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# ENERGY STAR® Program Requirements

## Product Specification for

### Commercial Electric Cooktops

#### Eligibility Criteria

#### Final Draft

#### Version 1.0

9 Following is the **Final Draft Version 1.0** product specification for ENERGY STAR certified commercial  
10 electric cooktops. A product shall meet all of the identified criteria if it is to earn the ENERGY STAR.

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12  
13 **1) Definitions:** Below are the definitions of the relevant terms in this document.

- 14  
15 A. Commercial Electric Cooktop: A commercial cooking unit that provides direct heat to a  
16 cooking container (i.e., a pot or pan), or works with the cooking container to generate heat,  
17 which is transferred to the product within the cooking container. There are multiple  
18 variations of these devices which utilize electric resistance heating or electric inductive  
19 heating.

20  
21 **Cooktop Types**

- 22  
23 B. Cooktop Electric Element (Open Coil Cooktops): Open coil electrical elements supported to  
24 withstand the weight of filled cooking container.<sup>1</sup>  
25  
26 C. Counter Top Cooktop Unit: A cooktop intended to be operated on a counter or table and does  
27 not include a standard conventional or convection oven base.  
28  
29 D. Heavy-Duty Range: An appliance used for pot or pan surface cooking, griddling, frying, broiling,  
30 steaming, baking, roasting, and reheating food products with a standard oven or convection  
31 oven. It is of the most durable construction, varying in size, offers increased heat input than  
32 medium (restaurant) or specialty ranges. Typical industry widths are 32 in. (812 mm), 34 in.  
33 (863 mm), and 36 in. (914 mm) for electric ranges. The top cooking surface can be 1/3, 2/3, or  
34 full top options of any style noted.<sup>1</sup>  
35  
36 a. Commercial Electric Range: A multi-purpose unit (integrated cooking platforms as a single  
37 unit) that may include an electric commercial oven positioned directly beneath the  
38 commercial electric cooktop, as a base.  
39  
40 E. French Top: Sheathed electric heating element with permanent cover over entire heating  
41 element; round and sealed to the range top to resist drips and splash.<sup>1</sup>  
42  
43 F. Hot Top/Hot Plate: Flat cast iron surface sometimes called a “boiling plate” or “uniform heat  
44 top” with heat transferred from electric heating elements under the cooking surface where pots  
45 are set to warm or keep hot food contained.<sup>1</sup>  
46  
47 G. Induction Cooktop: A commercial or institutional food cooking or warming device using  
48 magnetic induction as the heating energy source, which includes countertop, counter drop-in,  
49 and floor standing units.<sup>2</sup>  
50  
51

<sup>1</sup> Modified definition from ASTM F2521-09 (2022) *Standard Specification for Heavy-Duty Ranges, Gas and Electric.*

<sup>2</sup> ASTM F2834-10a (2017) *Standard Specification for Induction Cooktops, Counter Top, Drop-in Mounted, or Floor Standing.*

- 52 a. Counter Top (or Tabletop) Unit: An induction unit intended to be operated on a counter or  
53 table.<sup>2</sup>  
54  
55 b. Counter Drop-In Unit: An induction unit intended to be installed in a counter top or  
56 application specific cut-out.<sup>2</sup>  
57  
58 c. Floor Standing Unit: An induction unit intended to be operated standing on the floor.<sup>2</sup>  
59

60 **Preheat Value**

- 61  
62 H. Measured Energy Input Rate: The electrical power (measured in Watts and reported in kW) to  
63 preheat and/or maintain the desired temperature of the water within the cooking vessel.  
64 Preheating is done at the maximum control setting. Maintaining temperature may be done at  
65 less than the maximum control setting.<sup>3</sup>  
66  
67 I. Measured Energy Input: The amount of electrical energy (measured in Joules) to preheat  
68 and/or maintain the desired temperature of the water within the cooking vessel. Preheating is  
69 done at the maximum control setting. Maintaining temperature may be done at less than the  
70 maximum control setting.  
71  
72 J. Heat-up Temperature Response: The temperature increase on the surface of a plate during the  
73 test period in accordance with the heat-up temperature-response test.<sup>4</sup>  
74  
75

