

Evaluation of Water Conserving as an Environmental Attribute for Inclusion in the Federal Logistics Information System

April 23, 1999

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Chapter 1: Introduction

Federal Government agencies must comply with laws, Executive Orders (EOs), regulations, and policies designed to reduce waste and minimize the environmental impacts of its activities. Federal agencies can comply with the requirement to minimize the use of hazardous or toxic substances by promoting the use of recycled materials, improving energy efficiency, reducing the volume of waste for disposal, conserving natural resources, improving worker health and safety, reducing operating costs, and saving taxpayer dollars through procurement of environmentally preferable products.

To assist procurement personnel and end-users in identifying products with environmentally preferable attributes, the Joint Logistics Commanders (JLC) tasked the Defense Logistics Agency (DLA), in February 1997, to research the feasibility of adding environmental attributes to the Federal Logistics Information System (FLIS). The FLIS, a centerpiece of the Federal acquisition process, is a large database that catalogues almost 7 million records of products and services available in the Federal supply system. All Federal agencies use the FLIS to requisition items through DLA and General Services Administration (GSA).

The JLC asked DLA to identify environmental data currently available and possible constraints for adding environmental attributes to FLIS codes, to develop cost estimates for expanding FLIS, and to recommend a process for Federal procurement personnel to identify products that have a lesser impact on human health and the environment.

DLA conducted a business case analysis that analyzed the potential costs and benefits of using the FLIS to increase the Federal acquisition of environmentally oriented products. Exhibit 1 highlights the benefits of an expanded use of environmentally preferable products identified. As a result of the business case analysis, DLA established the Joint Group on Environmental Attributes (JG-EnvAtt) Coordinating Committee to identify positive environmental attributes for inclusion into FLIS.

The JG-EnvAtt Coordinating Committee is headed by the DLA, with the U.S. Army, Navy, Air Force, Marine Corps, and GSA as the other primary stakeholders. Advisors include the Department of Energy (DOE), Environmental Protection Agency (EPA), Department of Agriculture, and other Government agencies. The Committee is responsible for selecting priority attributes for evaluation, approving proposed attributes for inclusion in the FLIS, and adding the approved attribute to the FLIS.

Exhibit 1
Benefits of Expanded Use of
Environmentally Preferable Products

- Reduction in operating and disposal costs for facilities
- Reduction in exposure to hazardous materials, safety hazards, and environmental violations
- Compliance with regulations and Executive Orders directing increased Federal purchasing of environmentally preferable products
- Achievement of DoD affirmative procurement goals

The JG-EnvAtt Coordinating Committee developed the following three selection criteria for evaluating proposed attributes:

1. Regulatory or policy priority must exist.
2. Comprehensive definition must be available.
3. Cost benefit must be evident.

The JG-EnvAtt Coordinating Committee identified and prioritized 35 potential environmental attribute categories. Two of these attributes, “energy efficient” and “EPA Comprehensive Procurement Guidelines”, have been analyzed and approved for inclusion into FLIS. Additionally, the FLIS data base has been modified and prepared to receive environmental attribute data as of September 1998. In November 1998, the JG-EnvAtt Coordinating Committee tasked Litton PRC and Project Performance Corporation (PPC) to evaluate five additional categories:

1. EPA Significant New Alternatives Policy (SNAP) Program (Class I and II)-approved non-ozone depleting substances
2. Low volatile organic compounds
3. Water conserving
4. Non-greenhouse impact
5. Contains recycled content material (items not addressed in the EPA Comprehensive Procurement Guidelines attribute)

This report discusses the evaluation approach and criteria for identifying and determining *water conserving* as an environmental attribute for inclusion in FLIS. Then, the report highlights the underlying policy priorities, provides a standard definition, and presents associated life-cycle costs of *water conserving*. This report was prepared by Litton PRC and PPC, with assistance and guidance of the JG-EnvAtt Coordinating Committee.

Chapter 2: Evaluation Approach

Federal procurement agencies have initiated activities to encourage the procurement of environmentally preferable products. Various catalogs and guides have been developed for the procurement of environmentally preferable alternatives to conventional products, but these catalogs and guides are not linked to the FLIS. The FLIS characterizes more than 7 million items with over 240 codes, including national stock number, manufacturer, procuring agency, and price. These codes define the product's "form, fit, and function."

