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saving energy and  
taxpayer dollars in  
federal facilities

# Purchasing Specifications for Energy-Efficient Products



### Legal Authorities

Federal agencies are required by the National Energy Conservation Policy Act (P.L. 95-619), Executive Order 13423 and Federal Acquisition Regulations (FAR) Subpart 23.2 and 53.223 to specify and buy ENERGY STAR®-qualified products or, in categories not included in the ENERGY STAR program, FEMP-designated products which are among the highest 25 percent of equivalent products for energy efficiency.

Performance Requirements for Federal Purchases			
Type	Ice Harvest Rate (pounds/24 hours)	Energy Consumption <sup>a</sup> (per 100 pounds)	Potable Water Use (per 100 pounds)
Ice Making Head	≤ 300	6.9 kWh or less	25 gallons or less
Ice Making Head	301 - 449	5.7 kWh or less	25 gallons or less
Ice Making Head	450 - 699	5.5 kWh or less	25 gallons or less
Ice Making Head	700 - 999	5.2 kWh or less	25 gallons or less
Ice Making Head	1,000 - 1,499	4.7 kWh or less	25 gallons or less
Ice Making Head	≥ 1,500	4.6 kWh or less	25 gallons or less
Self-Contained	≤ 75	13.6 kWh or less	35 gallons or less
Self-Contained	76 - 174	9.3 kWh or less	35 gallons or less
Self-Contained	≥ 175	9.1 kWh or less	35 gallons or less
Remote Condensing	≤ 500	6.3 kWh or less	25 gallons or less
Remote Condensing	501 - 699	5.6 kWh or less	25 gallons or less
Remote Condensing	700 - 899	4.9 kWh or less	25 gallons or less
Remote Condensing	≥ 900	4.6 kWh or less	25 gallons or less

a) Measured in accordance with ARI Standard 810-2006, *Performance Rating of Automatic Commercial Ice Makers*.

### Buying Energy-Efficient Air-Cooled Ice Machines

This *Specification* applies to air-cooled ice machines that generate cubes 60 grams (2 ounces) or lighter. It does not apply to water-cooled machines or those that make flaked or nugget ice. When purchasing air-cooled ice machines, specify or select products that are ENERGY STAR-qualified (see *For More Information*) or meet the *Performance Requirements* shown above. The federal supply sources for ice machines are the General Services Administration (GSA) and the Defense Logistics Agency (DLA). GSA offers them through its Multiple Awards Schedule program and online shopping network, *GSA Advantage!* DLA sells them through their online supply network, *DOD EMALL*. A list of qualified products can be downloaded from the ENERGY STAR web site.



These requirements apply to all forms of procurements, including: guide and project specifications; construction, renovation, repair, maintenance and energy service contracts; lease agreements and solicitations for offers. Energy performance requirements should be included in all evaluations of solicitation responses. Buyers shall insert the standard clause from FAR section 52.223-15 into contracts and solicitations that deliver, acquire, furnish, or specify energy consuming products for use in federal facilities. Agencies can claim an exception to these requirements through a written finding that no ENERGY STAR-qualified or FEMP-designated product is available to meet the functional requirements, or that no such product is life-cycle cost-effective for the specific application.



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# FEMP Designated Product: Air-Cooled Ice Machines



## Buyer Tips

The type of ice machine purchased has significant energy use implications. Ice Making Head (IMH) type units do not contain storage bins, but are generally designed to accommodate a variety of bin sizes. Federal buyers need to be aware that the additional energy use associated with the storage bins is not included in the reported energy consumption for IMH units. Self-Contained Units (SCU) have an ice making mechanism and storage bin integrated into the same cabinet or housing. Remote Condensing Units (RCU) have a condenser located separately, usually outdoors or in an unconditioned equipment room, from the ice making mechanism. An advantage to this arrangement is that heat from the ice making process is discharged outside of the conditioned space, thereby not adding to the building's air conditioning loads and costs.

Due to their high electricity demand, ice machines should be operated during off-peak hours if possible. This requires purchasing storage bins that are larger than necessary and installing a clock or timer to prevent the machine from making ice during peak hours (usually between 12:00 and 6:00 PM). This operating strategy reduces demand charges resulting in additional cost savings.