76 **Energy Efficiency Metric**

- 77  
78 K. Cooking Energy-Efficiency: Quantity of energy imparted to the specified load (20 lbs of water  
79 at 70°F to 200 °F), expressed as a percentage of energy consumed by the cooktop during the  
80 cooking (boil) event. Also known as the “Cooking (Boil) Energy Efficiency” or “Boil Test”.<sup>5</sup>  
81  
82 L. Cooking Energy: Energy consumed by the cooking unit as it is used to raise the temperature  
83 of water in a cooking container under full-input rate.<sup>4</sup> Expressed in kWh.  
84  
85 M. Production Capacity: Maximum rate at which the commercial electric cooktop unit heats water in  
86 accordance with the cooking energy-efficiency test, expressed in pounds per hour (lbs/hr).<sup>6</sup>  
87  
88 N. Simmer Energy-Efficiency: Quantity of energy imparted to the specified load (20 lbs of water),  
89 expressed as a percentage of energy consumed by the cooktop for 30min at a steady input rate  
90 while maintaining water at an average 200°F.<sup>7</sup>  
91  
92 O. Simmer Energy Rate: The electrical power (measured in Watts and reported in kW) to maintain  
93 the desired temperature (an average of 200°F) of the water within the cooking vessel throughout  
94 the 30min simmering period.<sup>8</sup>  
95  
96 P. Simmer Average Water Temperature: The average water temperature (200 ± 3°F) in a cooking  
97 container throughout the simmer test period.  
98  
99

100 **Note:** EPA includes two additional terms and definitions in Section 1.L. for cooking energy and Section  
101 1.P. for simmer average water temperature that derive from the American Society for Testing and  
102 Materials (ASTM) F1521-22 *Standard Test Methods for Range Tops*.

<sup>3</sup> Modified definition from ASTM F1521-22 *Standard Test Methods for Range Tops*. Amended section 10.2.

<sup>4</sup> ASTM F1521-22 *Standard Test Methods for Range Tops*.

<sup>5</sup> ASTM F1521-22 *Standard Test Methods for Range Tops*. Amended Definition 3.1.3 and Sections 10.5.4 and 10.5.8.

<sup>6</sup> Modified definition from ASTM F1521-22 *Standard Test Methods for Range Tops*. Amended Definition 3.1.7 and Section 11.8.1.

<sup>7</sup> Modified ASTM F1521-22 *Standard Test Methods for Range Tops*. Amended Section 4.3.

<sup>8</sup> Modified ASTM F1521-22 *Standard Test Methods for Range Tops*. Amended Section 10.6.

103 **Certification Terms**

- 104
- 105 Q. Cooking Container: A stainless-steel vessel used to hold the water being heated by the cooktop.
- 106 The ASTM F1521-22 Section 6.3 dimensions for testing are 13in (330mm) diameter, 20qt (19L),
- 107 sauce pot with matching lid. The bottom of the pot shall be flat to within 0.0625in (1.6mm) over
- 108 the diameter. The inside diameter (ID) shall be measured to confirm the specified 13in diameter
- 109 of the cookware.
- 110
- 111 R. Heat-Up Time: The time required to heat the allotted volume of water from 70°F to 200°F, per
- 112 ASTM F1521-22
- 113
- 114 S. Hob: An individual heating element or cooking zone that is independently controlled; typically
- 115 associated with an individual induction coil.<sup>9</sup>
- 116
- 117 T. Product Family: Individual models offered within a product line based on the same engineering
- 118 design, including number of hobs, as applicable. Acceptable differences within a product family
- 119 for purposes of certification include controls knobs and any aesthetic additions that have no
- 120 impact on the cooktop energy consumption in any operating mode(s).
- 121
- 122 U. Set-Back Mode (Off Mode): A feature that includes automatic temperature reduction after
- 123 periods of non-use. In addition, the feature may also incorporate the reduction or elimination of
- 124 energy consumption during periods of non-use.
- 125
- 126

