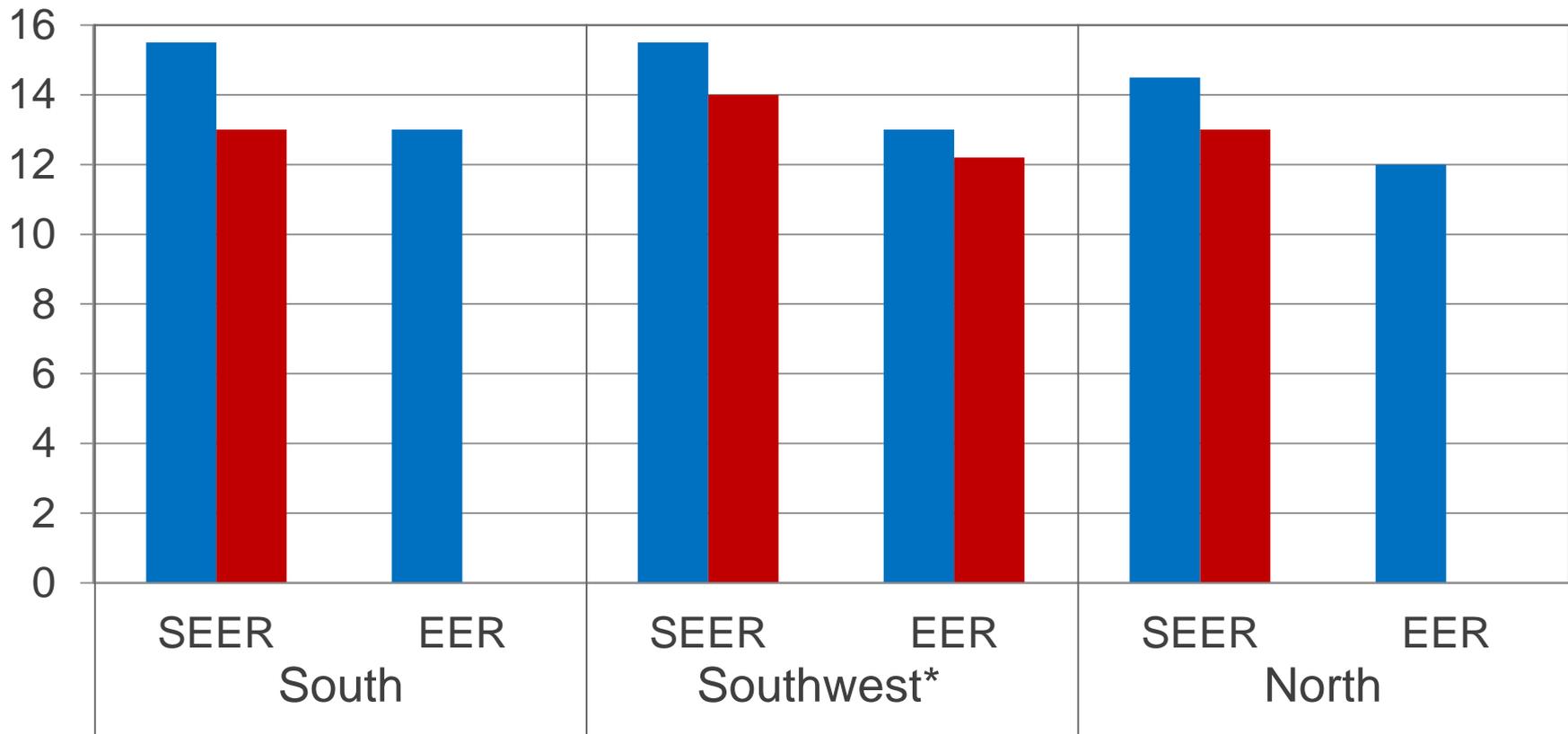
Energy-Efficiency Criteria for Qualified Residential ASHPs and Central Air Conditioners (Changes in Blue)

| Product Type | | Region | SEER | EER | HSPF |
|--------------|----------------|----------|--------|--------|-------|
| CAC | Split System | South | ≥ 15.5 | ≥ 13 | N/A |
| | | North | ≥ 14.5 | ≥ 12 | N/A |
| ASHP | Split System | National | ≥ 15.5 | ≥ 12.5 | ≥ 8.6 |
| CAC | Single Package | National | ≥ 15.5 | ≥ 12.5 | N/A |
| ASHP | Single Package | National | ≥ 14.5 | ≥ 12 | ≥ 8.3 |

