ENERGY STAR® Commercial Electric Cooktops

Version 1.0 Draft 2

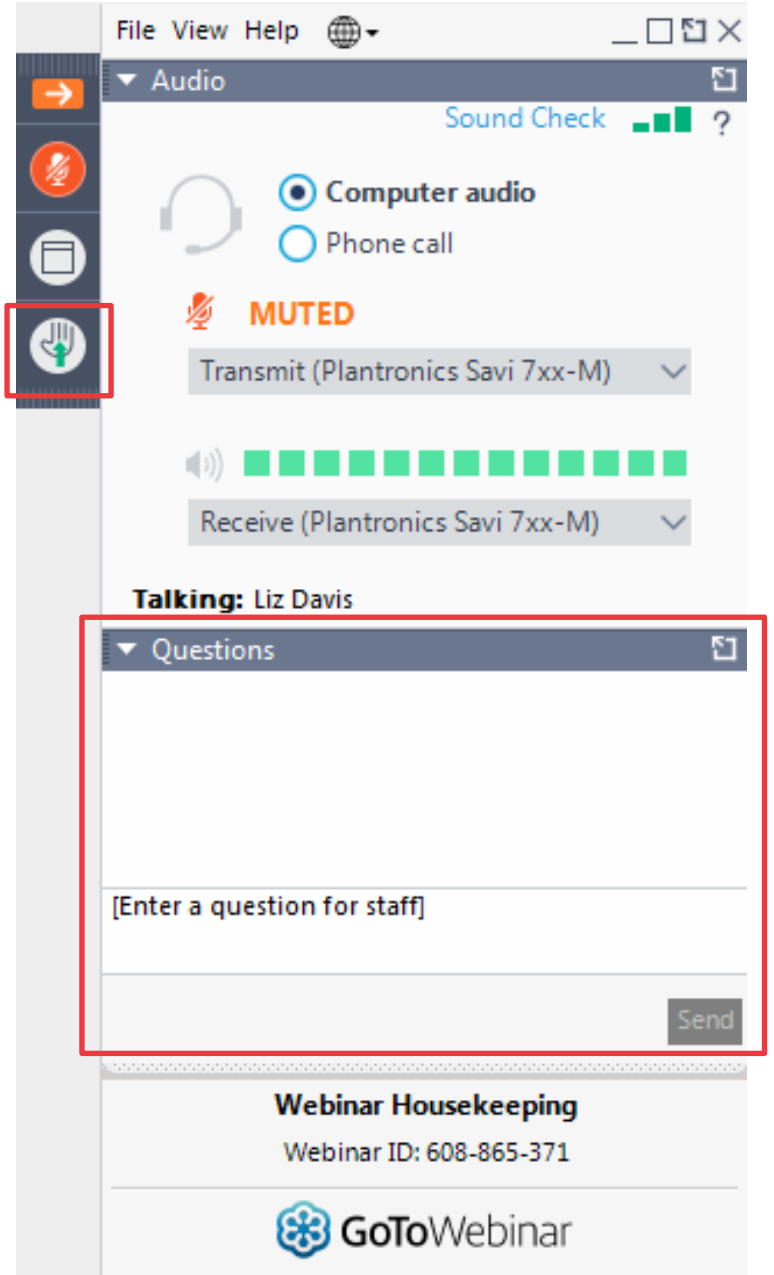
Stakeholder Meeting

May 3, 2023

Webinar Participation

- Please mute yourself when you are not speaking (use local mute or dial *6)
- Feel free to ask questions at any time

Submit written comments to cfs@energystar.gov by **May 22, 2023**



Meeting Agenda

1. **Introductions**
2. Definitions
3. Cookware
4. Scope
5. Data Analysis
6. Criteria
7. Additional Data
8. Reporting Requirements
9. Units with Multiple Operating Voltages
10. Closing - Next Steps & Questions

Introductions

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What is ENERGY STAR?

The simple choice for energy efficiency.