127 **2) Scope:**

- 128
- 129 A. Included Products: Products that meet the definition of a commercial electric cooktop are
- 130 eligible for ENERGY STAR certification, including commercial electric ranges.
- 131

132 Products shall be third-party certified to two requirements prior to ENERGY STAR certification:

- 133 1) Minimum food protection and sanitation requirements under NSF/ANSI Standard 4,
- 134 *Commercial Cooking, Rethermalization and Powered Hot Food Holding and Transport*
- 135 *Equipment*; and,
- 136 2) Safety requirements under UL 197 *Standard for Safety Commercial Electric Cooking*
- 137 *Appliances*.
- 138

139 A commercial electric range may be certified if the commercial cooktop portion of the unit meets

140 the criteria set forth in this specification and the commercial electric oven portion is certified to the

141 ENERGY STAR Commercial Ovens specification version currently in effect.

142

- 143 B. Excluded Products: Conventional cooking tops, as defined by the U.S. Department of Energy
- 144 (DOE) at Title 10 Code of Federal Regulations (CFR) 430.2 are not eligible for ENERGY
- 145 STAR certification under this specification. Conventional cooking top means a category of
- 146 cooking products (as defined in 10 CFR 430.2) which is a household cooking appliance
- 147 consisting of a horizontal surface containing one or more surface units that utilize a gas flame,
- 148 electric resistance heating, or electric inductive heating. This includes any conventional
- 149 cooking top component of a combined cooking product. 10 CFR 430.2 Cooktops designed for
- 150 other non-commercial applications are not eligible for ENERGY STAR certification under this
- 151 specification. Gas ranges, gas ovens, or gas cooktops (i.e., gas hot tops and open top gas
- 152 burners); griddles or planchas; soup wells; woks; dedicated warming/holding equipment; and
- 153 other cooktop types that do not meet the criteria are ineligible for ENERGY STAR certification
- 154 under this specification.
- 155

156 **Note:** The Agency highlights the safety requirement for third-party testing under UL 197 *Standard for*

157 *Safety Commercial Electric Cooking Appliances* prior to ENERGY STAR certification for products included

158 in scope.

<sup>9</sup> Modified definition from ASTM F2834-10a (2017) Standard Specification for Induction Cooktops, Counter Top, Drop-in Mounted, or Floor Standing. Amended Definition 3.1.4.

159 **3) Certification Criteria:**

160 A. Commercial Electric Cooktop Cooking (Boil)-Energy Efficiency Requirements:

161

162

Table 1: Energy Efficiency Requirements for Commercial Electric Cooktops	
Individual Hob Performance*	
Cooking (Boil) Energy Efficiency, %	≥ 80%
* The ASTM F1521-22 test method indicates to start the test on the hob (or cooking unit/zone) closest to front and left (Section 10.4.2), then to repeat the test for each type of hob (or cooking unit/zone) on the range top (Section 10.4.11). The intent of the method is to test each hob individually. ENERGY STAR certification will rely on all individual hobs meeting the cooking (boil) energy efficiency level.	

163

164

Table 2: Energy Efficiency Requirements for Commercial Electric Ranges	
Commercial Cooktop	Must meet energy efficiency requirements per Table 1 above.
Commercial Oven	Must be certified to the ENERGY STAR Commercial Ovens specification version currently in effect.

165 B. Significant Digits and Rounding:

- 166
- 167
- 168 a. All calculations shall be carried out with directly measured (unrounded) values. Only the final
- 169 result of a calculation shall be rounded.
- 170 b. Unless otherwise specified in this specification, compliance with certification criteria shall
- 171 be evaluated using exact values without any benefit from rounding.
- 172
- 173 c. Cooking (Boil) Energy Efficiency: Calculated values that are submitted for reporting on the
- 174 ENERGY STAR website shall be rounded to the nearest significant digit as expressed in the
- 175 certification criteria.