EPA defines products or services that are environmentally preferable as those with a "*lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose.*" The comparison of environmentally preferable products with other products may consider raw materials, acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, and/or disposal of the product or service. Incorporating positive environmental attributes in the FLIS will increase the visibility and availability of environmentally preferable products and assist procurement personnel and end-users in choosing items appropriate for their needs.

Approach

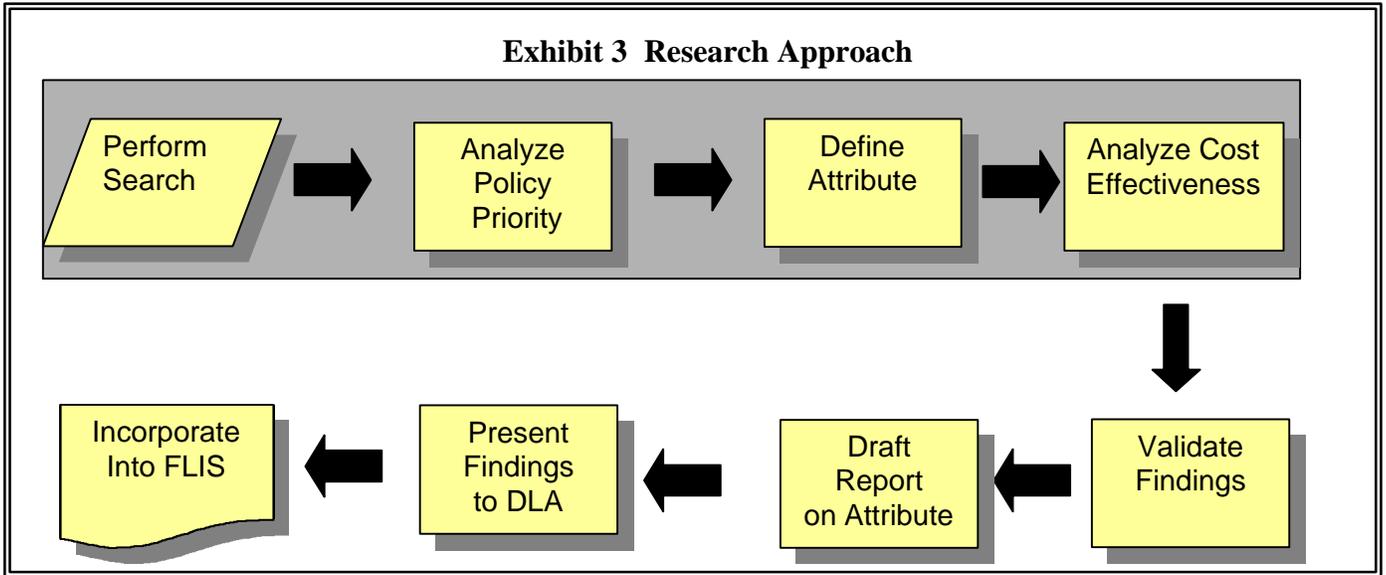
This section documents the multi-step process used to evaluate water conserving as an environmental attribute. First, PRC and PPC researched government, industrial, and international regulations, policies, and definitions to determine if a policy priority existed for the proposed attribute. The primary research sources used in this effort are shown in Exhibit 2.

Based upon this research, a definition of the attribute was developed and validated by subject matter experts at EPA and other Federal agencies. For some potential attributes, existing definitions are vague, originate from numerous sources, and are inconsistent. To ensure that any interpretation of existing definitions was consistent with accepted definitions, the project team asked experts in the subject to validate the definitions established.

Upon validation of the established definition, additional research was conducted on the attribute's life-cycle cost impacts. The overall process used to research the selected environmental attribute is presented in Exhibit 3.

