



ENERGY STAR® Program Requirements Product Specification for Commercial Fryers

Eligibility Criteria DRAFT 1: Version 2.0

Following is the **DRAFT 1** Version 2.0 product specification for ENERGY STAR qualified commercial fryers. A product shall meet all of the identified criteria if it is to earn the ENERGY STAR.

Note: The primary purpose of this revision is to expand the scope to commercial fryers with larger frypots (i.e., ≥ 18 inches wide). Changes are proposed throughout this Version 2.0 specification that would allow larger fryers to qualify for ENERGY STAR, including new test standard references and proposed efficiency levels.

In addition to this expansion in scope, EPA is also incorporating changes to further clarify requirements and ensure a level playing field to support upcoming changes to the ENERGY STAR program, which include the requirement of third-party certification for product qualification. Similar revisions are also being made to all ENERGY STAR product specifications, including the existing Commercial Fryer Version 1.0 specification.

Stakeholders will notice that the revised draft version of the Partner Commitments is attached with this Version 2.0. EPA is proposing new Partner Commitments with the enhanced testing and verification requirements that will apply to all ENERGY STAR product categories starting in early 2011. These draft Partner Commitments for commercial fryers were initially distributed for stakeholder review and comment on September 14, 2010. EPA encourages stakeholders to provide comments on these new commitments by October 1, 2010.

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

- A. **Commercial Open, Deep-Fat Fryer:** An appliance, including a cooking vessel, in which oil is placed to such a depth that the cooking food is essentially supported by displacement of the cooking fluid rather than by the bottom of the vessel. Heat is delivered to the cooking fluid by means of an immersed electric element or band-wrapped vessel (electric fryers), or by heat transfer from gas burners through either the walls of the fryer or through tubes passing through the cooking fluid (gas fryers).
- a. **Standard Fryer:** A fryer with a minimum 14 x 14 inch frypot and a shortening capacity greater than 25 pounds (i.e., nominal 14-inch wide fryer).
- b. **Split Vat Fryer:** A standard fryer with an internal wall that separates the frypot into two equal sides.
- c. **Large Vat Fryer:** A fryer with a minimum 18-inch wide frypot and a shortening capacity greater than 50 pounds (i.e., nominal 18-inch wide fryer).

Note: New definitions are proposed for standard, large, and split vat fryers based on frypot size and intended application. These definitions will be used to determine the appropriate test standard conditions and minimum performance levels that commercial fryers will need to meet to qualify as ENERGY STAR. Stakeholders are encouraged to provide feedback on the proposed definitions.

- B. **Cooking Energy Efficiency:** The quantity of energy input to the food product (i.e., french fries) during the cooking process; expressed as a percentage of the quantity of energy input to the fryer during the heavy-, medium-, and light-load tests. For purposes of this specification, the heavy-load test as defined in ASTM F1361-07 and ASTM F2144-07 will be used as a measurement of cooking energy efficiency.

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3 C. Idle Energy Rate: The average rate of energy consumed [Btu/h (kJ/h) or kW] by the fryer while
4 "holding" or "idling" the frying medium at the thermostat(s) set point.
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6 D. Product Family: Variations of one model are offered within a single product line with differences in
7 aesthetics only. Individual models represented by a product family must be based on the same
8 basic engineering design and have the same cooking energy efficiency and idle energy rate. All
9 members of the family must also have the same fry pot size.
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11 **Note:** The definition for idle energy rate has been revised to match the definitions provided in ASTM
12 F2144-07 and F1361-07. A definition for product family is proposed to ensure a level playing field when
13 evaluating product families for purposes of ENERGY STAR qualification based on test data from a
14 representative model. A definition for representative model is provided in Section 4, below.
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17 **2) Scope:**

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19 A. Included Products: Products that meet the definition of a Commercial Open Deep-Fat Fryer as
20 specified herein are eligible for ENERGY STAR qualification, with the exception of products listed
21 in Section 2.B.
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23 B. Excluded Products: Commercial fryers with frypots measuring less than 14 x 14 inches or greater
24 than 24 x 24 inches are not eligible for ENERGY STAR.
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27 **3) Qualification Criteria:**

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29 A. Determining Fry Pot Size: The frying area shall be measured at the fryer's maximum fill-line. The
30 frypot width is considered to be the distance between the inner side walls of the frypot. The frypot
31 length is considered to be the distance between the front edge and the rear of the frypot at the
32 fryer's maximum fill line. The dimensions for split vat fryers shall be considered to be twice the
33 width of one side.
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35 B. Cooking Energy Efficiency and Idle Energy Rate Requirements – Standard and Split Vat Fryers
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Table 1: Energy Efficiency Requirements for Standard Open Deep-Fat Gas Fryers	
Heavy-Load Cooking Energy Efficiency	≥ 50%
Idle Energy Rate	≤ 9,000 Btu/hr

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Table 2: Energy Efficiency Requirements for Standard Open Deep-Fat Electric Fryers	
Heavy-Load Cooking Energy Efficiency	≥ 80%
Idle Energy Rate	< 1000 watts

- 41 C. Cooking Energy Efficiency and Idle Energy Rate Requirements – Large Vat Fryers

