



ENERGY STAR® Commercial Boilers Draft 1 Version 1.0

**Stakeholder Webinar and Discussion
Abigail Daken, U.S. EPA**

September 9, 2015



Webinar Audio Access

- Audio provided via teleconference:

Call in: **+1 (877) 423-6338 (U.S.)**

Code: **313852**

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Agenda

- Welcome and Introductions
- ENERGY STAR Program Overview
- Overview of Specification Development Process
- Commercial Boilers Opportunity
- Draft 1 Document Discussion
 - Definitions
 - Scope
 - Qualification Criteria
 - Test Methods
- Timeline and Next Steps

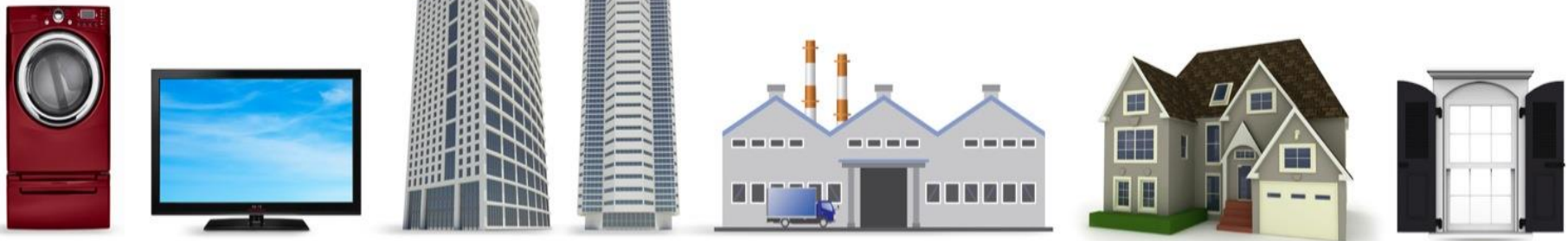


What is **ENERGY STAR**

- **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

EPA's ENERGY STAR identifies the most energy-efficient **products**, **buildings**, **plants**, and **new homes** – all based on the latest government-backed standards.

Today, every ENERGY STAR label is verified by a rigorous third-party certification process.



ENERGY STAR Program Overview



ENERGY STAR® is the simple choice for energy efficiency. For more than 20 years, EPA's ENERGY STAR program has been America's resource for saving energy and protecting the environment.

From 1993 to 2013 Americans have purchased more than 300 million products that earned the ENERGY STAR across **more than 70 product categories**. That's more than 4.8 billion products, about 58 million vehicles off the road, and **\$30 billion saved!**

Every single day,
consumers choose
ENERGY STAR
products more than

800,000 times





ENERGY STAR TODAY

Brand Preference & Loyalty

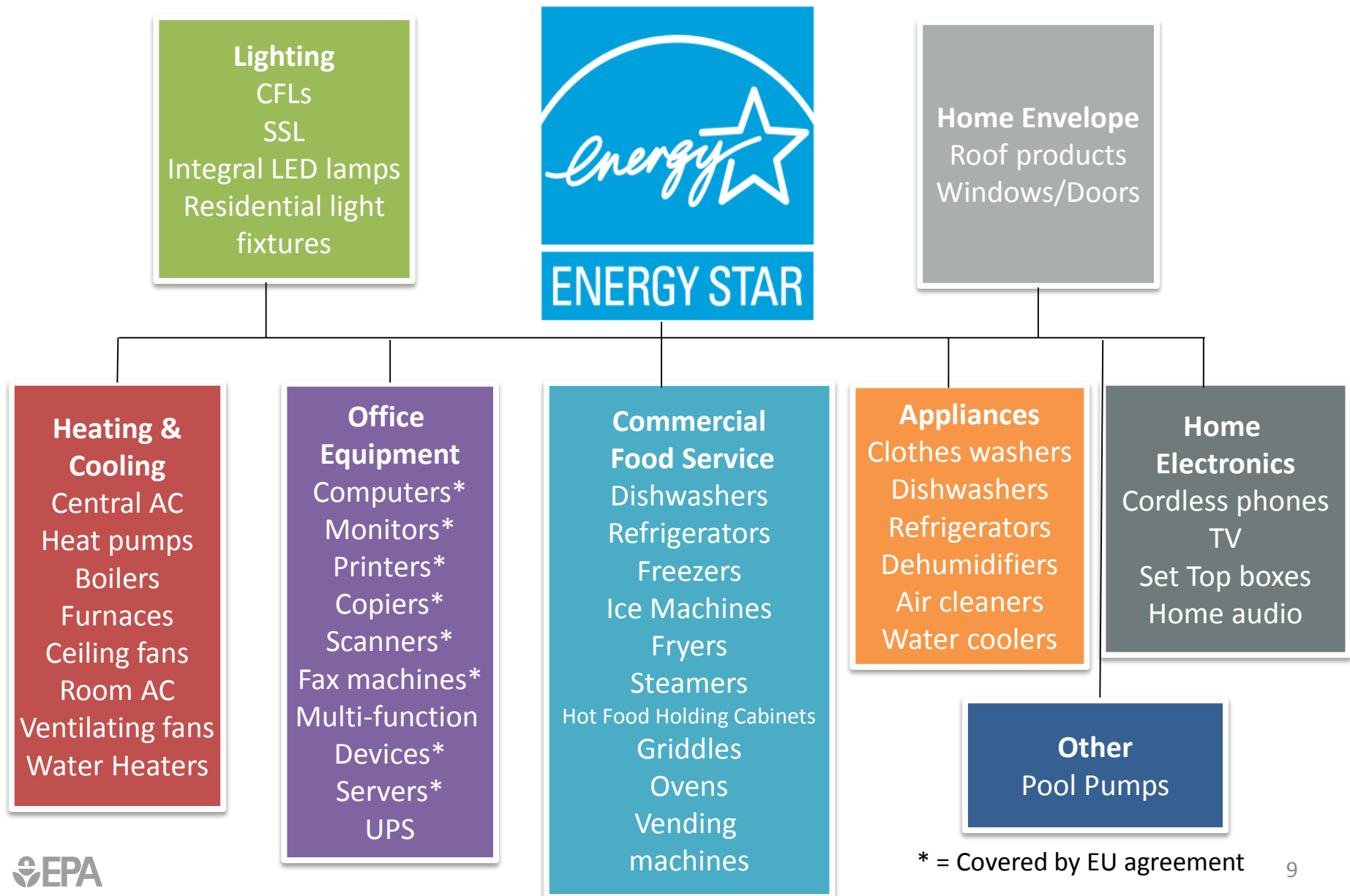
Of the **87% of households** that recognize the ENERGY STAR label

75% recalled purchasing an ENERGY STAR-labeled product in the past year

73% said the label **influenced at least one** of their purchase decisions very much or somewhat