Draft 1 – CAC Split System



Proposed ES V5.0 vs 2015 DOE Criteria



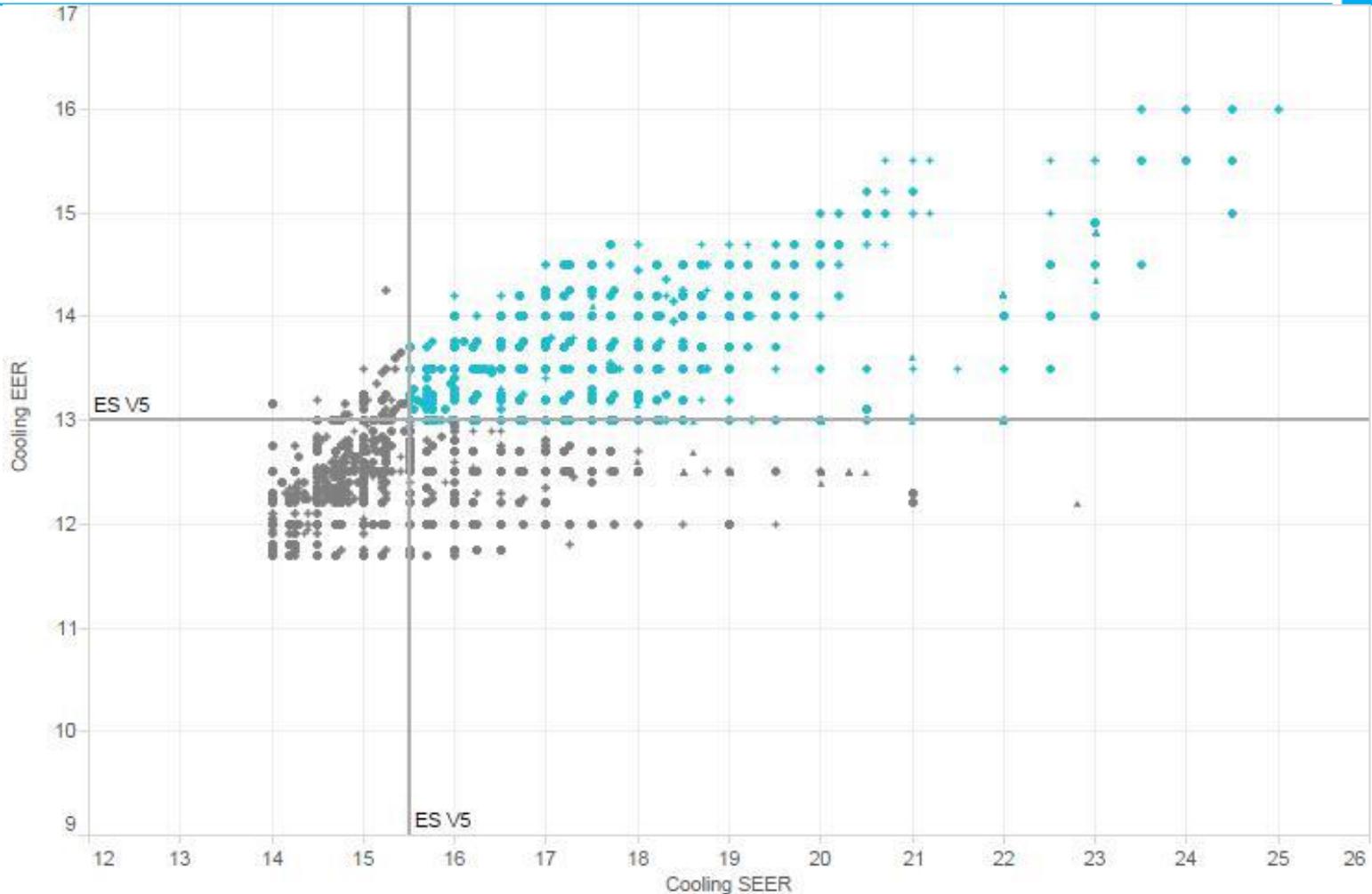
* DOE SW EER requirement is 12.2 < 45,000 Btu/hour, 11.7 for larger systems

