



Leading by example,
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 Requirement for Federal Purchases	
Capacity ^a	Required Energy Use ^b
201 to 300 cans	5.1 kWh/day or less
301 to 400 cans	5.5 kWh/day or less
401 to 500 cans	5.9 kWh/day or less
501 to 600 cans	6.3 kWh/day or less
601 to 700 cans	6.7 kWh/day or less
701 to 800 cans	7.1 kWh/day or less
801 to 900 cans	7.5 kWh/day or less

a) These *Performance Requirements* apply to beverage vending machines labeled “For Indoor Use Only,” “Suitable for Outdoor Use” and those that have been refurbished.

b) Energy use is based on ASHRAE Standard 32.1-2004. For machines with other rated capacities use this formula: $Y=0.45[8.66+(0.009 \times C)]$ where Y = kWh/day and C = capacity in 12 ounce cans. *Performance Requirements* are shown for the most common machine capacities; not all vending machines types are available for the capacities shown.

Why require Energy-Efficient Beverage Vending Machines?

Beverage vending machines, which are common in federal facilities, are typically provided by beverage distributors at no cost to government agencies as part of vending agreements. In most agreements, agencies pay for the energy to operate these machines. Since some models use up to 14.5 kilowatt-hours (kWh) of electricity per day, federal agencies can end up paying over \$400 per machine a year in operating costs.

ENERGY STAR-qualified (see *For More Information*) beverage vending machines have more efficient refrigeration systems, display lighting and fan motors that reduce energy consumption and costs approximately 18% over standard models. In addition, these machines have controls that, when activated, shut off lighting or allow the temperature of the beverages to rise slightly during periods of prolonged inactivity.



The requirements for federal agencies to obtain energy efficient products apply to all forms of procurements, including lease and other agreements. Federal agencies must require that beverage vending machines are ENERGY STAR-qualified or meet the *Performance Requirements* shown above when entering into these agreements. Model language to assist agencies with incorporating these requirements into procurement documents is available at www1.eere.energy.gov/femp/procurement/eep_modellang.html. 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.

Buyer Tips

Require distributors to place vending machines that meet the current (Tier II) ENERGY STAR eligibility criteria in federal facilities. It is possible that some distributors have vending machines that meet the old



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FEMP Designated Product: Beverage Vending Machines



(Tier I) criteria. Even though these machines have the ENERGY STAR label on them, they will not meet this *Specification*. To verify that beverage vending machines meet the Tier II eligibility criteria, go to the ENERGY STAR Web site at www.energystar.gov/index.cfm?c=vending_machines.pr_vending_machines and download the current products list.

ENERGY STAR -qualified beverage vending machines are equipped with controls that reduce lighting or refrigeration use at night, on weekends or other periods of prolonged inactivity. Depending on the location, activating these controls can result in additional savings. When applicable, require the distributor to enable these low-power setbacks prior to placing vending machines in federal facilities. Do not use the refrigeration setback if the vending machine has milk or other items that can spoil if not kept at the proper temperature.

User Tips

Some agencies have agreements that are not up for renewal for several years. It is possible that older, inefficient vending machines are being used in federal facilities. Typically vendors will not replace these machines with new, efficient models until the agreements have expired. In these cases, ask the distributors if VendingMisers or other external control devices can be connected to the machines. External control devices use motion sensors to determine when the surrounding areas are unoccupied. After several hours of inactivity they power down the vending machines. Once motion is detected, the vending machines return to their active power state. If external control devices are not compatible with the vending machines in your facility, ask the distributors to remove the fluorescent lamps so you can reduce lighting energy use.

Cost-Effectiveness Example			
Performance	Base Model ^a	Required	Best Available ^b
Daily Energy Use	8.0 kWh	6.7 kWh	4.2 kWh
Annual Energy Use ^c	2,920 kWh	2,445 kWh	1,530 kWh
Annual Energy Cost	\$230	\$195	\$120
Lifetime Energy Cost ^d	\$1,060	\$885	\$560
Lifetime Energy Cost Savings	-	\$175	\$500

- a) The energy use of the *Base Model* is set at the ENERGY STAR Tier I level.
- b) Information for the *Best Available* model was obtained from the ENERGY STAR beverage vending machine products list. More efficient products may have been introduced to the market since this *Specification* was published.
- c) Based on ASHRAE Standard 32.1-2004 test conditions, actual usage may vary.
- d) Lifetime Energy Cost is the sum of the discounted value of annual energy costs based on average usage and an assumed vending machine life of 5 years. Future electricity price trends and a discount rate of 3.0% are based on federal guidelines (effective from April, 2008 to March, 2009).

Cost-Effectiveness Assumptions

Annual energy use in this example is based on a vending machine with a 650 can capacity, operating 24 hours per day, 365 days per year. The assumed price for electricity is 8¢ per kilowatt-hour, the average rate at federal facilities throughout the United States. This example does not include savings from control features. With low-power features enabled, energy use will be less in facilities with long, unoccupied periods.

Using the Cost-Effectiveness Table

In the example shown above, an agency will save approximately \$175 over five years when using a vending machine that meets the *Required* level and \$500 if the *Best Available* machine is used.

What if my Electricity Price or Operating Hours are different?

ENERGY STAR has an Excel-based cost calculator for beverage vending machines on its Web site. Go to www.energystar.gov/index.cfm?c=vending_machines.pr_vending_machines and click on "Savings Calculator" in the column on the right. Input the machine capacity and rate for electricity. The Output section will automatically display results that more accurately reflect your energy cost.

For More Information:

EERE Information Center
1-877-EERE-INF or 1-877-337-3463
www.eere.energy.gov/femp/procurement/

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

EPA/DOE ENERGY STAR
(888) 782-7937
www.energystar.gov/

The Food Service Technology Center publishes fact sheets and test reports on commercial kitchen equipment.
(925) 866-2844
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