75% were **likely to recommend** ENERGY STAR-labeled products to a friend

30% were extremely likely to recommend ENERGY STAR

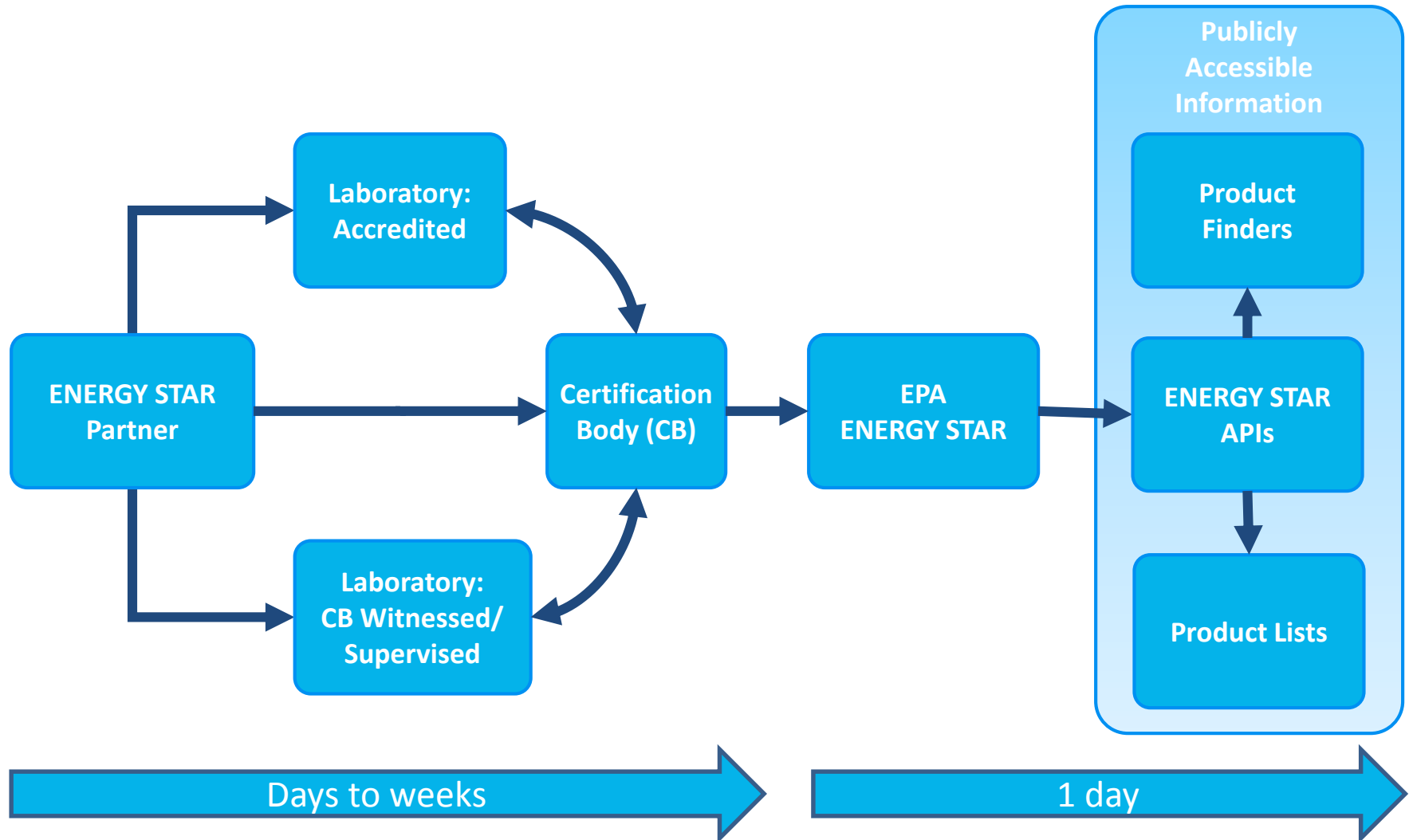




3rd Party Certification

- The U.S. Environmental Protection Agency (EPA) requires all ENERGY STAR products to be third-party certified.
 - Products are tested in an EPA-recognized laboratory and reviewed by an EPA-recognized certification body before they can carry the label.
- Representative models and product families will be established
 - Test results from one model can be used to represent other models that have the same core components.
 - Reduces time and testing burden for certification.

Certification Process





Resources - Product Finder Tool

- Public-facing tool consumers, retailers, utilities and other stakeholders use to access product data
- www.energystar.gov/productfinder

Benefits:

- Provide better access to EPA product data for all stakeholders
- Improve the ability to find product data
- Improve data quality
- Model data updated daily
- Models searchable by brand, model name, model number, additional information

ENERGY STAR Certified Residential Clothes Washers



Access the API, Analyze and Embed Data, Create an Account and more.
[Switch to Advanced View »](#)

32 Products match your search

LG

Compare up to 4 items

Load Configuration is

- ☐ Top Load
- ☐ Front Load
- ☒ Do not filter

Brand Name is

- ☐ Amana
- ☐ Ariston
- ☐ Asko
- ☐ BRADA
- ☐ Blomberg

LG - WM8000H**

Load Configuration: Front Load

Volume: 5.16 cu. feet

☐ Compare

LG - WM3550H***

Load Configuration: Front Load

Volume: 4.26 cu. feet

☐ Compare

LG - WM3150H**

Load Configuration: Front Load

Volume: 4.26 cu. feet

☐ Compare

LG - WM4070H**

Load Configuration: Front Load

Volume: 4.26 cu. feet

☐ Compare

Specification Development Cycle





Important Process Elements

- Consistency
- Transparency
- Inclusiveness
- Responsiveness
- Clarity



ENERGY STAR Guiding Principles

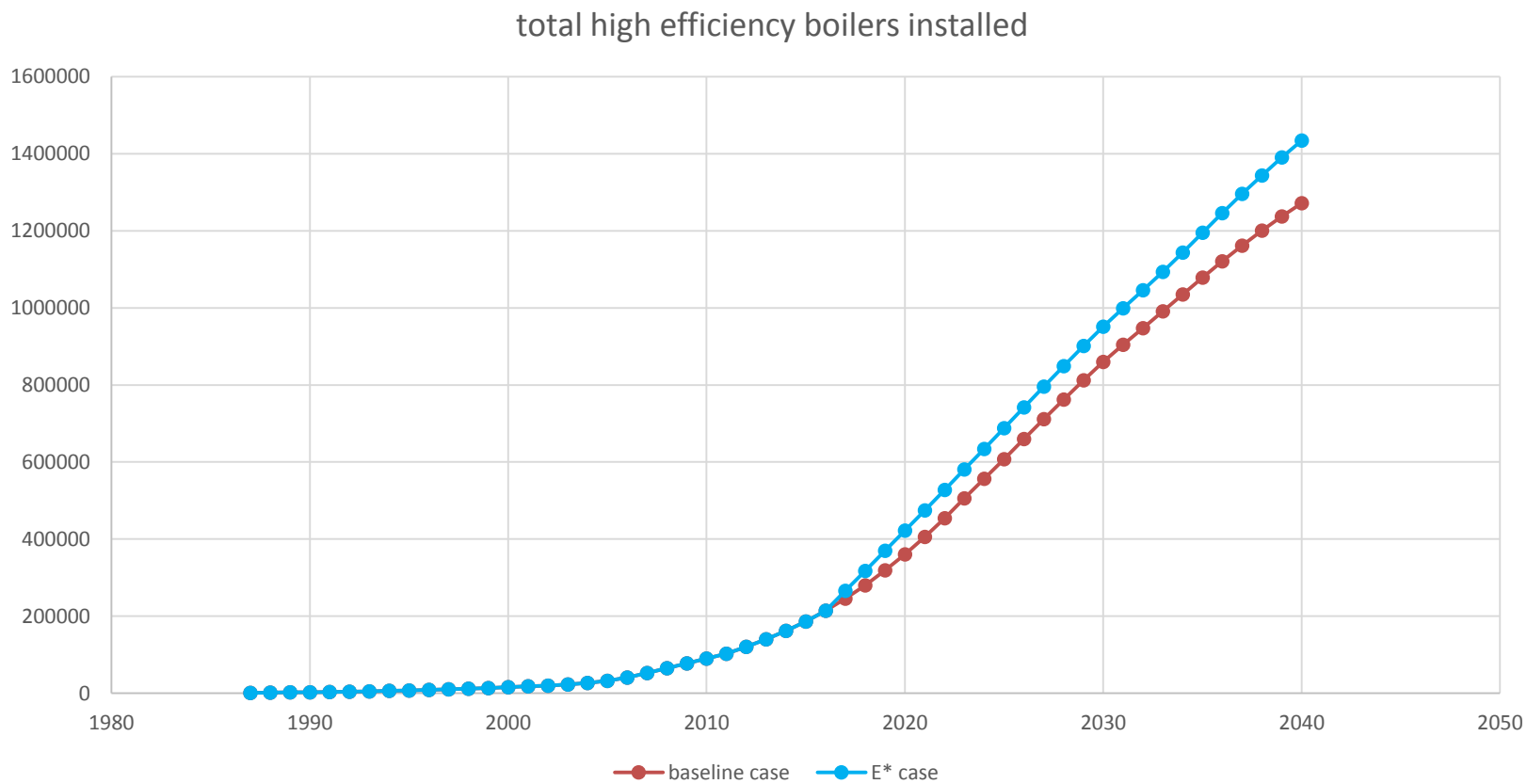
1. Significant national energy savings
2. Product performance maintained or enhanced with increased energy efficiency
3. Purchasers can recover any investment in increased efficiency reasonably quickly
4. Efficiency achieved through one or more technologies; products can be broadly available
5. Energy consumption can be measured and verified
6. Label is visible and provides meaningful differentiation



EPA Interest in Commercial Boilers

- Completed analysis in Summer 2015
- Sufficient availability of energy efficient products
- Opportunity for product differentiation
- Cost effective high efficiency models
- Growing demand for efficient commercial boilers
- Significant national energy savings potential
 - Installed base: about 1.6 million
 - Annual Gas Load Savings – 371 million therms/year
 - CO₂ Emissions Savings would grow to – 1.9 MMT/year

Savings from faster adoption of high efficiency boilers





Draft 1: Definitions

- Except for Turndown Ratio, all definitions proposed in the Draft 1 specification are based on the U.S. Department of Energy (DOE) regulations, 10 CFR Part 431 Subpart E and G
- Turndown Ratio Definition
 - The ratio of the burner's maximum firing rate (Btu/hr) to the lowest firing rate (Btu/hr).

Q 1: Is there an industry accepted definition for Turndown Ratio?



Draft 1: Scope

- Included:
 - Commercial boilers marketed for sale in the commercial market only.
 - Oil boilers included but
 - limited number of high efficiency products
 - product availability steadily decreasing
- Excluded:
 - Commercial boilers greater than 2.5MBtu/h
 - Products covered under other ENERGY STAR product specifications

Q 2: Do stakeholders anticipate to see an increase in the number of high efficiency oil boiler offerings in future?



Draft 1: Performance Criteria

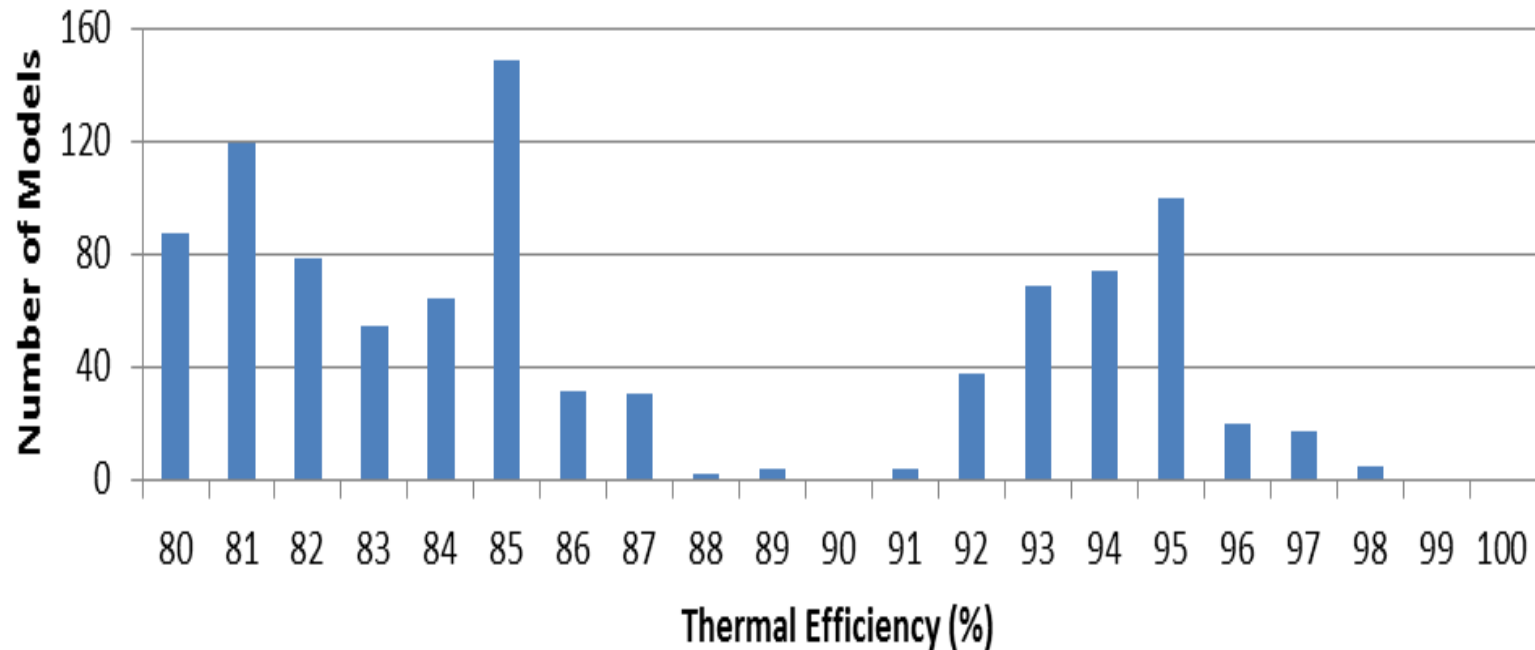
Criteria	ENERGY STAR Requirements
Thermal Efficiency (TE)	$\geq 94.0\%$
Turndown Ratio	$\geq 5:1$



Draft 1: Performance Criteria – Thermal Efficiency

- Thermal Efficiency $\geq 94.0\%$
 - Clear distinction between condensing and non-condensing products at 92.0%
 - 94.0% TE offers best combination of product availability and significant savings
 - Annual energy savings of about 1,300 therms/year
 - Harmonizes with other energy efficiency initiatives such as the Federal Energy Management Program (FEMP) requirements