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

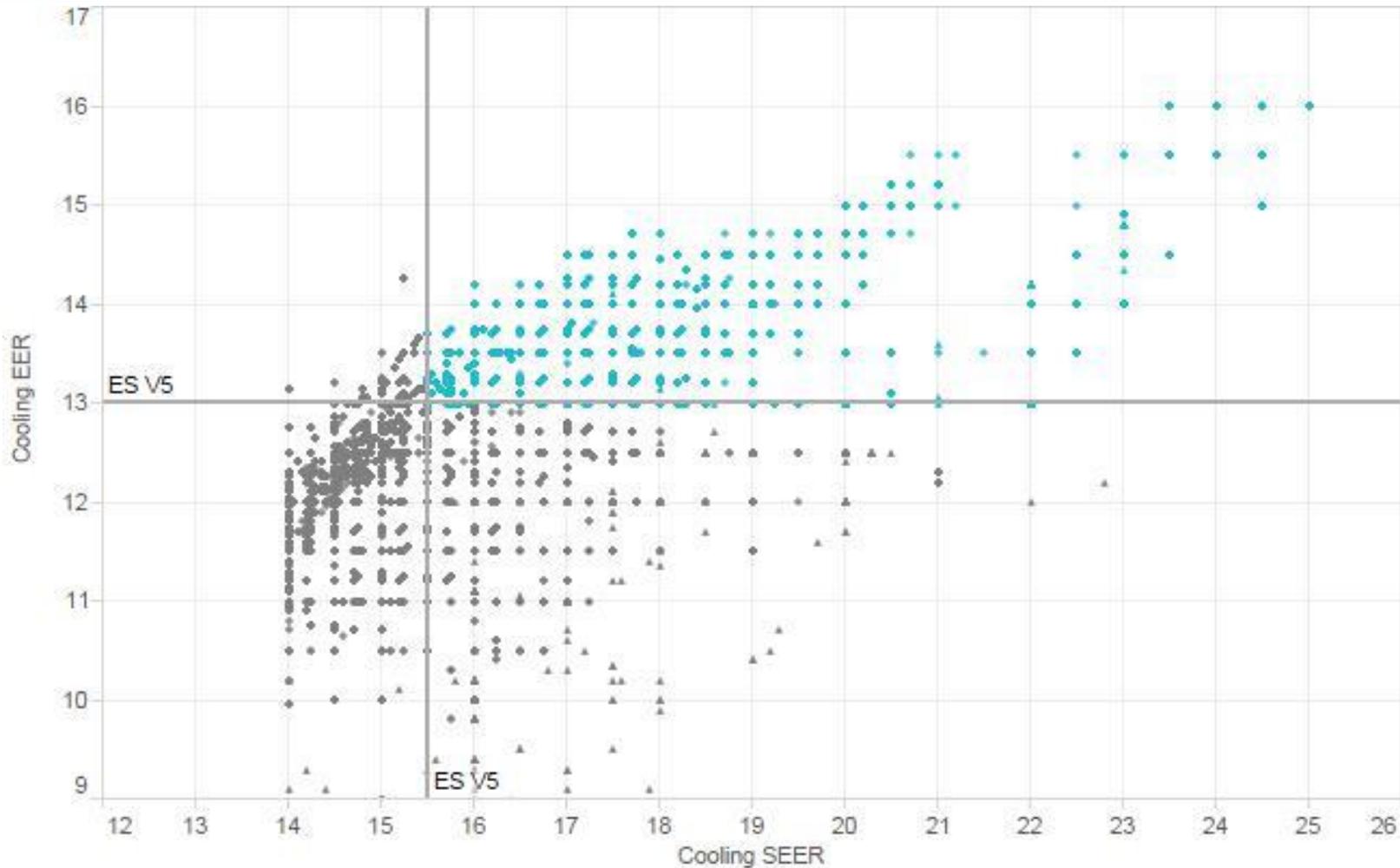
CAC-SS Product Availability in Southwest



