



ENERGY STAR® Program Requirements for Commercial Ovens

Final Draft: Partner Commitments

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Commitment

The following are the terms of the ENERGY STAR Partnership Agreement as it pertains to the manufacturing of ENERGY STAR qualified commercial ovens. The ENERGY STAR Partner must adhere to the following program requirements:

- comply with current ENERGY STAR Eligibility Criteria, defining the performance criteria that must be met for use of the ENERGY STAR certification mark on commercial ovens and specifying the testing criteria for commercial ovens. EPA may, at its discretion, conduct tests on products that are referred to as ENERGY STAR qualified. These products may be obtained on the open market, or voluntarily supplied by Partner at EPA's request;
- comply with current ENERGY STAR Identity Guidelines, describing how the ENERGY STAR marks and name may be used. Partner is responsible for adhering to these guidelines and for ensuring that its authorized representatives, such as advertising agencies, dealers, and distributors, are also in compliance;
- qualify at least one ENERGY STAR commercial oven within one year of activating the commercial ovens' portion of the agreement. When Partner qualifies the product, it must meet the specification (e.g., Tier 1 or 2) in effect at that time;
- Provide clear and consistent labeling of ENERGY STAR qualified commercial ovens. The ENERGY STAR mark must be clearly displayed on the front of the product, in product literature (i.e., user manuals, spec sheets, etc.), and on the manufacturer's Internet site where information about ENERGY STAR qualified models is displayed;
- provide to EPA, on an annual basis, an updated list of ENERGY STAR qualifying commercial oven models. Once the Partner submits its first list of ENERGY STAR qualified commercial ovens, the Partner will be listed as an ENERGY STAR Partner. Partner must provide annual updates in order to remain on the list of participating product manufacturers;
- provide to EPA, on an annual basis, unit shipment data or other market indicators to assist in determining the market penetration of ENERGY STAR. Specifically, Partner must submit the total number of ENERGY STAR qualified commercial ovens shipped (in units by model) or an equivalent measurement as agreed to in advance by EPA and Partner. Partner is also encouraged to provide ENERGY STAR qualified unit shipment data segmented by meaningful product characteristics (e.g., capacity, size, speed, or other as relevant), total unit shipments for each model in its product line, and percent of total unit shipments that qualify as ENERGY STAR. The data for each calendar year should be submitted to EPA, preferably in electronic format, no later than the following March and may be provided directly from the Partner or through a third party. The data will be used by EPA only for program evaluation purposes and will be closely controlled. If requested under the Freedom of Information Act (FOIA), EPA will argue that the data is exempt. Any information used will be masked by EPA so as to protect the confidentiality of the Partner;
- notify EPA of a change in the designated responsible party or contacts for commercial ovens within 30 days.

Performance for Special Distinction

In order to receive additional recognition and/or support from EPA for its efforts within the Partnership, the ENERGY STAR Partner may consider the following voluntary measures and should keep EPA informed on the progress of these efforts:

- consider energy efficiency improvements in company facilities and pursue the ENERGY STAR mark for buildings;
- purchase ENERGY STAR qualified products. Revise the company purchasing or procurement specifications to include ENERGY STAR. Provide procurement officials' contact information to EPA for periodic updates and coordination. Circulate general ENERGY STAR qualified product information to employees for use when purchasing products for their homes;
- ensure the power management feature is enabled on all ENERGY STAR qualified monitors in use in company facilities, particularly upon installation and after service is performed;
- provide general information about the ENERGY STAR program to employees whose jobs are relevant to the development, marketing, sales, and service of current ENERGY STAR qualified product models;
- feature the ENERGY STAR mark(s) on Partner Web site and in other promotional materials. If information concerning ENERGY STAR is provided on the Partner Web site as specified by the ENERGY STAR Web Linking Policy (this document can be found in the Partner Resources section on the ENERGY STAR Web site at www.energystar.gov), EPA may provide links where appropriate to the Partner Web site;
- provide a simple plan to EPA outlining specific measures Partner plans to undertake beyond the program requirements listed above. By doing so, EPA may be able to coordinate, communicate, and/or promote Partner's activities, provide an EPA representative, or include news about the event in the ENERGY STAR newsletter, on the ENERGY STAR Web pages, etc. The plan may be as simple as providing a list of planned activities or planned milestones that Partner would like EPA to be aware of. For example, activities may include: (1) increase the availability of ENERGY STAR labeled products by converting the entire product line within two years to meet ENERGY STAR guidelines; (2) demonstrate the economic and environmental benefits of energy efficiency through special in-store displays twice a year; (3) provide information to users (via the Web site and user's manual) about energy-saving features and operating characteristics of ENERGY STAR qualified products, and (4) build awareness of the ENERGY STAR Partnership and brand identity by collaborating with EPA on one print advertorial and one live press event;
- provide quarterly, written updates to EPA as to the efforts undertaken by Partner to increase availability of ENERGY STAR qualified products, and to promote awareness of ENERGY STAR and its message.
- join EPA's SmartWay Transport Partnership to improve the environmental performance of the company's shipping operations. SmartWay Transport works with freight carriers, shippers, and other stakeholders in the goods movement industry to reduce fuel consumption, greenhouse gases, and air pollution. For more information on SmartWay, visit www.epa.gov/smartway.
- join EPA's Climate Leaders Partnership to inventory and reduce greenhouse gas emissions. Through participation companies create a credible record of their accomplishments and receive EPA recognition as corporate environmental leaders. For more information on Climate Leaders, visit www.epa.gov/climateleaders.
- join EPA's Green Power partnership. EPA's Green Power Partnership encourages organizations to buy green power as a way to reduce the environmental impacts associated with traditional fossil fuel-based electricity use. The partnership includes a diverse set of organizations including Fortune 500 companies, small and medium businesses, government institutions as well as a growing number of colleges and universities, visit <http://www.epa.gov/grnpower>.



ENERGY STAR® Program Requirements for Commercial Ovens

Final Draft: Eligibility Criteria

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Below is the **FINAL DRAFT** Version 1.0 product specification for ENERGY STAR qualified commercial ovens. A product must meet all of the identified criteria if it is to earn the ENERGY STAR.

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

- A. **Commercial Oven:** A chamber designed for heating, roasting, or baking food by conduction, convection, radiation, and/or electromagnetic energy¹.

Oven Types

- B. **Combination Oven:** An oven that combines the function of hot air convection (oven mode) and saturated/superheated steam heating (steam mode), or both (combi mode), to perform steaming, baking, roasting, rethermalizing, and proofing of various food products. Also referred to as a combination oven/steamer, combi or combo.
- C. **Convection Oven:** A general-purpose oven that cooks food by forcing hot dry air over the surface of the food product. The rapidly moving hot air strips away the layer of cooler air next to the food and enables the food to absorb the heat energy. For the purposes of this specification, convection ovens do not include ovens that have the ability to heat the cooking cavity with saturated or superheated steam. Maximum water consumption within the oven cavity must not exceed 0.25 gallons/hour.

Note: EPA received several comments from stakeholders requesting additional clarity regarding the difference between convection ovens that introduce minimal levels of steam into the cavity for purposes of crisping product and combination ovens that introduce steam for purposes of cooking product. To address this concern, EPA has added a maximum water consumption requirement using a gallon per hour metric. Based on industry discussions, EPA understands that injecting moisture into the cavity for purposes of crisping product in convection ovens does not significantly impact the energy consumption profile. Under this proposed 0.25 gal/hr level, convection ovens using this technique will continue to be eligible for ENERGY STAR, which was EPA's intention, and combination ovens are clearly excluded.

- **Full-Size Convection Oven:** A convection oven that is able to accept a minimum of five standard full-size sheet pans measuring 18 x 26 x 1-inch.
 - **Half-Size Convection Oven:** A convection oven that is able to accept a minimum of five sheet pans measuring 18 x 13 x 1-inch.
- D. **Conventional or Standard Oven:** An oven that cooks food primarily using the naturally occurring hot air currents to transfer heat over the surface of the food product without the use of a fan or blower. The burner or elements heat the air within the oven cavity as well as the cavity walls, causing currents of hot air that transfer heat to the surface of the food. The hot air's buoyancy carries it upward through cooler air, which then slowly sinks to the bottom of the oven as it cools off.
- E. **Conveyor Oven:** An oven designed to carry food product on a moving belt into and through a heated chamber.

¹ NSF 170-2005, *Glossary of food equipment terminology*.

- 169 F. Cook-and-Hold Oven: An oven designed specifically for low-temperature (e.g., less than 300°F)
170 cooking, followed by a holding period at a specified temperature.
171
- 172 G. Deck Oven: An oven that cooks food product directly on the floor of a heated chamber. The
173 bottom of each compartment is called a deck and heat is typically supplied by burners or elements
174 located beneath the deck. The oven ceiling, floor, and walls are designed to absorb heat quickly
175 and radiate that heat back slowly and evenly.
176
- 177 H. Mini-Rack Oven: A rack oven that has the ability to produce steam internally and includes an
178 internal rotating rack where pans are manually pushed into the racks. Mini-rack ovens typically
179 hold 5 – 8 full-size sheet pans.
180
- 181 I. Rack (Roll-In) Oven: A high-capacity oven, with the ability to produce steam internally and fitted
182 with a motor-driven mechanism for rotating multiple pans fitted into one or more pan racks within
183 the cavity.
184
- 185 • Single Rack Oven: A rack oven that is able to hold one full rack of sheet pans of product at a
186 time, based on nominal 4-inch spacing between pans.
187
 - 188 • Double Rack Oven: A rack oven that is able to hold two single racks or one double-width
189 rack, based on nominal 4-inch spacing between pans.
190
- 191 J. Range Oven: An oven base for a commercial range top (i.e., burners, electric elements or hobs).
192 Range ovens may use either standard or convection technologies to cook food.
193
- 194 K. Rapid Cook Oven: An oven that utilizes one or more non-traditional heat transfer technologies to
195 cook food product significantly faster than would be possible using conventional (e.g., convection,
196 conduction, radiant) heat transfer technologies. Heat transfer technologies that may be employed
197 include microwave, quartz halogen and high-velocity or impingement convection.
198
- 199 L. Rotisserie Oven: An oven fitted with a mechanism to move or turn food past a fixed heat source
200 while the food is slowly being cooked on all sides.
201

202 **Energy Efficiency Measures**

- 203
- 204 M. Cooking Energy Efficiency: The ratio of energy absorbed by the food product to the total energy
205 supplied to the oven during cooking.
206
- 207 N. Idle Rate: The rate of oven energy consumption while it is maintaining or holding at a stabilized
208 operating condition or temperature. Also called standby energy rate.
209

- 210
- 211 **2) Qualifying Products**: Only commercial full-size gas and half- and full-size electric convection
212 ovens, as defined in Section 1C above, are eligible for ENERGY STAR qualification under this Version
213 1.0 specification. EPA may consider covering additional commercial oven types, as defined in Section
214 1, in future versions of this document. **Note**: Hybrid ovens, such as those incorporating steam and/or
215 microwave technologies in addition to convection, are excluded from this specification.
216

217 Ovens qualifying under this specification must be third-party certified to NSF/ANSI Standard 4,
218 *Commercial Cooking, Rethermalization and Powered Hot Food Holding and Transport Equipment*.
219

220 **Note**: This specification is intended for commercial food-grade ovens. Ovens designed for residential
221 or laboratory applications cannot qualify for ENERGY STAR.
222

Note: Due to lack of sufficient data by which to determine appropriate performance levels, rack ovens are now excluded. EPA will consider including these product types under future versions of the specification if a robust data set can be developed for gas and/or electric categories (both single and double rack) that demonstrate sufficient product differentiation. EPA did not receive any additional comments regarding the inclusion of countertop ovens. As such, these product types continue to be excluded by the minimum 5-pan requirement in the convection oven definition. Similar to rack ovens, EPA will consider adding these product types at a later date depending on manufacturer interest and available data.

EPA also added a note that ovens incorporating more than one technology, in addition to convection, to cook food are excluded from the specification. It is unclear how these products would be tested and rated in terms of efficiency.

3) Efficiency Requirements for Qualifying Products: Commercial ovens must meet all the requirements provided below to qualify as ENERGY STAR.

Table 1: Energy Efficiency Requirements for Convection Ovens	
Gas	
Full-Size	
Cooking Energy Efficiency*	≥ 44%
Idle Energy Rate	≤ 13,000 Btu/h
Electric	
Half-Size	
Cooking Energy Efficiency*	≥ 70%
Idle Energy Rate	≤ 1.0 kW
Full-Size	
Cooking Energy Efficiency*	≥ 70%
Idle Energy Rate	≤ 1.6 kW

*Based on the heavy-load (potato) cooking test.

Note: Performance levels for gas half-size convection ovens have been removed from Table 1, above. These product types are not eligible for ENERGY STAR qualification. EPA did not receive any additional data on these product types, which also represent a very small share of the convection oven market. Similar to other oven types, EPA may consider including half-size gas convection ovens based on stakeholder interest and data availability.

4) Test Criteria: Partners are required to perform tests and self-certify those product models that meet the ENERGY STAR guidelines. The test results must be reported to EPA using the Commercial Ovens Qualifying Product Information (QPI) Form. A test report must also be submitted along with the QPI form. When testing commercial ovens, partners agree to use the following test procedure to determine ENERGY STAR compliance:

- ASTM F1496, *Standard Test Method for Performance of Convection Ovens*

Note: The reference for ASTM F2093, *Standard Test Method for Performance of Rack Ovens*, has been removed since rack ovens are not eligible for ENERGY STAR qualification.

Note: For purposes of ENERGY STAR, cooking energy efficiency is measured at heavy-load conditions as defined in ASTM F1496. Manufacturers must disable any set back mode feature while testing ovens for ENERGY STAR qualification.

Multiple Oven Door Options: Ovens that offer multiple door options (e.g. glass, solid) must meet the requirements presented in Table 1 utilizing all of these options for that model to qualify as ENERGY STAR. Manufacturer may use the test results representing the worst case scenario (e.g., glass door) to qualify all door options under one model number. In the case where a manufacturer wishes to qualify a model with only one compliant door option, a unique identifier must be used that provides clear delineation between ENERGY STAR qualified and non-compliant units.

Note: EPA has revised the language above to allow manufacturers to qualify solid door options using glass door test results, which represent the more energy intensive configuration (i.e., worst case scenario). If the model only meets ENERGY STAR requirements using one door option, but not the other(s), then the manufacturer may qualify that configuration but also must assign a unique identifier to either the ENERGY STAR compliant or non-compliant option(s). Also, the previous reference to oven control options has been removed based on industry feedback that differences in control have little impact on energy consumption. However, in the case that there is a difference in performance, the manufacturer will be responsible for making sure that the oven meets ENERGY STAR requirements in all control options.

Ovens with Variable Btu/h or kW Input: Manufacturers qualifying ovens with variable Btu/h or kW input must test and report performance results at all available inputs. The oven must meet the cooking energy efficiency and idle energy rate requirements presented in Table 1 at all available inputs to qualify for ENERGY STAR.

5) Effective Date: The date that manufacturers may begin to label and promote qualifying products as ENERGY STAR will be defined as the *effective date* of the agreement. The ENERGY STAR Commercial Oven Specification shall go into effect on **May 16, 2009**

Note: EPA received limited feedback on the Draft 2 proposal, especially with regard to the proposed cooking energy efficiency and idle energy rate levels. Therefore, EPA considers the performance requirements to be final. As such, manufacturers may begin submitting QPI forms for convection ovens that have been tested using ASTM Standard F1496 and meet the levels presented in Table 1, above.

Please note that the ENERGY STAR mark should not be used to promote qualified models until the specification becomes effective on May 16, 2009. EPA plans to launch the new ENERGY STAR Commercial Oven specification at the National Restaurant Association (NRA) Show, May 16 – 19, 2009. Manufacturers who wish to promote ENERGY STAR compliant models during the show should submit a completed Partnership Agreement and QPI form(s) to EPA for review no later than May 14, 2009

6) Future Specification Revisions: EPA reserves the right to change the specification should technological and/or market changes affect its usefulness to consumers, industry, or the environment. In keeping with current policy, revisions to the specification are arrived at through industry discussions. In the event of a specification revision, please note that ENERGY STAR qualification is not automatically granted for the life of a product model. To carry the ENERGY STAR mark, a product model must meet the ENERGY STAR specification in effect on the model's date of manufacture.

Combination and Other Oven Types: Approximately one year after the effective date of this Version 1.0 specification (i.e., May 16, 2010), EPA will evaluate whether to extend coverage to combination ovens and other oven types defined in Section 1, above. Inclusion of these additional oven types will depend on stakeholder interest, test procedure availability, and access to a sufficient quantity of product performance data.