



ENERGY STAR® Program Requirements for Commercial Ovens

Draft 1: Partner Commitments

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13 **Commitment**

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

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

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

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64 • consider energy efficiency improvements in company facilities and pursue the ENERGY STAR mark for
65 buildings;

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67 • purchase ENERGY STAR qualified products. Revise the company purchasing or procurement
68 specifications to include ENERGY STAR. Provide procurement officials' contact information to EPA for
69 periodic updates and coordination. Circulate general ENERGY STAR qualified product information to
70 employees for use when purchasing products for their homes;

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72 • ensure the power management feature is enabled on all ENERGY STAR qualified monitors in use in
73 company facilities, particularly upon installation and after service is performed;

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75 • provide general information about the ENERGY STAR program to employees whose jobs are relevant
76 to the development, marketing, sales, and service of current ENERGY STAR qualified product models;

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78 • feature the ENERGY STAR mark(s) on Partner Web site and in other promotional materials. If
79 information concerning ENERGY STAR is provided on the Partner Web site as specified by the
80 ENERGY STAR Web Linking Policy (this document can be found in the Partner Resources section on
81 the ENERGY STAR Web site at www.energystar.gov), EPA may provide links where appropriate to the
82 Partner Web site;

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84 • provide a simple plan to EPA outlining specific measures Partner plans to undertake beyond the
85 program requirements listed above. By doing so, EPA may be able to coordinate, communicate,
86 and/or promote Partner's activities, provide an EPA representative, or include news about the event in
87 the ENERGY STAR newsletter, on the ENERGY STAR Web pages, etc. The plan may be as simple
88 as providing a list of planned activities or planned milestones that Partner would like EPA to be aware
89 of. For example, activities may include: (1) increase the availability of ENERGY STAR labeled
90 products by converting the entire product line within two years to meet ENERGY STAR guidelines; (2)
91 demonstrate the economic and environmental benefits of energy efficiency through special in-store
92 displays twice a year; (3) provide information to users (via the Web site and user's manual) about
93 energy-saving features and operating characteristics of ENERGY STAR qualified products, and (4)
94 build awareness of the ENERGY STAR Partnership and brand identity by collaborating with EPA on
95 one print advertorial and one live press event;

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97 • provide quarterly, written updates to EPA as to the efforts undertaken by Partner to increase availability
98 of ENERGY STAR qualified products, and to promote awareness of ENERGY STAR and its message.

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100 • join EPA's SmartWay Transport Partnership to improve the environmental performance of the
101 company's shipping operations. SmartWay Transport works with freight carriers, shippers, and other
102 stakeholders in the goods movement industry to reduce fuel consumption, greenhouse gases, and air
103 pollution. For more information on SmartWay, visit www.epa.gov/smartway.

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105 • join EPA's Climate Leaders Partnership to inventory and reduce greenhouse gas emissions. Through
106 participation companies create a credible record of their accomplishments and receive EPA recognition
107 as corporate environmental leaders. For more information on Climate Leaders, visit
108 www.epa.gov/climateleaders.

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110 • join EPA's Green Power partnership. EPA's Green Power Partnership encourages organizations to buy
111 green power as a way to reduce the environmental impacts associated with traditional fossil fuel-based
112 electricity use. The partnership includes a diverse set of organizations including Fortune 500
113 companies, small and medium businesses, government institutions as well as a growing number of
114 colleges and universities, visit <http://www.epa.gov/grnpower>.



ENERGY STAR® Program Requirements for Commercial Ovens

Draft 1: Eligibility Criteria

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Below is the **DRAFT 1** 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 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.
 - Full-Size Convection Oven: A convection oven that is able to accept standard full-size sheet pans measuring 18 x 26 x 1-inch.
 - Half-Size Convection Oven: A convection oven that is able to accept 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. 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.
- F. Cook-and-Hold Oven: An oven designed specifically for low-temperature cooking, followed by a holding period at a specified temperature.
- G. Deck Oven. An oven that cooks food product directly on the floor of a heated chamber. The bottom of each compartment is called a deck and heat is typically supplied by burners or elements located beneath the deck. The oven ceiling, floor, and walls are designed to absorb heat quickly and radiate that heat back slowly and evenly.
- H. Rack (Roll-In) Oven: A high-capacity oven,  with a motor-driven mechanism for rotating  one or more pan racks within the cavity.
 - Single Rack Oven: A rack oven that is able to hold up to 15 full-size sheet pans of product at a time.

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

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- Double Rack Oven: A rack oven that is able to hold two single racks or one double-width rack.
 - I. Range Oven: An oven base for a commercial range top (i.e., burners, electric elements or hobs). Range ovens may use either standard or convection technologies to cook food.
 - J. Rapid Cook Oven: An oven that utilizes one or more non-traditional heat transfer technologies to cook food product. Heat transfer technologies that may be employed include microwave, quartz halogen and high-velocity or impingement convection.
 - K. Rotisserie Oven: An oven fitted with a mechanism to move or turn food past a fixed heat source while the food is slowly being cooked on all sides.

182 **Energy Efficiency Measures**

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

 **Note:** Stakeholders are encouraged to comment on the definitions proposed above and/or provide suggestions regarding other terms that might need to be defined within this section.

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- 2) **Qualifying Products:** Only commercial convection ovens and rack ovens, as defined in Section 1C and 1H above, are eligible for ENERGY STAR qualification under this Version 1.0 specification. EPA may consider covering additional commercial oven types, as defined in Section 1, in future versions of this specification.