Exhibit 2 Primary Research Sources

- Federal laws and regulations
- Executive Orders
- DoD affirmative procurement goals
- EPA Partners for the Environment Programs
- International agreements and standards
- Regulatory impact analyses
- Government and non-government cost studies
- DLA inventory control points
- FTC guides for the use of environmental marketing claims (16 CFR Part 260)
- ANSI and ASTM
- ISO 14020--Guiding Principles for Environmental Labeling Programs (Draft)

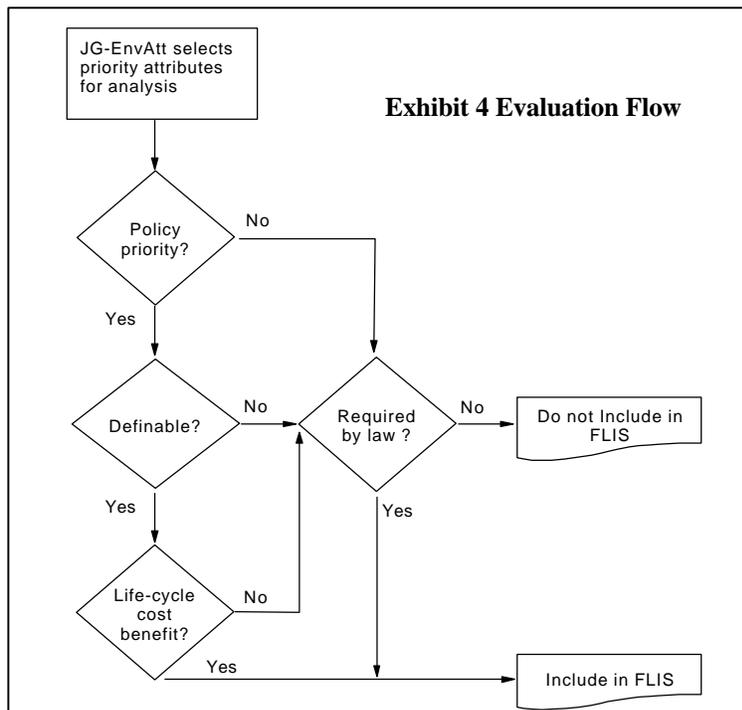


Evaluation Criteria

The process of selecting and including potential environmental attributes in FLIS involves evaluating each attribute against the following three selection criteria:

- Is it a policy priority?
- Can it be clearly defined?
- What is the life-cycle cost benefit?

Exhibit 4 shows how the criteria influence whether an attribute is incorporated into the FLIS:



Policy priority?

A potential environmental attribute must be a Federal policy priority with compliance required under Federal environmental laws, regulations, and Executive Orders (EOs). Additionally, Federal procurement personnel must comply with Federal Acquisition Regulations (FAR) which provide further direction concerning implementation requirements contained in regulations and EOs. Finally, departmental policies or initiatives may exist that govern affirmative procurement of environmentally oriented products. Environmental stewardship programs and green design projects may also affect procurement decisions. All of the environmental laws, regulations, policies, and initiatives indicate that environmentally preferable products and services are a priority from both the policy and a public consciousness standpoint.

Definable?

If an environmental attribute proves to be a policy priority, it must be clearly defined. The intent of adding an environmental attribute to the FLIS is to contribute to the procurement personnel's knowledge of the product and identify products that are environmentally preferable. Procurement personnel must be able to identify products with these attributes from similar products available in the FLIS. The environmental attribute field must contribute clear information and distinguish between products of similar form, fit, and function. Therefore, the attribute definitions must be unambiguous and include some quantifiable characteristic.

Cost benefit?

If the environmental attribute is a policy priority and definable, it must be shown to provide a cost benefit when compared to similar products without the environmental attribute. Information concerning cost-effectiveness of an environmental attribute may be found in regulatory impact analyses and in governmental and non-governmental cost studies. In some cases, the results of the cost assessment may be overridden by the requirements of a Federal directive or agency policy. Additionally, a life-cycle cost assessment may be beneficial and/or required as a means of acquisition planning. The cost assessment tracks the costs associated with a particular product from procurement through use, handling, and disposal.¹ Often, a higher initial purchase price for environmentally oriented products is off-set by reduced costs associated with the following:

1. Material storage and handling
2. Use of energy, water, and other resources
3. Waste storage, treatment, and disposal
4. Compliance, permitting, and reporting
5. Liability for work-related injuries and environmental contamination

¹ This analysis does not evaluate the cost associated with manufacturing environmentally preferable products relative to other products. Any costs incurred prior to procurement are excluded from this evaluation.

Chapter 3: Water Conserving

Water is the Earth's most essential natural resource because it is a basic requirement for survival of all species, it contributes to the basic health of human beings and the environment, and it is a necessary component of industrial processes and products. Water is key to chemical processing, mechanical operations (e.g., high-pressure technologies, hydropower), and biological functions. Because of this reliance on water, it is imperative to manage both its quality and quantity properly. Conserving, or reducing, the amount of water used has two positive impacts:

1. More water is retained in available reserves.
2. Less wastewater is produced.

EPA's Water Conservation Plan Guidelines include the following definition for water conservation: "any beneficial reduction in water losses, waste, or use." Another EPA publication, "Cleaner Water Through Conservation," defines water conservation as "finding ways to use less water to begin with." On the DOE Consumer Energy Information World Wide Web site conservation is defined as follows: "To reduce or avoid the consumption of a resource or commodity."²

Conserving water requires not only changing the personal behavior of human beings with respect to water use (e.g., sweeping sidewalks as opposed to washing them with water), but also changing the behavior of society with respect to the use of materials and equipment that require less water as an input and produce less wastewater as an output (e.g., closed loop cooling systems). Efficiencies in water use may be achieved by implementing the following *water conserving* techniques:

- Using water efficient plumbing fixtures
- Reducing amount of water used in irrigation and landscaping
- Using graywater and process recycling systems
- Reducing water use in heating, ventilating, and air-conditioning equipment
- Conducting leak detection and repair activities

One way the Federal Government can take a lead role in accelerating the development and implementation of water conservation measures is by instituting procurement preferences for materials and equipment that result in the conservation of water. The following sections assess the policy priority, specific definition, and life-cycle cost savings associated with procurement by Government agencies of *water conserving* materials and equipment.

Is it a policy priority?

The conservation of water is a policy priority as established by the Energy Policy Act of 1992 and Executive Order 12902. Both of these policies require Federal agencies to pursue and implement cost-effective water conservation methods.

² <http://www.eren.doe.gov/consumerinfo/>

Energy Policy Act of 1992

In the Energy Policy Act of 1992, the U.S. Congress stated its purpose as: *“to conserve water by improving the water efficiency of certain plumbing products and appliances.”* The Act legislates a goal to reduce the energy consumption of the Government by 20 percent by fiscal year 2000; establishes a fund for grants to agencies working toward energy efficiency; and directs energy surveys of Federal facilities to identify conservation measures, recommend improvements, and identify barriers to implementation of improvements. It further requires Federal agencies to implement all cost-effective life-cycle water conservation measures with payback periods of less than 10 years.

The Act is an impetus for the Federal Government to lead the way in energy and water conservation measures, especially because Federal agencies are one of the largest consumers of energy and water resources.

Executive Order 12902

Executive Order 12902, “Energy and Water Efficiency in Federal Facilities” implements the provisions of the Energy Policy Act of 1992. The EO directs Federal agencies to identify energy and water conservation opportunities (e.g., through an audit) and install cost-effective conservation measures. Construction of new facilities must also be based upon designs that incorporate water conservation measures.

The EO identifies the DOE as the agency that will lead implementation through the Federal Energy Management Program (FEMP). The Interagency Energy Policy Committee and the Interagency Energy Management Task Force serve as forums to coordinate issues related to energy and water conservation.

Attribute Definition

To develop a definition of water-conserving as an environmental attribute, the Energy Policy Act requirements, the DOE FEMP recommended standards, and the “best available” product performance standards were reviewed and current technical literature was investigated. The subsections, which follow, discuss the information from each source and the attribute definition for water conserving.

Requirements of Energy Policy Act of 1992

The most definitive criteria for water conservation come from the Energy Policy Act, which requires that after January 1, 1994, the performance standards presented in Exhibit 5 must be met for the manufacture of specific plumbing fixtures. These performance standards were defined by the American Society of Mechanical Engineers (ASME) and the American National Standards Institute (ANSI). Both of these organizations develop national and international standards for the safe, reliable, and productive design and manufacture of engineering components or equipment. In the case of the plumbing fixtures specified in the Act, the ASME/ANSI standards provide performance criteria that must be met for a fixture to be compliant with the provisions of

the Act. The performance standards are used by the plumbing industry as the design and manufacturing standards for the specified plumbing fixtures.