176

177 C. Additional Reporting Requirements:

- 178
- 179 a. The total number of hobs of the cooktop shall be reported.
- 180 b. The maximum electrical energy input rate of each hob shall be confirmed and reported.
- 181 c. The area of the individual hobs shall be reported.
- 182 d. Heat-up time (in minutes) shall be reported for each hob from ambient to production-ready
- 183 temperature (70°F to 200°F).
- 184 e. Production capacity (lbs. of water per hour) shall be reported.
- 185 f. Simmer test results (simmer average water temperature in °F, energy rate in kW, and
- 186 energy efficiency in %) shall be reported.
- 187 g. For induction cooktops, the sub-category of the unit (countertop, drop-in, and/or floor
- 188 standing) shall be specified, if applicable.
- 189

190 **Note:** Though the Agency highlights in Section 3 (Scope) the food protection, sanitation, and safety

191 requirements for third-party testing under NSF/ANSI Standard 4 and UL 197 Standard prior to ENERGY

192 STAR certification, the EPA excludes confirmation of these tests as a reporting requirement to avoid

193 confusion. In addition, the reporting requirement for individual hob size is revised to be an area instead of

194 diameter for greater inclusivity. Furthermore, the reporting requirement for simmer test results are revised

195 for clarity to include three endpoints: simmer average water temperature, energy rate, and energy

196 efficiency as defined in Section 1.N-P.

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198

199 **4) Test Requirements:**

200 A. Representative models shall be selected for testing per the following requirements:

- 201
- 202
- 203 a. For certification of an individual product model, the representative model shall be equivalent
- 204 to that which is intended to be marketed and labeled as ENERGY STAR.
- 205
- 206 b. For certification of a product family, any model within that product family can be tested and

207 serve as the representative model. When submitting product families, manufacturers continue  
208 to be held accountable for any efficiency claims made about their products, including those not  
209 tested or for which data was not reported.  
210

- 211 B. When testing commercial electric cooktops, the following test method shall be used to determine  
212 ENERGY STAR certification.  
213

Table 2: Test Method for ENERGY STAR Certification		
Cooktop Category	ENERGY STAR Requirement	Test Method Reference
Commercial Electric Cooktops	Cooking (Boil) Energy Efficiency	ASTM F1521-22 <i>Standard Test Methods for Performance of Range Tops.</i>

214  
215 **Note:** Partner must ensure the product continues to meet the certification criteria through subsequent  
216 firmware, software, or other changes to the certified product, where applicable.  
217

- 218 C. For electric cooktops with dual voltage, multiple voltage-versatility and for those that are  
219 available in different voltage configurations, the cooktop shall be evaluated as separate  
220 appliances in accordance with ASTM F1521-22, see Section 9.0, Note 3<sup>10</sup>, and shall meet the  
221 minimum energy efficiency level in the least energy efficient voltage the unit is designed to  
222 operate.  
223

- 224  
225 **5) Effective Date:** This Version 1 ENERGY STAR Commercial Electric Cooktops specification is  
226 effective on 9/01/2023. To certify as ENERGY STAR, a product model shall meet the ENERGY  
227 STAR specification in effect on the model's date of manufacture. The date of manufacture is specific  
228 to each unit and is the date on which a unit is considered to be completely assembled.  
229

230 **Note:** EPA anticipates finalizing this Version 1.0 specification September 1, 2023. Upon finalization,  
231 manufacturers will be able to immediately begin certifying products.  
232

- 233  
234 **6) Future Specification Revisions:** EPA reserves the right to change the specification should  
235 technological and/or market changes affect its usefulness to consumers, industry, or the environment.  
236 In keeping with current policy, revisions to the specification are arrived at through industry  
237 discussions. In the event of a specification revision, please note that ENERGY STAR certification is  
238 not automatically granted for the life of a product model.

<sup>10</sup> ASTM F1521-22 Section 9.0, Note 3 states: "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"