Product Availability by Thermal Efficiency



Commercial boilers between 300,000 Btu/h to 2,500,000 Btu/h, per the AHRI Directory

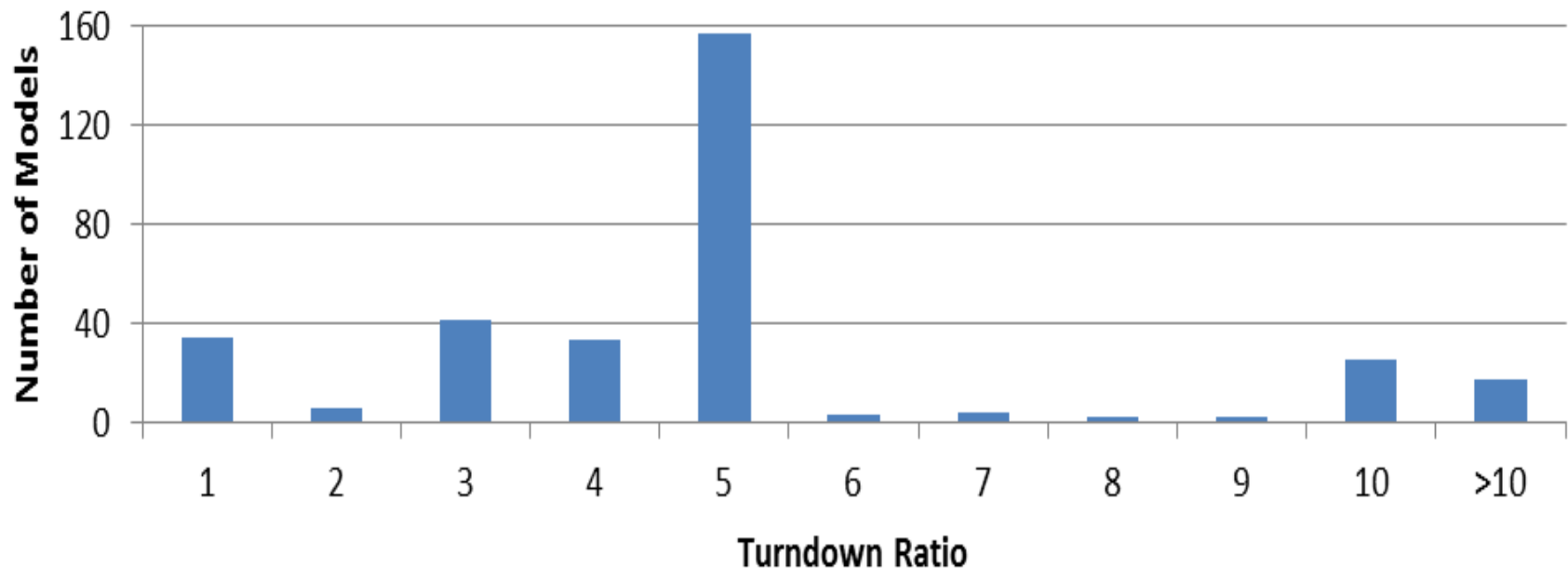


Draft 1: Performance Criteria – Turndown Ratio

- Turndown Ratio $\geq 5:1$
 - Allows part load operation and prevents losses due to excessive cycling and wear and tear
 - 2/3rd of the condensing boilers in the AHRI directory have a turndown ratio of 5:1 or more.
 - Harmonizes with other energy efficiency initiatives such as the FEMP and Consortium for Energy Efficiency (CEE).
 - About 15% of commercial boilers in the AHRI directory meet both TE and turndown requirements.



Product Availability by Turndown Ratio



- Number of condensing boilers between 300,000 Btu/h to 2,500,000 Btu/h in the AHRI Directory
- Majority have a turndown ratio of 5:1



Draft 1: Test Methods

- Thermal Efficiency – DOE 10 CFR Part 431.86
- EPA is following the ongoing rulemaking of the DOE commercial boiler test method and will adopt the new test method when it is final.

Q 3: Is there a test method or an industry standard to verify the Turndown Ratio?



Specification Development Timeline

- Aug. 27, 2015 - Draft 1 released
- Sept. 9, 2015 - Stakeholder Webinar
- Sept. 25, 2015 - Draft 1 comment period closes
- Nov. 2015 - Draft Final published
- Nov. 2015 - Draft Final comment period
- Dec. 2015 - Final published and effective

If a second draft is needed before the final draft, the process is expected to finish in January instead.



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Questions ?