- Influential and trusted symbol of **energy efficiency**
- Available across **75+ product categories**
- Since 1992, a voluntary **partnership** among government, business, and consumers
- Now in our 20th year partnering with the commercial food service industry
- Products are independently certified to meet strict energy-efficiency guidelines set by the **U.S. EPA**
- **Utilities** offer **rebates** on ENERGY STAR certified equipment
- **Saves** end-users **energy**, **water**, and **money**
- Helps protect the **climate**

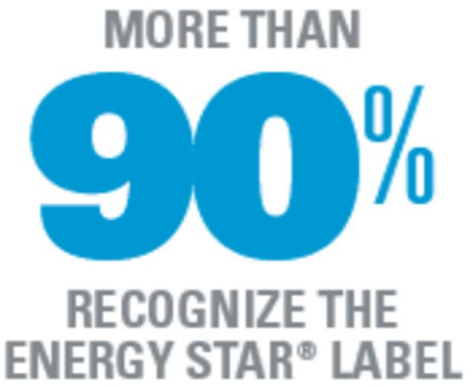
ENERGY STAR by the Numbers

In 2020…

- Utilities invested nearly $8 billion in energy efficiency programs
- 300 million ENERGY STAR products purchased
  - The estimated annual market value of product sales is more than $100 billion
- Avoided $42 billion in energy costs
  - 400 million metrics tons of GHG

https://www.energystar.gov/about/origins_mission/impacts

Benefits to joining ENERGY STAR



Source: CEE's 2019 Household Survey
https://www.energystar.gov/awareness

- Leverage the label recognition
- Access a network of over 800 utilities
- Access customer support teams at EPA
- Utilize co-brandable materials
- Participate in promotional events
- Get listed on publicly-available ENERGY STAR search tools
- Apply for the ENERGY STAR Partner of the Year Award
- Receive email notifications about program activities

ENERGY STAR Partnership Types

ENERGY STAR

The simple choice for energy efficiency.

- Brand owner
- Retailer (*i.e.*, CFS dealer/distributor)
- Residential building
- Commercial building
- Industrial plant
- Energy Efficiency Program Sponsor

For more information on joining as an ENERGY STAR partner visit this webpage
https://www.energystar.gov/partner_resources/join-energy-star

Product Brand Owner Partnership Requirements

1. **Sign** partnership agreement. See partner resources page: https://www.energystar.gov/partner_resources/join-energy-star

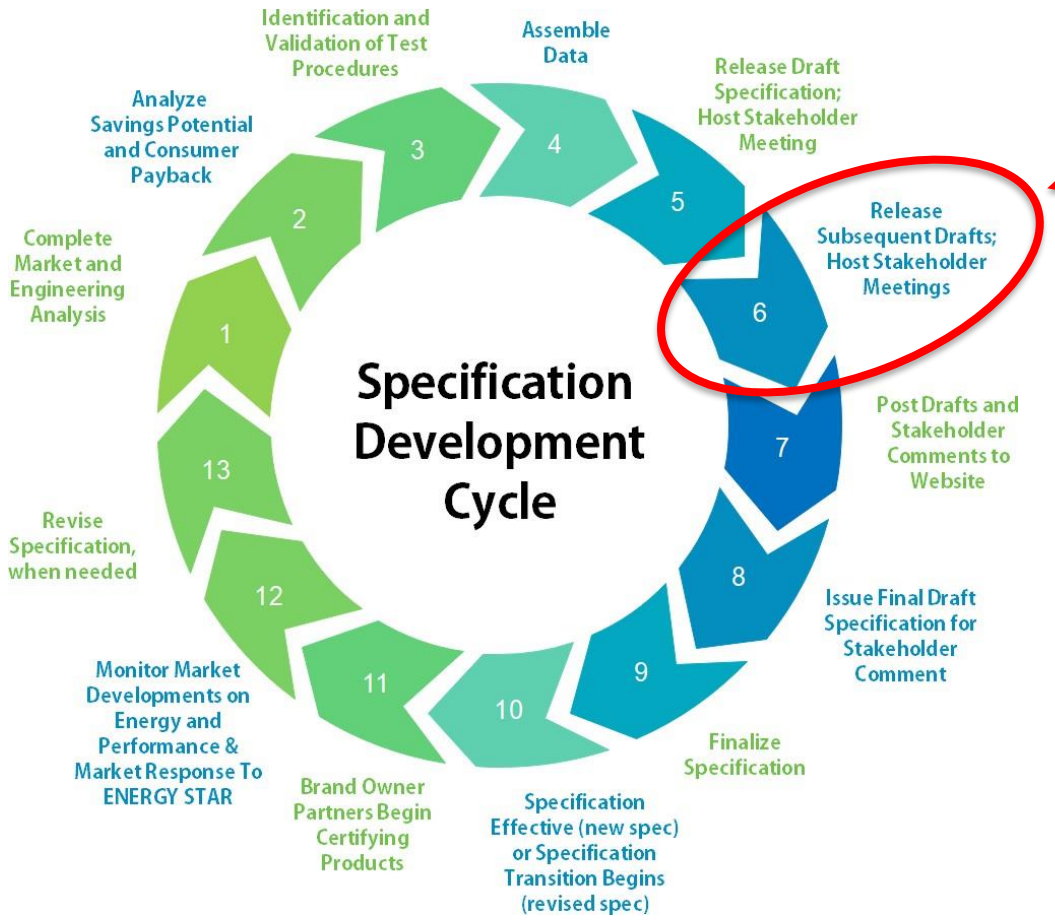
2. **Third-party certification** through an EPA-recognized certification body (CB): www.energystar.gov/3rdpartycert.