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

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

Note: This Version 1.0 specification covers convection and rack ovens, both of which are supported by well vetted, industry accepted test procedures and offer significant energy savings and reductions in carbon emissions. In October, EPA announced its intention to also develop specification requirements for rotisserie ovens. Shortly following this announcement, EPA learned that the ASTM test procedure for rotisserie ovens was being revised. Therefore, rotisserie ovens are not included in this Version 1.0 specification. EPA will consider including these products under a subsequent version of this specification once changes to the test procedure are complete and product performance data, based on the new test method, is made available for analysis. EPA also intends to cover additional commercial oven types with this ENERGY STAR specification in the future. Inclusion of these additional oven types will depend on stakeholder interest, test procedure availability, and access to product performance data.

Ovens used in residential and laboratory applications are explicitly excluded from this specification. To further ensure that only those ovens designed for use in foodservice applications qualify under this specification, all products must meet NSF/ANSI Standard 4 requirements, as applicable.

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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	
Half-Size	
Cooking Energy Efficiency	≥ 44%
Idle Energy Rate	TBD
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

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Table 2: Energy Efficiency Requirements for Rack Ovens	
Gas	
Single Rack	
Baking Energy Efficiency	TBD
Idle Energy Rate	TBD
Double Rack	
Baking Energy Efficiency	≥ 52%
Idle Energy Rate	≤ 35,000 Btu/h
Electric	
Single Rack	
Baking Energy Efficiency	TBD
Idle Energy Rate	TBD
Double Rack	
Baking Energy Efficiency	TBD
Idle Energy Rate	TBD



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Note: The primary objective of ENERGY STAR is to recognize the most energy-efficient products in the marketplace. In developing a specification, EPA considers the following criteria:

- Significant energy and/or water savings can be realized on a national basis;
- Product performance is maintained or enhanced with increased efficiency;
- Purchase of high efficiency product will be cost-effective;
- Energy and/or water efficiency can be achieved through several technology options; at least one of which is non-proprietary;
- Product energy and/or water consumption and performance can be measured and verified with testing;
- Labeling would effectively differentiate products and be visible for purchasers.

It is not EPA's intention to design a specification that will allow every model available to qualify. In choosing the top performers in the marketplace, EPA anticipates that over time, the percentage of qualified products will increase as ENERGY STAR penetrates the market.

Note continued

The performance levels proposed in Tables 1 and 2, above, are based on data provided by PG&E's Food Service Technology Center (FSTC) in early November.

Convection Ovens: The proposed gas full-size convection oven requirements are met by approximately the top 27% of the current data set.

Only one data point in the FSTC convection oven data set is represented by a half-size model. It is EPA's understanding that most, if not all, gas convection models sold today are full-size. However, end users looking for a half-size model should have the option of identifying the most energy-efficient unit that also meets their specific operating and space needs. Therefore, EPA is proposing that half-size units meet the same cooking energy efficiency level as full-size units. Manufacturers are encouraged to provide additional data to determine an appropriate ENERGY STAR level for the idle energy rate of half-size gas convection ovens.

The electric convection oven data set includes an equal number of full-size and half-size models. As such, EPA was able to propose draft cooking energy efficiency and idle levels for both sub-categories representing approximately 28% and 42% of the current data set, respectively. However, these levels are based on a small data set (i.e., 14 models total) and EPA is interested in reviewing additional data that supports this proposal or suggests the need for revised levels.

Rack Ovens: The current data set is limited to gas double-rack ovens. The levels proposed in Table 2 above represent approximately 23% of this data set. The rack oven data set does not include gas single rack ovens or electric rack ovens (single or double-rack). To date, EPA has written ENERGY STAR commercial foodservice specifications to be inclusive of both gas and electric designs. This ensures that the end user is able to find ENERGY STAR qualified models regardless of fuel source. It is EPA's intention to do the same for rack ovens. However, more data is needed to determine the top performers within these sub categories.

Submission of Performance Data: As discussed above, there are several areas where additional information is needed to derive proposed draft requirements in Tables 1 and 2, above. It is EPA's intention to develop an ENERGY STAR commercial oven specification that provides the end user with several choices of convection and rack oven designs (e.g., gas and electric). As such, manufacturers that sell electric convection ovens (half and full-size), half-size gas convection ovens, single-rack gas rack ovens, and electric rack ovens (single and double rack) are encouraged to provide information and/or data to EPA for consideration. Comments and/or data should be submitted to Rebecca Duff, ICF International, at rduff@icfi.com by **January 30, 2009**.

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4) Test Criteria: Partner is 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. When testing commercial ovens, the partner agrees to use the following test procedures to determine ENERGY STAR compliance:

- ASTM F1496, *Standard Test Method for Performance of Convection Ovens*
- ASTM F2093, *Standard Test Method for Performance of Rack Ovens*

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- 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 1, 2009**

Note: Typically, EPA looks to announce a new ENERGY STAR specification in conjunction with an industry trade show or conference. It is EPA's hope to finalize this specification in April and launch the new product category at the National Restaurant Association (NRA) Show, May 16 – 19, 2009. EPA is proposing that the specification become effective May 1 to allow manufacturers time to submit product information for ENERGY STAR qualification and prepare marketing materials for use at the NRA Show.

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- 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 1, 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 product performance data.

Note: As indicated in Section 2, above, EPA intends to extend ENERGY STAR coverage to additional commercial oven types in the future. EPA expects that for combination ovens in particular, revisions to the test procedure will be finalized and a robust data set made available by May 1, 2010. However, EPA is interested in evaluating any of the commercial oven types defined in Section 1, above, for ENERGY STAR consideration based on stakeholder interest, test procedure availability, and access to product performance data. If EPA does proceed with additional product types, a specification development process similar to this one will be initiated and new levels added to Section 3, above.

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