ENERGY STAR® Program Requirements
Product Specification for Commercial Fryers

Eligibility Criteria
Draft 1 Version 3.0

Following is the **Draft 1 Version 3.0** product specification for commercial fryers. A product shall 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 Open, Deep-Fat Fryer: An appliance, including a cooking vessel, in which oils are 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 vat that measures ≥12 inches and < 18 inches wide, and a shortening capacity ≥ 25 pounds and ≤ 65 pounds.

b. Large Vat Fryer: A fryer with a vat that measures ≥ 18 inches and ≤ 24 inches wide, and a shortening capacity > 50 pounds.

c. Split Vat Fryer: A standard or large vat fryer with an internal wall that separates the vat into two equal sides.

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-load tests.

C. Idle Energy Rate: The average rate of energy consumed [Btu/h (kJ/h) or kW] by the fryer while "holding" or "idling" the frying medium at the thermostat(s) set point.

D. Product Family: Variations of one model are offered within a single product line with differences in aesthetics only. Individual models represented by a product family must be based on the same basic engineering design and have the same cooking energy efficiency and idle energy rate. All members of the family must also have the same fry pot size.

2) Scope:

A. Included Products: Products that meet the definition of a Commercial Open Deep-Fat Fryer as specified herein are eligible for ENERGY STAR certification, with the exception of products listed in Section 2.B. Countertop, floor type designs are eligible to qualify for ENERGY STAR.

B. Excluded Products: Fryers with vats measuring < 12 inches wide, or > 24 inches wide, are not eligible for ENERGY STAR.

Note: EPA is considering adding "drop-in" designs to the list of included products eligible for certification in Section 2A. Based on market research performed in support of this revision, several drop-in models were identified in the same size categories as countertop and floor type fryers. It is EPA's understanding that these designs offer the same cooking performance as countertop and floor type fryers, if included manufacturers would have the option of certifying models that meet this particular design approach. Stakeholders are encouraged to share any comments or concerns regarding this proposed addition.

3) Qualification Criteria:

A. Determining Fry Pot Size: The frying area shall be measured at the fryer's maximum fill-line. The fry pot width is considered to be the distance between the inner side walls of the frypot. The dimensions for split vat fryers shall be considered to be twice the width of one side. For kettle fryers, the frying area shall be measured at the fryer's maximum fill-line using the diameter of the cylinder and determined by the inner walls.

B. Cooking Energy Efficiency and Idle Energy Rate Requirements – Standard Fryers

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

Table 2: Energy Efficiency Requirements for Standard Open Deep-Fat Electric Fryers	
Heavy-Load Cooking Energy Efficiency	≥ 85%
Idle Energy Rate	≤ 800 watts

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	≤ 12,000 Btu/hr

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

Note: Split-vat cooking-energy efficiency and idle rate performance shall be measured with both sides operating.

Note: EPA is not proposing any revisions to the existing Version 2.0 performance levels for standard and large vat gas fryers. Based on annual ENERGY STAR unit shipment data collected by EPA for the 2014 calendar year, at the current levels, the ENERGY STAR continues to provide differentiation in the marketplace. EPA will continue to monitor the gas fryer market and may decide to revisit current levels as new technologies are introduced or ENERGY STAR market penetration estimates increase. EPA also reviewed large vat electric fryer data and decided not to revise current levels at this time because meaningful energy gains compared to Version 2.0 levels are not currently feasible while maintaining adequate availability of labeled products. EPA has decided to allow the large vat electric fryer market to further mature and will continue to monitor the introduction of new technologies, working closely with manufacturers to better understand the potential efficiency gains for this product subcategory. Similar to gas fryers, EPA will continue to monitor the large vat electric fryer market and may revisit specification levels in a subsequent revision.

Standard Electric Fryers: EPA is proposing new performance levels for standard vat electric fryers in Table 2. EPA conducted a review of qualified product availability and shipments under the current Version 2.0 specification. This review confirmed that advances in the market, as reflected by 2014 ENERGY STAR market share estimates for electric fryers (> 50%), present an opportunity to revise the ENERGY STAR requirements to deliver even greater savings. EPA performed an initial analysis of the current ENERGY STAR Qualified Product List (QPL) to identify the top performers and opportunities for savings. To better understand the impact of proposed new levels on product availability within this market, EPA incorporated product data provided by AutoQuotes into the data set. Models not currently listed as ENERGY STAR were assumed unable to meet Version 2.0 criteria, unless EPA was able to determine compliance using other sources such as the Pacific Gas and Electric (PG&E) California rebate list.

According to this data, six manufacturers and approximately 13% of products currently available in the U.S. market meet the new cooking-energy efficiency and idle energy rate levels proposed in Table 2. These levels offer a 19% reduction in energy consumption compared to standard models. Several models are on the cusp of meeting the Version 3.0 requirements and based on industry discussions, EPA believes that the proposed levels will provide manufacturers with an incentive to identify low cost design approaches that will allow these models to meet ENERGY STAR. As such, EPA anticipates that once the specification is effective the percentage of products eligible for ENERGY STAR certification will quickly reach 20-25%.

EPA's data analysis is available on the ENERGY STAR website. Stakeholders are encouraged to provide feedback on the Draft 1 proposed levels. EPA has limited performance data on non-ENERGY STAR fryers and as such would welcome additional information on standard product designs as well as new technologies on the horizon.

D. Significant Digits and Rounding:

a. All calculations shall be carried out with directly measured (unrounded) values.

b. Unless otherwise specified below, compliance with specification limits shall be evaluated using directly measured or calculated values without any benefit from rounding.

c. Directly measured or calculated values that are submitted for reporting on the ENERGY STAR website shall be rounded to the nearest significant digit as expressed in the corresponding specification limit.

4) Test Criteria:

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

a. For certification 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 certification 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 certification:

Table 5: Test Methods for ENERGY STAR Certification

ENERGY STAR Requirement	Test Method Reference
Cooking Energy Efficiency	**Standard Fryers:** ASTM Standard F1361-07 (2013), *Test Method for Performance of Open Deep Fat Fryers* **Large Vat Fryers:** ASTM Standard F2144-09, *Test Method for Performance of Large Open Vat Fryers*
Idle Energy Rate	

Note: The reference date for ASTM Standard F1361 has been updated in Table 5 to reflect the most recent 2013 version; the updated test method does not impact energy performance measurements. This standard is scheduled to be reviewed again later this year along with ASTM Standard F2144-09, primarily to address potential loopholes identified by laboratory personnel and to bring instrumentation specifications up to date. These revisions are not expected to impact energy performance. EPA will follow the F26 committee revision efforts of these test methods. Once the final standards are released, EPA will determine if there will be an impact on the test results. In the event the changes to the test methods do not impact the energy performance results, EPA will release an amendment to the Version 3.0, aligning with the updated standards. If there is potential for impact on energy performance results, EPA will work with industry stakeholders to determine next steps for adoption.

5) **Effective Date:** The ENERGY STAR Commercial Fryer specification shall take effect on **TBD**. To certify 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 on which a unit is considered to be completely assembled.

Note: EPA anticipates finalizing this Version 3.0 specification in early 2016. Manufacturers will then have 9 months to transition to the new specification. Once the specification takes effect, fryers that do not meet the Version 3.0 criteria will be removed from the ENERGY STAR QPL and may no longer be marketed or labeled as ENERGY STAR. Once a final specification is released, manufacturers may immediately begin certifying products to the new Version 3.0 specification.

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 certification is not automatically granted for the life of the product model.