



# ENERGY STAR® Program Requirements for Commercial Ice Machines

## Eligibility Criteria

Below is the 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.

2) Qualifying Products: Commercial ice machines must meet the definitions provided in Section 1, above, to be eligible for ENERGY STAR. **Ice machines that use water-cooled technology as well as 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*.

- 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

- 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 **January 1, 2008**.

- 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.

**Flake and Nugget Ice Machines**: ENERGY STAR plans to revisit this specification once the revision processes for ARI 810-2006 and ASHRAE 29 are complete. At that time, performance requirements for flake and nugget ice machines will be considered and shared with industry stakeholders for review and comment.