3. **Comply** with the ENERGY STAR **Brand Guidelines** for appropriate use of the logo: www.energystar.gov/logouse

4. **Participate** in **third-party verification** through an EPA-recognized certification body

5. **Provide** **annual unit shipment data** no later than **March 1** www.energystar.gov/unitshipmentdata

ENERGY STAR Specification Development Process



We are here

https://www.energystar.gov/partner_resources/product_specification_development_process

Guiding Principles That Drive New Specifications and Revisions

- Driven by the need to continuously recognize and differentiate top performing products on the market:
  - **New categories and scope expansion**
    - **National energy and GHG savings**
  - New or revised test methods
  - Significant increase in ENERGY STAR market penetration
  - Change in Federal minimum efficiency standards
  - Technological advancements
  - Product performance or quality concerns

Current Timeline: Commercial Electric Cooktops

- Draft 1 Discussion Guide published – February 24, 2021
- Draft 1 Discussion Guide webinar – March 17, 2021
- Draft 1 Discussion Guide comments due – April 7, 2021

- Draft 1 published – November 10, 2022
- Draft 1 webinar – November 30, 2022
- Draft 1 comments due – December 22, 2022

- Draft 2 published – April 20, 2023
- Draft 2 webinar – May 3, 2023
- Draft 2 comments due – May 22, 2023

Product Development Website—Bookmark this page!

POTENTIAL TIMELINE

Draft 2 – Q1 2023
Final Draft – Q2 2023
Final Version 1.0 – Q2 2023 (effective immediately)

* This timeline is subject to change

Meeting Agenda

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Definitions

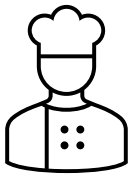
Cooking Container: A stainless steel vessel for induction and aluminum vessel for non-induction used to hold the water being heated by the cooktop. The ASTM F1521-12 (2022) Section 6.3 dimensions for testing are 13in (330mm) diameter, *20qt* (19L), sauce pot with matching lid. The bottom of the pot shall be flat to within 0.0625in (1.6mm) over the diameter. The inside diameter (ID) shall be measured to confirm the specified 13in diameter of the cookware.

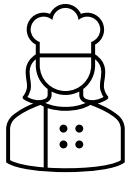
Definitions

Added Terms and Definitions

Counter Top Cooktop Unit: A cooktop intended to be operated on a counter or table and does not include a standard conventional or convection oven base.

Hot Top/Hot Plate: Flat cast iron surface sometimes called a “boiling plate” or “uniform heat top” with heat transferred from electric heating elements under the cooking surface where pots are set to warm or keep hot food contained.





Definitions

Cooktop Types:

Heavy Duty Range: An appliance used for pot or pan surface cooking, griddling, frying, broiling, steaming, baking, roasting, and reheating food products with a standard oven or convection oven. It is of the most durable constructions, carrying in size, offers increased heat input than medium (restaurant) or specialty ranges. Typical industry widths are 32 in. (812 mm), 34 in. (863 mm), and 36 in. (914 mm) for electric ranges. The top cooking surface can be 1/3, 2/3. or full top options of any style noted.

a. Electric Range: A multi-purpose unit (integrated cooking platforms as a single unit) that may include an electric commercial over positioned directly beneath the electric cooktop, as a base.

Definitions

Commercial Electric Cooktop Certification:

- An electric range may be certified if the unit's cooktop meets the ENERGY STAR Commercial Ovens Version 3.0 specification's scope and criteria.

- The standard test method (ASTM F1521-22) evaluates the performance of the cooktop only, regardless of if it's a part of a multi-function unit.

- Eligible standalone commercial cooktops shall be certified under this specification.

- Eligible independent commercial ovens without an electric cooktop shall continue to be certified under the ENERGY STAR Commercial Ovens Version 3.0 specification.

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Cookware

Cookware Measurements and Materials

To effectively compare different cooktops' energy efficiency performance, as well as to ensure repeatable and reproduceable results from test-to-test and lab-to-lab, it was necessary to narrow down the material type and size of the test cookware.

EPA aligned with the F1521-22 standard test method for different technologies.

Cookware

Cookware Materials:

For standardization purposes, EPA proposes a stainless-steel pot for induction cooktops and aluminum pot for non-induction, to the size specified in ASTM F1521-22.

EPA recognizes that the recommended aluminum pot may not always be a suitable cooking vessel for certain types of commercial electric cooktops. Additional physical characteristics of the specified cookware considered being included:

1) Layers of metal (i.e., single-layer, three-ply, five-ply, etc.)
2) For multi-ply options, the different metals
3) Grade series (i.e., 300 or 400 series)

EPA concluded that energy performance data would be necessary to justify further specification of the cookware.

Cookware

Cookware Measurements:

Measure the diameter of the cookware in Section 1.M.: “The inside diameter (ID) shall be measured to confirm the specified 13in diameter of cookware.”

ATSM F1521-22 states in section 6.3:

- 13-in. (330-mm) diameter, 20-qt (19-L), sauce pot with matching lid.
- Bottom of pot shall be measured from parallel inner walls.

Cookware

Measurements and Materials Feedback

Stakeholders are encouraged to provide feedback on the proposed cooking container, including:

- the referenced ASTM standard test method,
- the approach for **measuring the diameter** of the cookware,
- **specifying pot material**, and
- further information on other variables that may impact energy efficiency of the electric cooktop.

Submit written comments to
cfs@energystar.gov

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Scope

- Included Products: Products that meet the definition of a commercial electric cooktop are eligible for ENERGY STAR certification, including electric ranges.
  - Cooktops that utilize conventional electric resistance and/or induction as a means for cooking food
  - Single- and multi-hob units
  - Examples: coil cooktops; hot tops; French tops; induction cooktops that are either countertops or tabletops, drop-ins, or floor-standing

- Excluded Products: Cooktops designed for residential or other non-commercial applications, including conventional cooking tops as defined by the U.S. Department of Energy (DOE) at Title 10 Code of Federal Regulations (CFR) 430.2, are not eligible for ENERGY STAR certification under this specification. Gas ranges/cooktops (i.e., gas hot tops and open top gas burners); griddles or planchas; soup wells; woks; dedicated warming/holding equipment; and other cooktop types that do not meet the criteria are ineligible for ENERGY STAR certification under this specification.

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Data Analysis

Cooking (Boil) Energy Efficiency, %:

The intent of the ASTM F1521-12 (2022) test method is to test each hob individually. ENERGY STAR certification will rely on all individual hobs meeting the cooking (boil) energy efficiency level.

Table 1: Energy Efficiency Requirements for Commercial Electric Cooktops	
Individual Hob Performance*	
Cooking (Boil) Energy Efficiency, %	≥ 80%

Concerns regarding the use of a weighted average approach for certification creates risks that may compromise the performance expectations of the end-user (i.e., manufacturer gaming).

Data Analysis

EPA considered this concern and proposes certification be based on each, individual hob passing the cooking (boil) energy efficiency criterion.

As some cooktop models' hobs exist with different operating conditions, an average hob efficiency may result in a product being comprised of one or more hobs that do not meet the minimum efficiency performance threshold.

Similarly, a weighted average hob could result in an incentive being used towards the purchase of less efficiency equipment than intended.

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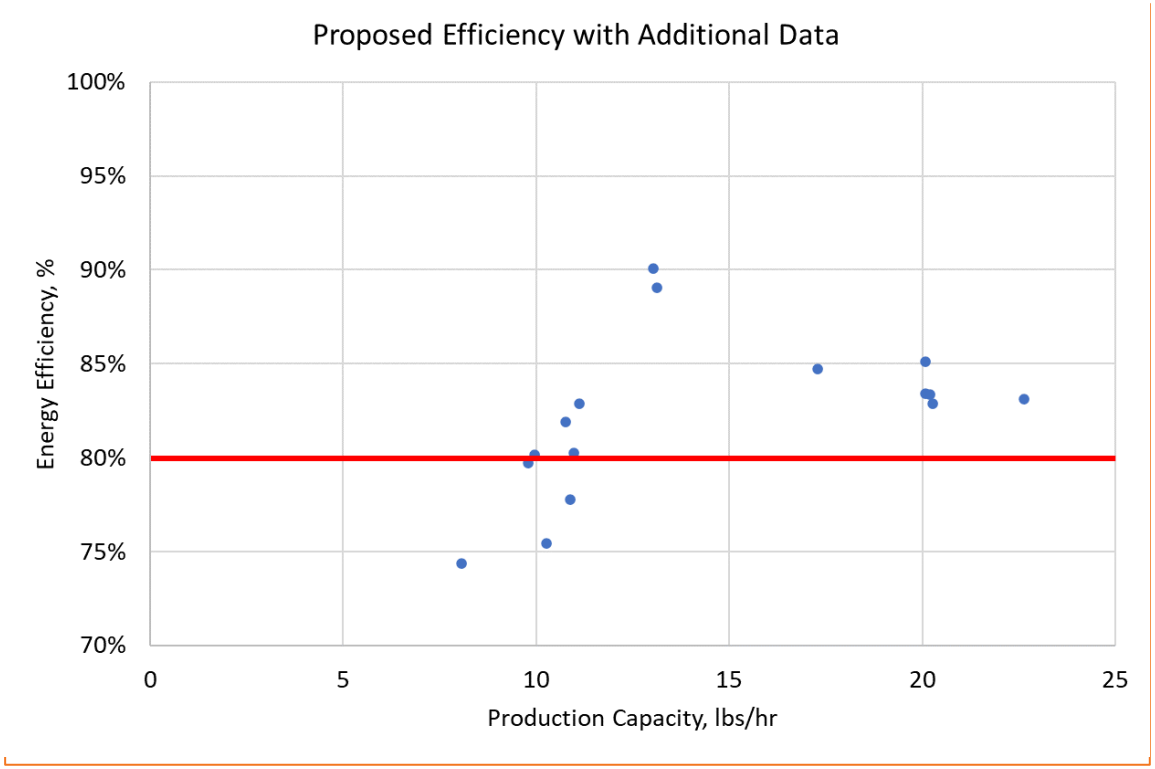
Criteria

Table 1: Energy Efficiency Requirements for Commercial Electric Cooktops	
Individual Hob Performance*	
Cooking (Boil) Energy Efficiency, %	≥ 80%



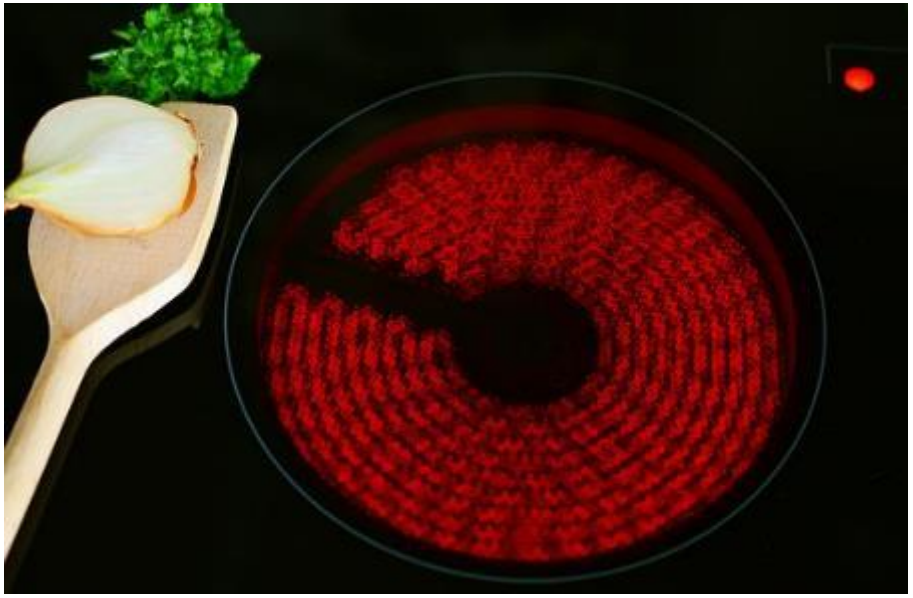
ASTM F1521-12 (2022) and 56 induction data points (14 models)

Boil Efficiency of 3 Cooktop Varieties (based on pre-2022 ASTM test method)

Fuel Type	Boil Efficiency
Induction	80-90%
Conventional Electric	65-75%
Gas	25-40%

Source: Frontier Energy. Electric Plug Load Savings Potential of Commercial Food Service Equipment Report Draft, April 2020.