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



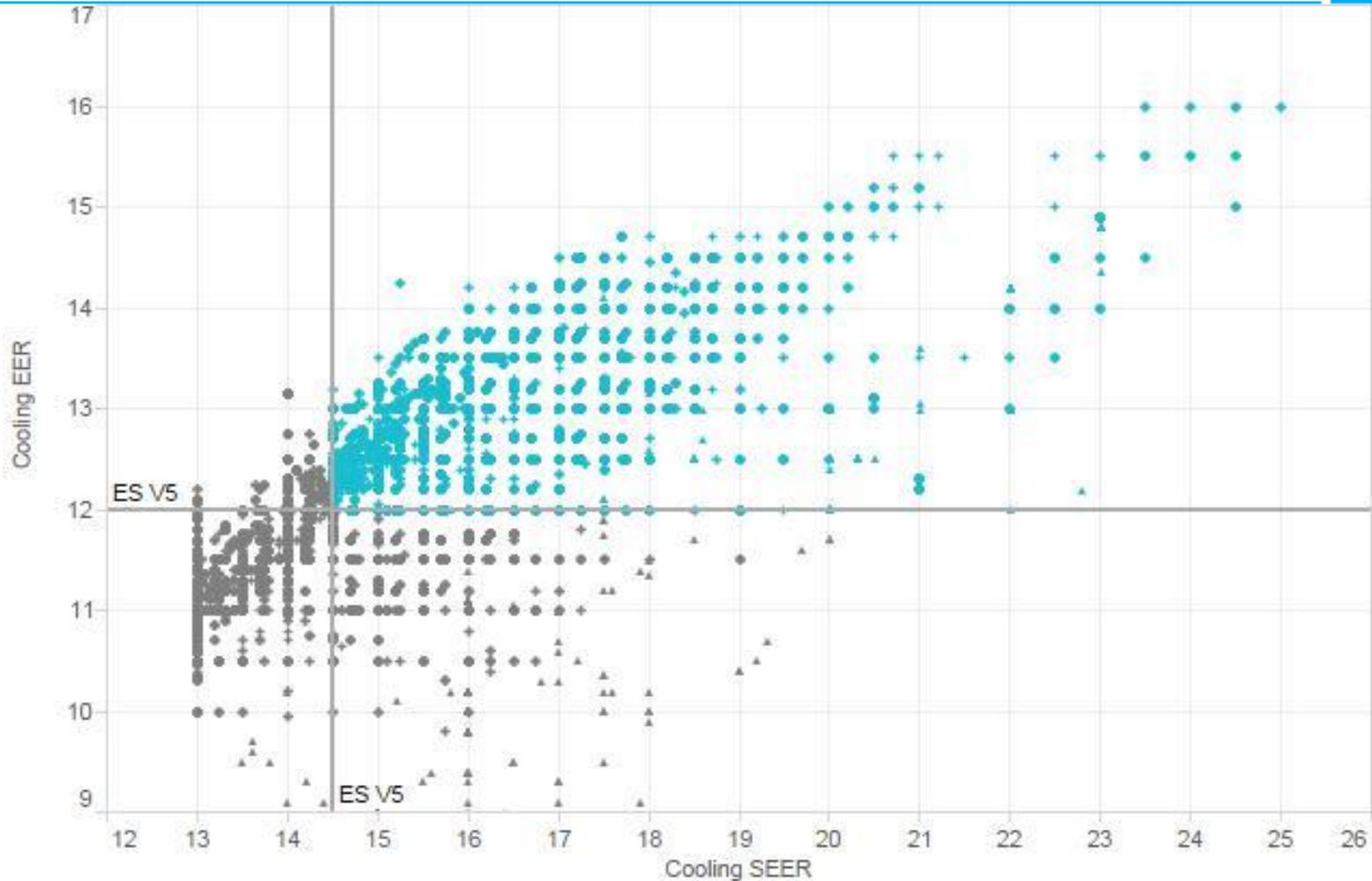
CAC-SS Product Availability in South



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



CAC-SS Product Availability in North



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
 - Alaska, Colorado, Connecticut, Idaho, Illinois, Indiana, Iowa, Kansas, Maine, Massachusetts, Michigan, Minnesota, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Vermont, Washington, West Virginia, Wisconsin, Wyoming