## Cost-Effectiveness Example

Performance	Base Model	Required	Best Available <sup>a</sup>
Energy Consumption (per 100 lbs)	6.1 kWh	5.2 kWh	4.9 kWh
Potable Water Use (per 100 lbs)	32 gallons	25 gallons	19.3 gallons
Annual Energy Use	6,860 kWh	5,850 kWh	5,510 kWh
Annual Water Use	36,000 gallons	28,125 gallons	21,710 gallons
Annual Utility Cost	\$710	\$595	\$540
Lifetime Utility Cost <sup>b</sup>	\$4,140	\$3,460	\$3,125
Lifetime Utility Cost Savings	—	\$680	\$1,015

a) More efficient products may have been introduced to the market since this *Specification* was published.

## Cost-Effectiveness Assumptions

Energy use in this example is based on the standard test procedure for an air-cooled, ice making head unit with a harvest rate of 725 pounds per 24 hours. The ice machines operates 5 days per week making an average of 450 pounds per day. The *Base Model* meets the federal appliance standards for this product type, the performance of the *Required* model meets this *Specification* and the performance for *Best Available* model was obtained from the ENERGY STAR list of qualified products. The assumed rates for electricity (8¢ per kilowatt-hour) and water & sewer (\$4.50 per 1,000 gallons) are the average at federal facilities throughout the United States. *Lifetime Energy Cost* is the sum of the discounted value of *Annual Energy Cost* and an assumed ice machine life of 7 years. Future energy price trends and a discount rate of 3.0% are from the May 2009 version of *Energy Price Indices and Discount Factors for Life-Cycle Cost Analysis* (NISTIR 85-3273-24).

## Using the Cost-Effectiveness Example

In the example above, the *Required* air-cooled ice machine is cost-effective if its purchase price is no more than \$680 above that of the *Base Model*. The *Best Available* model is cost-effective if its installed cost is no more than \$1,015 above that of the *Base Model*.

## What if my Energy Price is different?

ENERGY STAR has an Excel-based cost calculator for air-cooled ice machines on its Web site. Go to: [www.energystar.gov/index.cfm?c=comm\\_ice\\_machines.pr\\_comm\\_ice\\_machines](http://www.energystar.gov/index.cfm?c=comm_ice_machines.pr_comm_ice_machines), and click on "Savings Calculator" in the column on the right. Input the water and electric rates at your facility, the output section will automatically display results that more accurately reflect your water use, energy use and costs.

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## For More Information:

EERE Information Center  
1-877-EERE-INF or 1-877-337-3463  
[www.eere.energy.gov/femp/procurement/](http://www.eere.energy.gov/femp/procurement/)

Lawrence Berkeley Laboratory provided product research and life cycle cost analysis in support of this *Specification*. (202) 488-2250

EPA/DOE ENERGY STAR program provides additional information on food service equipment along with lists of complying products.  
(800) 372-7827  
[www.energystar.gov](http://www.energystar.gov)

The Air-Conditioning, Heating and Refrigeration Institute (AHRI, formerly ARI) has an online directory of certified commercial ice making machines. This directory is available at:  
[www.ahridirectory.org/](http://www.ahridirectory.org/)

## Federal Supply Sources:

General Services Administration  
(816) 926-6760  
[www.gsa.gov/](http://www.gsa.gov/)  
[www.gsaadvantage.gov/](http://www.gsaadvantage.gov/)

Defense Logistics Agency  
(Access to DLA's Web sites requires enhanced security measures. Civilian federal agencies may have difficulty accessing these sites.)  
[www.dla.mil/](http://www.dla.mil/)  
[www.emall.dla.mil/](http://www.emall.dla.mil/)

Defense Supply Center Philadelphia  
(800) DLA-BULB  
[www.dscp.dla.mil/](http://www.dscp.dla.mil/)

## A Strong Energy Portfolio for a Strong America

Energy efficiency and clean, renewable energy will mean a stronger economy, cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.



U.S. Department of Energy

## Energy Efficiency and Renewable Energy

Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable