



# ENERGY STAR® Program Requirements for Commercial Ice Machines

## Partner Commitments DRAFT 1

### Commitment

The following are the terms of the ENERGY STAR Partnership Agreement as it pertains to the manufacturing of ENERGY STAR qualified commercial ice machines. 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 ice machines and specifying the testing criteria for commercial ice machines. 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 ice machine within one year of activating the commercial ice machines' 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 ice machines. 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 qualified commercial ice machine models. Once the Partner submits its first list of ENERGY STAR qualified commercial ice machines, 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 ice machines 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 ice machines 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](http://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.



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## Eligibility Criteria Draft 1

Below is the **DRAFT 1** product specification for ENERGY STAR qualified commercial ice machines. A product must meet all of the identified criteria if it is to earn the ENERGY STAR.

- 1) Definitions: Provided below are definitions of the relevant terms in this document<sup>1</sup>.
  - A. Ice Machine: A factory-made assembly (not necessarily shipped in one package) consisting of a condensing unit and ice-making section operating as an integrated unit, with means for making and harvesting ice. It is an assembly that makes up to 4,000 lbs of ice per day at Standard Ratings Conditions, as defined in Section 5.2.1 of ARI Standard 810-2006, and may also include means for storing or dispensing ice, or both.

### Ice Machine Categories

- B. Ice Making Head (IMH): A model with the ice-making mechanism and the condensing unit in a single package, but with a separate ice storage bin.
- C. Remote Condensing Unit (RCU) or Split System Unit: A model in which the ice-making mechanism and condenser or condensing unit are in separate sections.
- D. Self-Contained (SCU): A model in which the ice-making mechanism and storage compartment are in an integral cabinet.
- E. Air-Cooled: An ice machine wherein motor driven fans or centrifugal blowers move air through the condenser to remove heat from the refrigerant.
- F. Cubed: Cubed ice machines have an alternate freezing and harvesting period. Water is circulated over an evaporator where it freezes until cubes are fully formed. The cubed ice is then harvested and moved to storage. The ice may be in cube shape, or in a variation of a solid shape.
- G. Flake: Flake ice machines produce ice continuously, usually in a barrel-shaped evaporator. An auger inside the evaporator scrapes ice off the sides into a storage bin.
- H. Nugget: Nugget ice machines use the same process as flake machines but compress the ice flakes into nuggets.

**Note:** The definitions provided above for Ice Machine and IMH, RCU, and SCU units were taken directly from ARI Standard 810-2006, Section 3: Definitions. The remaining definitions (E through H) were developed using several industry resources. Stakeholders are encouraged to provide comments on these definitions or suggestions regarding additional terms that should be addressed under this section.

- 2) Qualifying Products: Commercial ice machines must meet the definitions provided in Section 1, above, to be eligible for ENERGY STAR. **Water-cooled, flake, and nugget ice machines are not eligible for ENERGY STAR under this Version 1.0 specification.** EPA intends to include flake and nugget ice machines once a test standard is made available and a robust database is established that may be used to derive performance requirements.

<sup>1</sup> Definitions for ice machine, IMH, RCU, and SCU adopted from ARI Standard 810-2006, *Performance Rating of Automatic Commercial Ice Makers*.

**Note:** Some manufacturers are currently using ARI Standard 810 to test and rate their flake and nugget ice machines. However, a robust dataset for these machine types is not as readily available as cube-type machines. Furthermore, the Air-Conditioning and Refrigeration Institute (ARI) is in the process of developing a standard to specifically test the performance of nugget and flake ice machines and expects to finalize it by the end of 2007. Once the standard is released, ARI will then decide whether to launch a certification program for these machine types. It is EPA's intention to include flake and nugget machines under this specification at a later time. Depending on ARI's decision regarding a certification program, EPA will either use the ARI certified product database or work directly with ice machine manufacturers to collect and analyze performance data, based on testing under the new ARI test standard, and propose draft levels for flake and nugget ice machines in an amendment to this specification.

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

<b>Table 1: Efficiency Requirements for Commercial Cubed Ice Machines</b>			
<b>Equipment Type</b>	<b>Harvest Rate, H (lbs ice/day)</b>	<b>Energy Use Limit (kWh/100 lbs ice)</b>	<b>Potable Water Use Limit (gal/100 lbs ice)</b>
<b>Air-Cooled</b>			
<b>IMH</b>	< 450	9.23 – 0.0077H	≤ 25
	≥ 450	6.20 – 0.0010H	≤ 25
<b>RCU (without remote compressor)</b>	< 1000	8.05 – 0.0035H	≤ 25
	≥ 1000	4.64	≤ 25
<b>RCU (with remote compressor)</b>	< 934	8.05 – 0.0035H	≤ 25
	≥ 934	4.82	≤ 25
<b>SCU</b>	< 175	16.7 – 0.0436H	≤ 35
	≥ 175	9.11	≤ 35

**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 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 efficiency can be achieved through several technology options
- Energy consumption and performance can be measured and verified with testing
- Labeling would effectively differentiate products and be visible for purchasers.

In addition, because water use is closely tied to energy use, EPA also considers its commitment to advancing water efficiency when setting ENERGY STAR specifications, where doing so is consistent with the ENERGY STAR principles outlined above. EPA assessed all of these criteria when evaluating the inclusion of water-cooled machines in this draft specification. Overall, water-cooled machines are more energy efficient than air-cooled machines. However, because there is not much differentiation in energy consumption among water-cooled machines, EPA's analysis revealed that buying a more energy efficient water-cooled machine is not a cost effective investment for purchasers. Promoting water-cooled machines under ENERGY STAR would therefore go against one of the program's guiding principles. In addition, water-cooled machines consume significantly more water than air-cooled ones. While installing these machines on a closed loop system reduces the total water consumed, there is no feasible way to guarantee that this installation will actually happen in the field. For these reasons, EPA is proposing to exclude water-cooled ice machines from this specification.

Several sources were consulted in deriving the levels proposed in Table 1 including the 2005 Energy Policy act (EPA Act) which directs DOE to promulgate minimum Federal energy standards effective January 1, 2010, and the Consortium for Energy Efficiency (CEE) specification for commercial ice machines, the latest version of which has been in place since January 2006. In addition, an analysis was performed on the most recent ARI Directory of Certified Automatic Commercial Ice-Cube Machines (January 2007) which indicates that approximately 15-35% of machines listed, depending on the equipment type, meet the energy and water efficiency levels proposed in Table 1. EPA strives to set performance levels that represent approximately 25% of the models available when the specification is set. However, EPA is aware that some manufacturers are already in the process of redesigning equipment to be more efficient in response to the upcoming minimum Federal standards. Therefore, EPA expects the percentage of qualified models to increase as technologies improve, new designs reach the market, and utilities provide incentives for more efficient equipment.

- 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 Ice Machine Qualifying Product Information (QPI) Form.

In performing these tests, Partner agrees to use the Air-Conditioning and Refrigeration Institute (ARI) Standard 810-2006, *Performance Rating of Automatic Commercial Ice-Makers*.

- 5) Effective Date: The date that manufacturers may begin to qualify products as ENERGY STAR will be defined as the *effective date* of the agreement. The ENERGY STAR Commercial Ice Machine Specification shall go into effect on **October 11, 2007**.

**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 that this specification can be finalized prior to the North American Association of Food Equipment Manufacturers (NAFEM) Show in October 2007 and that this trade show may be used to announce this new ENERGY STAR specification. Manufacturers are encouraged to comment on whether this is the appropriate venue and the length of time needed to allow for ENERGY STAR qualified ice machines to be available at the time of the announcement.

- 6) Future Specification Revisions: ENERGY STAR 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 the ENERGY STAR qualification is not automatically granted for the life of a product model. To qualify with the energy and/or water efficiency criteria of ENERGY STAR, a product model must meet the ENERGY STAR specification in effect on the date of manufacture.