Draft 1 - Regional Labeling



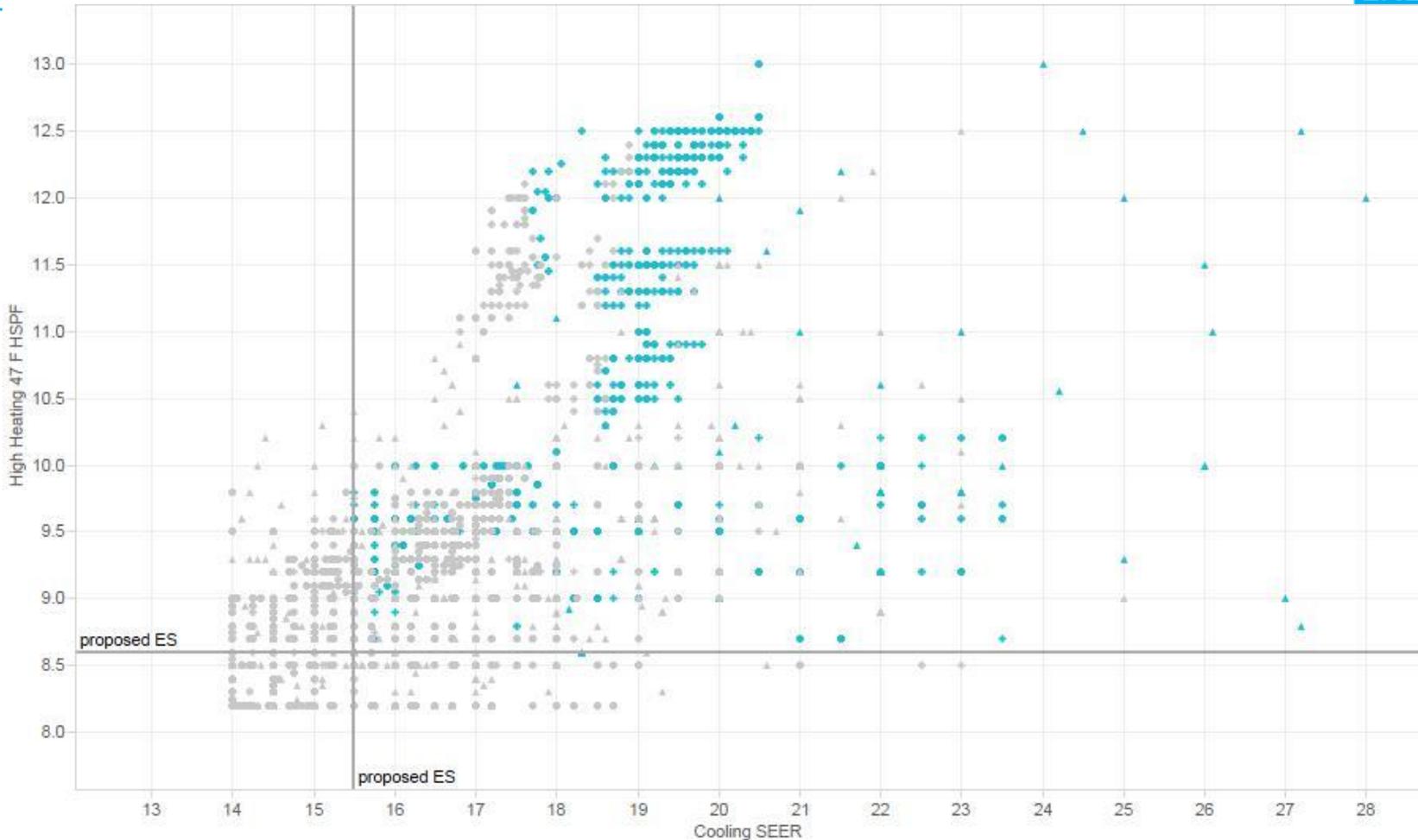
- Regional certification mark for North
- Require ENERGY STAR (regional) mark on a rating certificate available for download from the manufacturer (or their Certification Body)
 - Certificate includes model numbers of the full system, performance ratings and capacity (both cooling and heating for ASHP)
 - 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

