FEMP Designated Product: **Showerheads**

Leading by example, saving energy and taxpayer dollars in federal facilities

Purchasing Specifications for Energy-Efficient Products

Legal Authorities

Executive Order 13123 requires federal agencies to reduce water consumption and its associated energy use in their facilities. Federal Acquisition Regulations (FAR) Subpart 23.2 requires that agencies acquire water saving products designated by FEMP as being among the highest 25 percent for equivalent products.

Performance Requirement for Federal Purchases

Product Type	Flow Rate[a]
Showerhead	2.2 gallons per minute or less

a) Based on ASME test procedure A112.18.1M-19944, with an inlet water pressure of 80 pounds per square inch (psi).

Buying Water-Saving Showerheads

When purchasing showerheads from commercial sources, check for models with flow rates (gallons per minute or gpm) at or below the level shown in the *Performance Requirement* table.

Agencies must use FEMP-designated performance requirements for all water-consuming product and system procurements including guide and project specifications, and construction, renovation and service contracts. They should also be used in evaluating responses to solicitations.

The federal supply sources for showerheads are the General Services Administration (GSA) and Defense Logistics Agency (DLA). GSA sells showerheads through its Multiple Awards Schedule program and online shopping network *GSAAdvantage!* DLA offers them through its Defense Supply Center Philadelphia and online through DoD *EMall*. Purchase models that meet the flow rate shown in the *Performance Requirement* table above.

Agencies can claim an exception to these requirements only through a written finding that no FEMP-designated product is life-cycle cost effective or meets the functional requirements for a specific application.

Buyer Tips

There is substantial difference in the performance of showerheads, even among models with the same flow rate, due to variations in water pressure and spray patterns. The Energy Policy Act of 1992 sets the maximum flow for showerheads at 2.5 gallons per minute (gpm) at 80 pounds per square inch (psi) or 2.2 gpm at 60 psi. The actual flow rate and performance will depend on local water pressure.

Mineral buildup can clog showerheads resulting in significantly less flow than originally rated. Some showerheads can be taken apart and cleaned while others must be replaced. In areas with hard water, consider purchasing showerheads that can easily be taken apart and cleaned.

Early Replacement

Older showerheads predating the current standard can use 5 to 8 gpm. Early replacement of these can lead to even greater water and energy savings than shown in the Cost-Effectiveness Example on page 2.

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Energy Efficiency and Renewable Energy
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Cost-Effectiveness Example			
Performance	**Base Model[a]**	**Required**	**Best Available[b]**
Water Use Only			
Flow Rate	**2.5 gpm**	**2.2 gpm**	**1.5 gpm[c]**
Annual Water Use	**18,250 gallons**	**16,060 gallons**	**10,950 gallons**
Annual Water Cost	**$73**	**$64**	**$44**
Lifetime Water Cost[d]	**$625**	**$545**	**$375**
With Electric Water Heating			
Annual Energy Use	**2,350 kWh**	**2,070 kWh**	**1,410 kWh**
Annual Energy Cost	**$140**	**$125**	**$85**
Lifetime Energy Cost[d]	**$1,075**	**$955**	**$650**
Lifetime Energy and Water Cost Savings	**-**	**$200**	**$675**
With Gas Water Heating			
Annual Energy Use	**53 therms**	**48 therms**	**9 therms**
Annual Energy Cost	**$32**	**$29**	**$5**
Lifetime Energy Cost[d]	**$230**	**$210**	**$40**
Lifetime Energy and Water Cost Savings	**–**	**$100**	**$440**

a) The flow rate of the *Base Model* just meets the current federal standards for faucets, based on ASME test conditions.

b) Performance data for the *Best Available* model was obtained from the January 2006 California Energy Commission Appliance Database (see *For More Information*).

c) Some lower flow models exist, but shower quality is sacraficed.

d) Lifetime Energy or Water Cost is the sum of the discounted value of annual energy or water costs based on average usage and an assumed faucet life of 10 years. Future energy price trends and a discount rate of 3.0% are based on federal guidelines (effective from April, 2005 to March, 2006). Future water and waste water costs are conservatively assumed to increase only at the rate of inflation.

Cost-Effectiveness Assumptions

Showerheads are assumed to be used for 10 minutes per shower, 2 showers per day, 365 days per year. The showerhead water temperature is 106° F with an inlet water temperature of 58° F and pressure of 80 psi. The electricity and gas prices are 6¢/ kWh and 60¢/therm, the federal average energy prices in the US. The assumed combined water and wastewater price is $4.00 per 1,000 gallons.

Using the Cost-Effectiveness Example

In the example shown above, a new showerhead with the *Required* flow rate of 2.2 gpm will generate $200 in water and energy cost savings with electric water heating, or $100 in savings with gas water heating. Similarly, a *Best Available* showerhead, with a flow rate of 1.5 gpm, will save $675 with electric water heating or $440 with gas water heating. Since the cost to install these showerheads is very small, their purchase is certain to be cost-effective.

What if my Energy or Water Price is different?

FEMP provides a Web-based cost calculator for showerheads. Go to http://www.eere.energy.gov/femp/procurement/eep_faucets_showerheads_calc.cfm and input the rate for natural gas, electricity and water at your facility. The output section will automatically display results that better reflect your energy 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/

General Services Administration
(816) 926-6760
www.fss.gsa.gov/
www.gsaadvantage.gov/

Defense Logistics Agency
www.dla.mil/
www.emall.dla.mil/

Defense Supply Center Philadelphia
(800) DLA-BULB or (215) 737-7950
www.dscp.dla.mil/

American Water Works Association
(800) 926-7337
www.waterwiser.org/

California Energy Commission (CEC) has a database of certified plumbing fittings online at http://www.energy.ca.gov/appliances/appliance/excel_based_files/

Contact your local water utility for details about conservation programs and incentives in your area.

Lawrence Berkeley National Laboratory provided market research and life cycle cost analysis in support of this energy efficiency purchasing specification.
(202) 646-7950

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.

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