

Energy Efficiency Rebates for Your Business

Commercial Ice Machines

Qualifying ice machines generate 60 grams (2 oz.) or lighter cubed, flaked, crushed, or fragmented ice and do not exceed the energy efficiency thresholds by Ice Harvest Rate (IHR) as listed below. The IHR (or capacity in lbs) is the amount of ice produced in 24 hours. Only air-cooled machines (ice-making heads, self-contained units, and remote condensing units) are eligible for rebates. Energy use is determined by applying the Air-Conditioning and Refrigeration Institute (ARI) Standard 810 test method.

Energy-efficient cube ice machines save between 15-30% on energy costs and 20-40% on water costs over standard efficiency models. Energy-efficient nugget ice machines save between 30-60% on energy costs and 40-50% on water costs over standard efficiency models. By applying high efficiency motors in condenser fans and compressors and reduced evaporator thermal cycling, further reductions in ice machine energy use are possible. Energy use will vary from product to product, depending on the condenser, ice harvest rate (IHR), and the type of ice produced.

Energy Efficiency Requirements for Commercial Air-Cooled Ice Machines

Ice Harvest Rate (Lbs per 24 hrs.)*	Incentive Threshold kWh/100 lbs ice (or Less)
101-200	9.4
201-300	8.5
301-400	7.2
401-500	6.1

Ice Harvest Rate (Lbs per 24 hrs.)*	Incentive Threshold kWh/100 lbs ice (or Less)
501-1000	5.8
1001-1,500	5.5
>1,500	5.1

* The ice harvest rate (IHR or capacity in lbs) is the amount of ice produced in 24 hours.



What are the different kinds of ice makers?

Ice machines are primarily available in three different configurations:

- **Ice-making Head Units.** Standard ice makers are manufactured with the ice-making mechanism and the condensing unit in a single package, but with a separate ice storage bin.
- **Self-contained Units.** Self-contained units are manufactured so the ice-making mechanism and the storage compartment are in an integral cabinet.
- **Remote Condensing Units.** A split-system ice maker is designed so that the ice-making mechanism, the condensing unit, and the ice storage bin are in separate sections.

Types of Ice

Cube Ice	Flake Ice	Crushed Ice
<ul style="list-style-type: none"> • Clear • Variety of shapes: <ul style="list-style-type: none"> • Rectangular, Crescent, Pillow-shaped, Pure cube • Ice cube weight ranges - 1/6 to 1-1/2 ounce • Contains minimal amounts of liquid water • Accounts for more than 80% of ice machines sold in the U.S. 	<ul style="list-style-type: none"> • Chips or flakes contains up to 20% liquid water • May conform to the surface of items that rest on it • Typically used in hospitals, supermarket display cases, on fishing boats where food needs to be preserved for short periods • Flake ice reacts to carbonation causing soft drinks to go flat • Generally not used for beverage service 	<ul style="list-style-type: none"> • Consists of small, irregular pieces made by crushing larger chunks of ice • Primary use is to cool drinks
		Nugget Ice
		<ul style="list-style-type: none"> • Also known as chewable ice • Made by extruding and freezing slushy flake ice into small pieces • Primary use is to cool drinks



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Energy Efficiency Example

Annual energy use in the following comparison is based on the ice machine operating at 75% capacity at the median ice harvest rate (IHR) for each given range. The assumed price for electricity is \$0.15 per kWh. Energy use is determined by applying the Air-Conditioning and Refrigeration Institute (ARI) Standard 810 test method.

Commercial Ice Machine Cost Effectiveness Example

Performance	IHR	IHR	IHR	IHR	IHR	IHR	IHR
Ice Harvest Rate (IHR) (lbs per 24 hrs.)	101-200	201-300	301-400	401- 500	501-1,000	1,001-1,500	> 1,500
Standard Efficiency Machine ^a Energy Use (kWh/100 Lbs)	16.0	11.0	8.5	7.6	6.9	6.4	6.1
Energy Efficient Machine ^b Energy Use (kWh/100 Lbs)	9.4	8.5	7.2	6.1	5.8	5.5	5.1
Estimated Annual Energy for Baseline ^c (kWh)	8,760	10,038	10,859	12,483	18,889	29,200	26,720
Estimated Annual Energy for EE Machine ^c (kWh)	5,147	7,756	9,198	10,019	15,878	25,094	22,340
Probable Demand Reduction (kW)	0.41	0.26	0.19	0.28	0.34	0.47	0.50
Estimated Annual Energy Savings ^c (kWh)	3,614	2,281	1,661	2,464	3,011	4,106	4,380
Estimated Annual Energy Cost Savings	\$542	\$342	\$249	\$370	\$452	\$616	\$657

^a Based on FSTC review of ARI Directory and estimate of lower 25 percentile and representation of installed base.

^b Based on FEMP recommendation for icemaker head (equivalent to CEE Tier D).

^c Assumes ice machine operates at 75% of capacity and median ice harvest rate.

Energy Saving Tips and Information

Ice machines account for 10% of all commercial refrigeration energy use.

- Purchase energy-efficient cube ice machines that meet this program's specification:
 - Save 15-30% in electricity over standard models
 - Nugget ice machines can save 30-60% when compared to standard cube ice machines

Reduce peak demand from ice production as well as on air conditioning load.

- Use an ice bin sized to meet daily usage
 - Install a timer set so ice is produced at night when the facility is closed
 - Reduces electrical demand during the peak periods of 12:00 P.M. - 6:00 P.M.
 - Demand reduction results due to:
 - Off-peak ice production
 - Reduction of heat load on the air conditioning system
- Consider purchasing a higher capacity machine
 - Uses less energy per 100 pounds of ice produced than smaller machines
 - There is no penalty for up sizing the ice maker or the storage bin

For rebate information, please visit the PG&E Web site at www.pge.com/biz/rebates or call **PG&E's Business Customer Center** at **(800) 468-4743**.

Product Lifecycle Cost Calculator

Visit the **PG&E Food Service Technology Center** Web site at www.fishnick.com/tools/calculators and enter your specific operating conditions and energy rate into the product lifecycle cost calculators to determine how much you can save in energy cost over the life of your equipment.

Food Service Technology Center

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