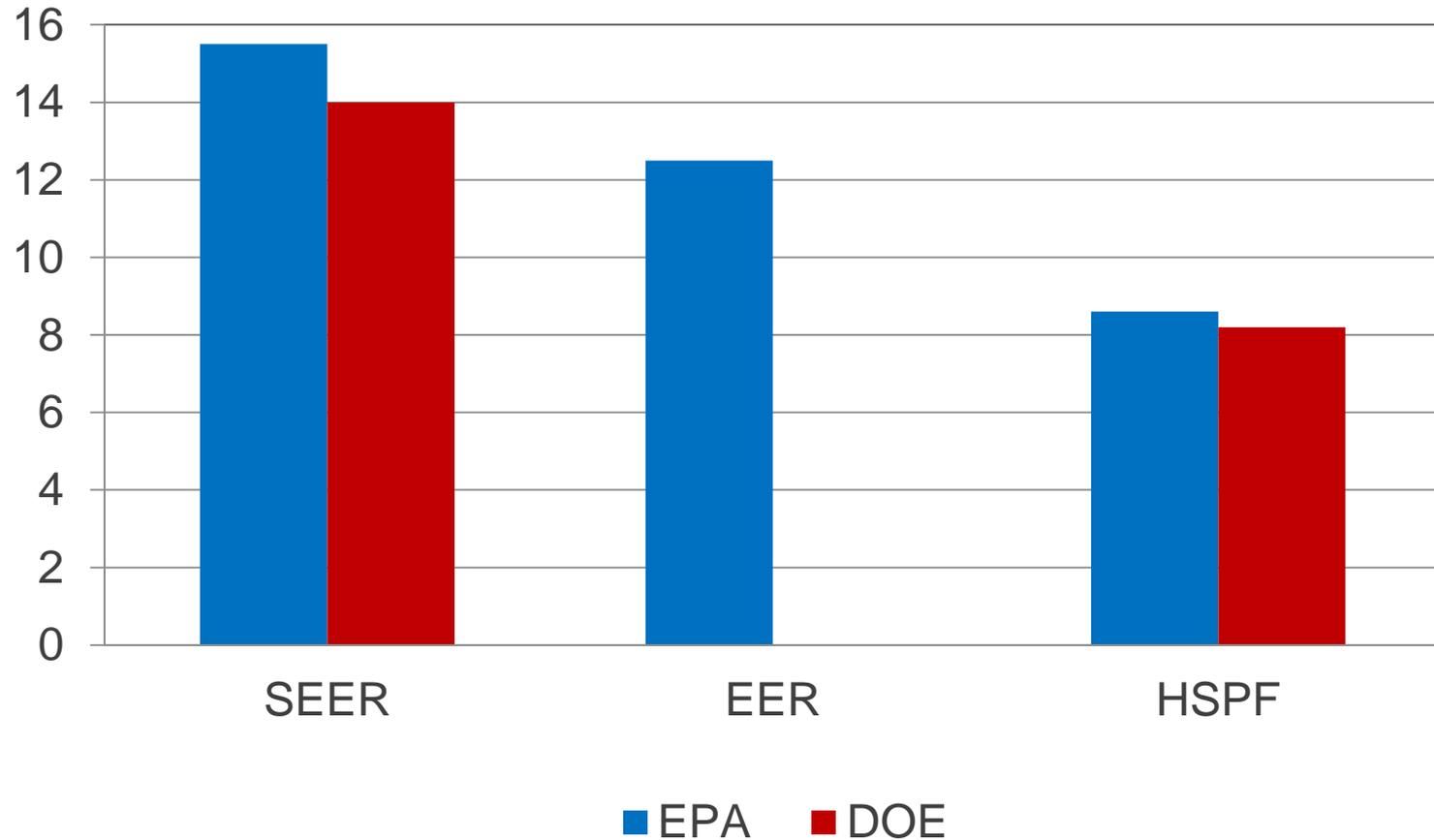


| | | High Heating 47 F HSPF (bin) | | | | | | | | | | | |
|--------------------|-------|------------------------------|-------|-------|-------|------|------|------|------|------|------|------|------|
| | | 7.5 | 8.0 | 8.5 | 9.0 | 9.5 | 10.0 | 10.5 | 11.0 | 11.5 | 12.0 | 12.5 | 13.0 |
| Cooling SEER (bin) | 28 | | | | | | | | | | 1 | | |
| | 27 | | | 1 | 1 | | | | | | | 1 | |
| | 26 | | | | | | 2 | | 1 | 1 | | | |
| | 25 | | | | 2 | | | | | | 1 | | |
| | 24 | | | | | | | 1 | | | | 1 | 1 |
| | 23 | | | 2 | 6 | 18 | 8 | 1 | 1 | | | 1 | |
| | 22 | | | 12 | 18 | 40 | 15 | 2 | 1 | | | | |
| | 21 | | | 22 | 5 | 9 | 16 | 6 | 1 | 1 | 3 | | |
| | 20 | | | 1 | 75 | 58 | 93 | 1 | 7 | 10 | 25 | 82 | 4 |
| | 19 | | 1 | 22 | 36 | 100 | 129 | 73 | 44 | 82 | 186 | 48 | |
| | 18 | | 83 | 49 | 741 | 483 | 217 | 70 | 47 | 32 | 46 | 2 | |
| | 17 | | 78 | 1020 | 4193 | 1803 | 98 | 14 | 94 | 72 | 32 | | |
| | 16 | 88 | 856 | 5751 | 11156 | 1359 | 23 | 6 | 6 | | | | |
| 15 | 614 | 8719 | 29615 | 10024 | 262 | 14 | | | | | | | |
| 14 | 10661 | 63247 | 22648 | 4281 | 172 | 2 | | | | | | | |
| 13 | 28469 | 28866 | 3748 | 1049 | 13 | | | | | | | | |

Draft 1 – ASHP Split System



Proposed ES V5.0 vs 2015 DOE Criteria



Draft 1 – ASHP Split Systems

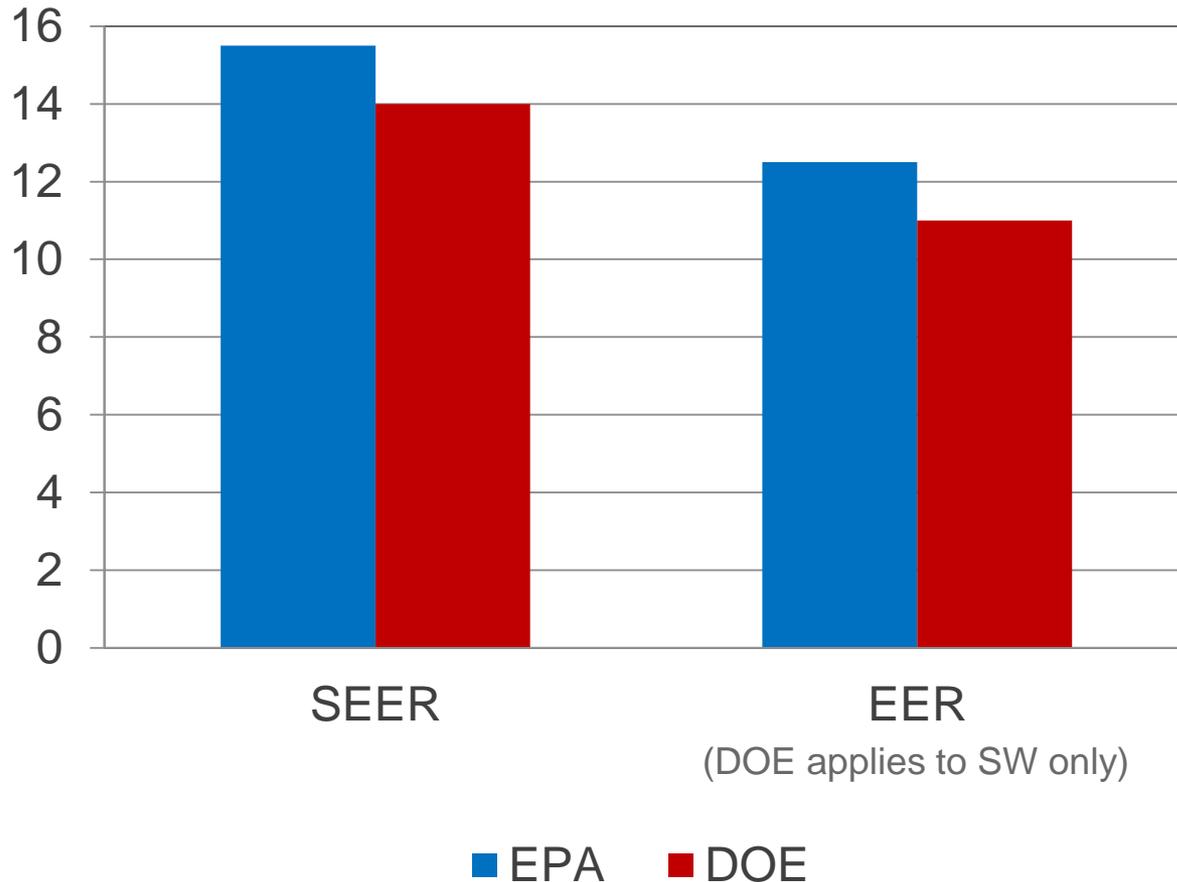


- National requirement, similar to 2015 federal standards
- Substantial savings in both hot climates (South) and cooler climates (North)
- About 15% model availability per AHRI Directory