Table 3: Energy Efficiency Requirements for Large Vat Open Deep-Fat Gas Fryers	
Heavy-Load Cooking Energy Efficiency	≥ 50%
Idle Energy Rate	≤ 11,000 Btu/hr

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Table 4: Energy Efficiency Requirements for Large Vat Open Deep-Fat Electric Fryers	
Heavy-Load Cooking Energy Efficiency	$\geq 80\%$
Idle Energy Rate	$\leq 1,100$ watts

Note: To ensure consistency in the categorization and evaluation of commercial fryers under this ENERGY STAR specification, EPA is including guidance on measuring frypot size. This guidance is based on current industry practice and ensures a level playing field. Stakeholders are encouraged to comment on the proposed approach.

The levels proposed for commercial fryers measuring 18 inches and larger in Tables 3 and 4 are based on test results submitted in support of EPA’s effort to evaluate the energy consumption of fryers smaller and larger than the standard, nominal 14-inch frypot. EPA received limited data for smaller fryers and is therefore, only proposing expansion of the specification to include larger fryers (i.e., ≥ 18 inches) at this time. If additional data is received for smaller fryers that suggest differentiation in the marketplace, significant potential energy savings and a favorable payback to the end user, EPA may consider including these products during this revision process.

Cooking energy efficiency data received indicate that existing Version 1.0 levels are attainable for larger fryers and therefore, EPA is proposing these same requirements for electric and gas units. However, an analysis of the idle energy rate data for these same units suggests that there is an inherent increase in idle energy rate with larger frypots due to increased surface area and heat loss as a result. Therefore, EPA is proposing slightly higher idle energy rates for larger fryers. These levels represent the top performers in the EPA data set while also ensuring purchaser choice and cost effectiveness to the end user.

Stakeholders will be able to view EPA’s data set on the ENERGY STAR Commercial Fryer product development website at www.energystar.gov/revisedspecs and are encouraged to comment on the proposed levels, and submit additional data, for EPA consideration.

D. Significant Digits and Rounding:

- a. All calculations shall be carried out with actual measured or observed values. Only the final result of a calculation shall be rounded. Calculated results shall be rounded to the nearest significant digit as expressed in the corresponding specification limit.
- b. Unless otherwise specified, compliance with specification limit shall be evaluated using exact values without any benefit from rounding.

4) Test Criteria:

- A. Representative Models shall be selected for testing per the following requirements:
 - a. For qualification of an individual product model, the representative model shall be equivalent to that which is intended to be marketed and labeled as ENERGY STAR.
 - b. For qualification of a product family, any model within that product family can be tested and serve as the representative model.
- B. When testing commercial fryers, the following test methods shall be used to determine ENERGY STAR qualification:

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Table 5: Test Methods for ENERGY STAR Qualification	
ENERGY STAR Requirement	Test Method Reference
Cooking Energy Efficiency	ASTM Standard F1361-07, <i>Test Method for the Performance of Open Deep Fat Fryers (standard fryers)</i>
Idle Energy Rate	OR ASTM Standard F2144-07, <i>Test Method for Performance of Large Open Vat Fryers (large vat fryers)</i>

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Note: EPA is proposing to adopt the most recent version of the ASTM Standard F1361 for standard fryers. Based on industry discussions, EPA understands that changes to the idle energy rate and cooking energy efficiency test methods in the 2007 version do not affect the comparability of results from the previous 1999 version. The primary changes made to this test method focused on redefining the applicable categories of appliances, tightening the test procedure, and adding additional test scenarios.

To support the addition of large vat fryers to this specification, ASTM Standard F2144 is also referenced in Table 5, above. Testing of large vat fryers must follow this test method to determine cooking energy efficiency at heavy-load (i.e., french fry test) and idle energy rate.

Product Families: EPA understands that similar to other commercial food service equipment, one commercial fryer could be offered with several design variations that while important to product installation and kitchen operations (e.g., finish, wheels) does not change the energy consumption or production capacity of the unit. These variations may come with slightly different model numbers for purposes of procurement but are based on the same design platform. With this scenario in mind, EPA has proposed allowing the qualification of product families, based on a representative model. Product families must meet the definition provided in Section 1, above.

5) Effective Date: The ENERGY STAR Commercial Fryer specification shall take effect on **February 1, 2011**. To qualify for ENERGY STAR, a product model shall meet the ENERGY STAR specification in effect on the model's date of manufacture. The date of manufacture is specific to each unit and is the date (e.g., month and year) on which a unit is considered to be completely assembled

Note: Since larger commercial fryers are currently ineligible for ENERGY STAR under Version 1.0, and no changes are being proposed to the existing requirements for standard fryers, EPA is proposing that this Version 2.0 specification go into effect shortly following finalization. EPA is working toward finalizing this specification by the end of this year. The date proposed above allows manufacturers time to certify and launch qualified models at the North American Food Equipment Manufacturers (NAFEM) Show February 10-12, 2011. Stakeholders are encouraged to comment on this timeline.

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. Please note that ENERGY STAR qualification is not automatically granted for the life of the product model.