ENERGY STAR criterion is expected to capture the highest performing electric models.



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Additional Data

EPA had received two additional cooking energy-efficiency data points since publication of the Draft 1 from stakeholders for non-induction cooktops.

No changes to the minimum energy-efficiency performance level specified in Draft 1 have been proposed by EPA.

Each cooktop model was tested a total of three times, where an average of these test results was included as a fourth data point for each model.

Due to small variations in a model's test results, multiple test runs help to better understand the range of expected performance.

The average is also helpful in enhancing the dataset used for determining the minimum efficiency level for certification.

Additional Data

Each of the three runs being considered provided greater insight into the level of range that could be expected in performance.

Individual runs were considered as placeholders for models not included in the dataset.

Data Package revisions were consistent with how ASTM tests are conducted (presenting only the average of the three tests as the performance metric).

EPA has included the non-induction test result to the dataset.

EPA appreciated the additional data and has incorporated them into the Draft 2 performance analysis. EPA strongly encourages additional performance data, inclusive of baseline data, be made available to further refine a future V1.2 ENERGY STAR Commercial Electric Cooktops specification.

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Reporting Requirements

- **(*New*) Confirmation that commercial electric cooktop was certified to NSF/ANSI Standard 4 ahead 280 of energy efficiency testing for the purposes of ENERGY STAR certification.**
- The total number of hobs in the cooktop.
- The maximum input rate of each hob.
- The diameter(s) of the individual hobs.
- Heat-up time (in minutes) for each hob from ambient to production-ready temperature (70°F to 200°F).
- Production capacity (lbs. of water per hour).
- Simmer test results (water temperature in °F and energy consumption in kW).
- For induction cooktops, specify the sub-category of the unit (countertop, drop-in, and/or floor standing), if applicable.

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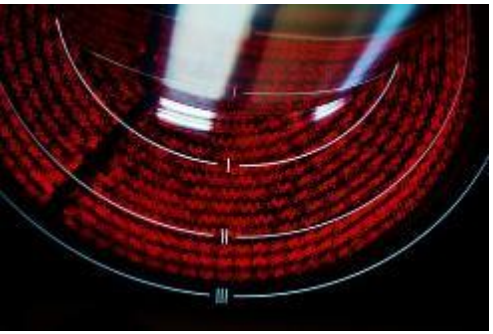
Units with Multiple Operating Voltages



For units with more than one possible operating voltage, EPA requests data on the efficiencies at each operating voltage, particularly how the energy efficiency measurements compare on each hob when operating in both voltage conditions.

The lower efficiency operating voltage must be used for ENERGY STAR certification if different efficiencies are measured at different voltages.

If the efficiencies are inconsistent, both operating voltages shall be required for certification testing/ verification to ensure ENERGY STAR quality and efficiency in consumer purchases.

Units with Multiple Operating Voltages

EPA does not have adequate data representation to determine if a higher or lower voltage is more or less energy consumptive and energy efficient.

As such, EPA included a caveat in Section 3.C.:

C. For electric cooktops with dual voltage, multiple voltage-versatility and for those that are available in different voltage configurations, the cooktop shall be evaluated as separate appliances in accordance with ASTM F1521-22, see Section 9.4, and shall meet the minimum energy efficiency level in the least energy efficient voltage the unit is designed to operate.

For manufacturers/ labs testing units with voltage versatility:

- Units shall be tested in worst-case scenario for energy efficiency, as specified by the manufacturer.
- Since labs should be running the tests at both voltages, then the worst must pass.

ASTM F1521-22: “If an electric range top is rated for dual voltage (for example, 208/240), the range top should be evaluated as two separate appliances in accordance with these test methods.”

Units with Multiple Operating Voltages

Stakeholders shared concern with the classification of 120V units as commercial cooktops.

During product and industry research and outreach, EPA identified 120V commercial-grade electric cooktops available in the market.

Stakeholders are encouraged to provide feedback on the proposed test requirement, including:

- the referenced ASTM standard test method,
- approach to addressing multiple voltage configurations, and
- the additional reporting requirements.

Submit written comments to
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Next Steps & Questions

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