Draft 1 – CAC Single Package



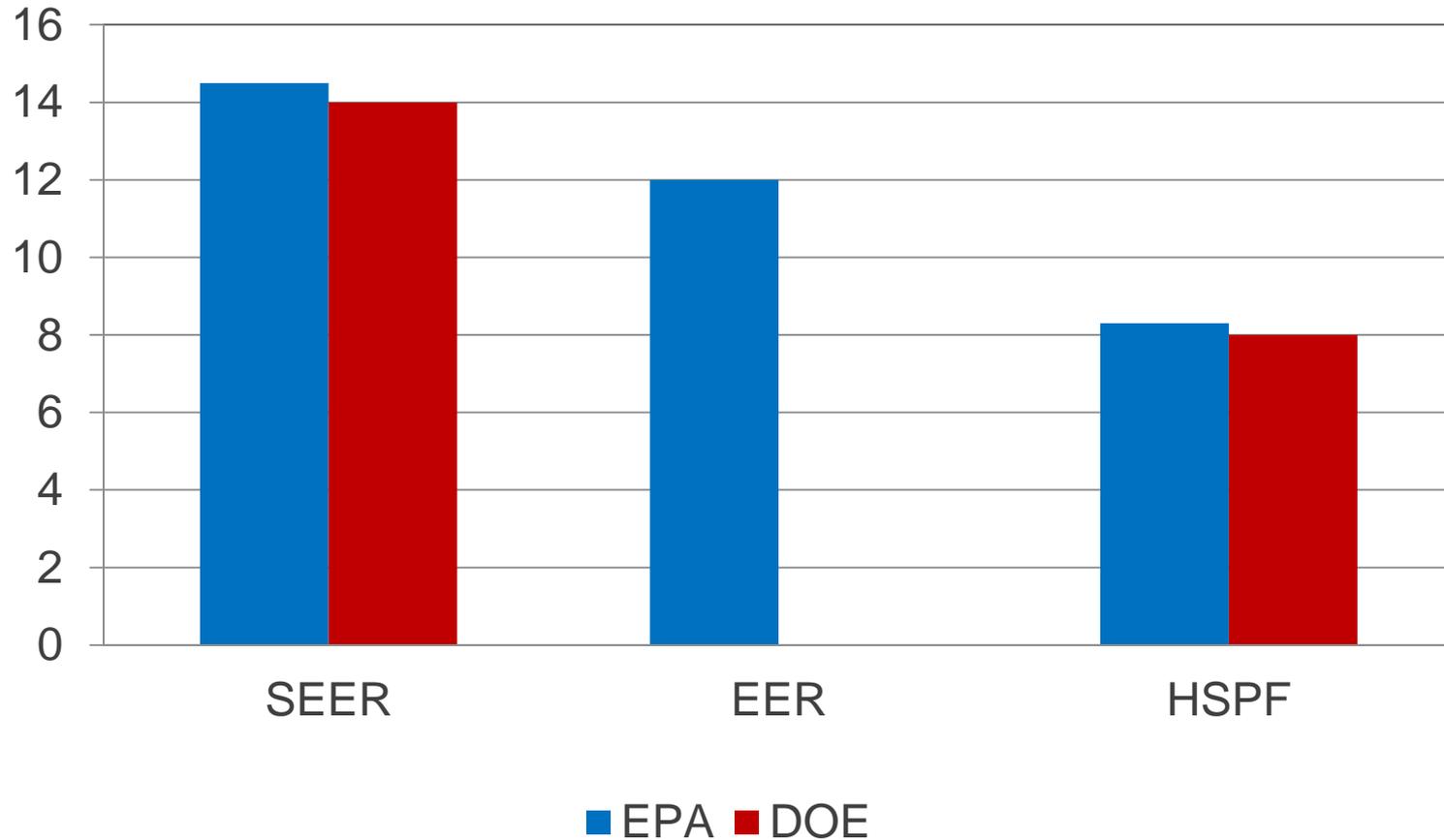
Proposed ES V5.0 vs 2015 DOE Criteria



Draft 1 – ASHP Single Package



Proposed ES V5.0 vs 2015 DOE Criteria



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/ASHRAE federal test method, 10 CFR part 430 Subpart B, Appendix M

Specification Development Timeline



- Apr 16, 2014 Draft 1 published
- May 5, 2014 Stakeholder Webinar
- May 16, 2014 Draft 1 comment period ends
- Jul 2014 Draft 2 published
- Sep 2014 Final Draft published
- Oct 2014 Final published

Contact Information



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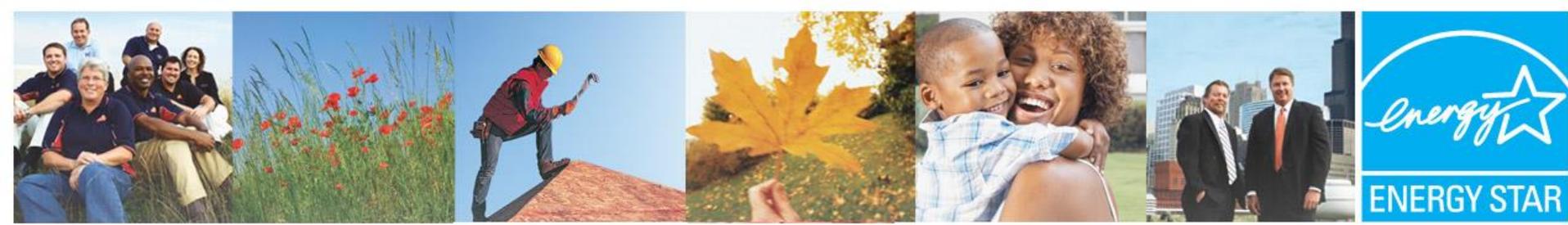
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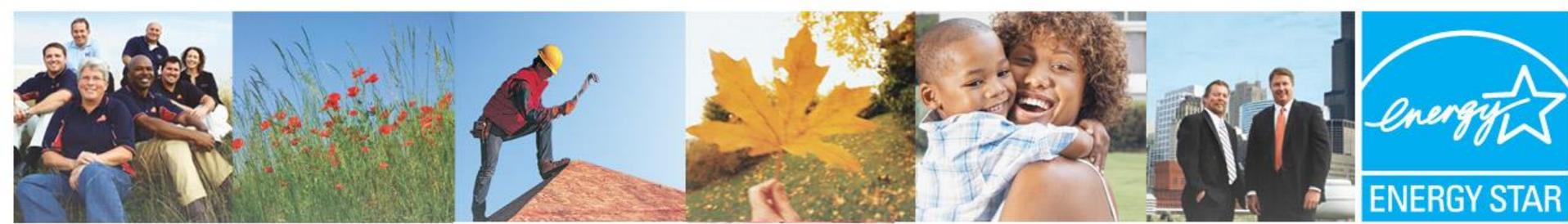
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Questions?



Thank You



Learn more at energystar.gov