All of the specified plumbing fixtures produced or sold during or after 1994 must meet or exceed the performance standards defined by the Act. However, it is likely that fixtures purchased and/or installed prior to the effective date of the Act may be in use and would result in inefficient water use. To address this, the Act, and the EO 12902, direct the initiation of facility audits to identify inefficiencies and implement measures that are cost effective. The Act does not specify any other quantitative requirements for *water-conserving* products and activities.

Recommended Standards From DOE FEMP and “Best Available” Product Performance

FEMP’s mission is to reduce the use and cost of energy in the Federal sector by advancing energy efficiency, water conservation, and the use of solar and other renewable energy sources. FEMP accomplishes its mission by leveraging both Federal and private resources to transfer technology and by providing technical training and financial assistance to other Federal agencies. These activities are directly related to achieving the goals set forth in the Energy Policy Act and Executive Order 12902, as well as those inherent to sound management of Federal financial and personnel resources. FEMP has identified the following techniques and water conservation technologies that can be used to save water and to lower the associated energy costs:

- Water efficient plumbing fixtures such as ultra-low-flush, wall-hung toilets and urinals, waterless urinals, low-flow and sensed sinks, low-flow showerheads, and water-efficient dishwashers and washing machines
- Methods to reduce water use associated with irrigation and landscaping (water-efficient irrigation systems, irrigation control systems, low-flow sprinkler heads, and xeriscape, or dry landscaping)
- Graywater and process recycling systems that recycle or reuse water
- Methods to reduce water use in heating, ventilating, and air conditioning equipment

Because FEMP is the Federal organization charged with performing technical reviews and evaluating the cost effectiveness of water conserving measures as part of implementing EO 12902, FEMP’s recommendations provide a sound basis for performance standards for Federal procurements. Performance standards recommended by FEMP are at least equal to, and in many cases, more stringent than the requirements of the Energy Policy Act. Because the FEMP recommendations are more stringent than the minimum Federal requirements, they provide purchasers with the information to distinguish products that are more water conserving than others on the market. Depending on market availability and cost effectiveness, Federal agencies should strive to procure products with the “best available” performance with respect to water efficiency.

Additionally, before incorporating water conserving as an attribute in the FLIS, it is necessary to review equipment specifications, which currently exist only for the few specific plumbing

fixtures listed in Exhibit 5. FEMP fact sheets are available that define the “best available” products with respect to efficiency and make performance recommendations for water efficient fixtures. In addition to the requirements of the Act, Exhibit 5 presents functional standards as defined by the DOE FEMP.

Exhibit 5 **Performance Standards (Flow Rates) for Water-Conserving Plumbing Fixtures³**

Product	Regulatory Requirement¹	Best Available Product Performance²	FEMP Recommended²
Lavatory faucets and replacement aerators	2.2 gpm	1.5 gpm	#2.0 gpm
Kitchen faucets and replacement aerators	2.5 gpm	1.5 gpm	#2.0 gpm
Metering Faucets	0.25 gpc	not available	not available
Showerheads	2.5 gpm	1.5 gpm	#2.2 gpm
Toilets (Gravity tank-type, flushometer tank-type, electromechanical hydraulic)	1.6 gpf	1.3 gpf	#1.6 gpf
Blow-out Toilets	3.5 gpf	not available	not available
Urinals	1.0 gpf	0.0 gpf	#1.0 gpf

(1) The Energy Policy Act of 1992; Section 6295 (j) and (k); based on flowing pressure of 60psi; must meet requirements of ASME/ANSI A112.18.1M-1989, 7.4.3 (a) and A112.19.6.

(2) From the FEMP web site; <http://www.eren.doe.gov/femp/procurement/>.

Literature Reviews

Much of the literature on water conservation measures describes best practices and water use techniques rather than quantitative equipment specifications. Such best practices can be applied to a wide variety of water-using products, such as heaters, air conditioners, and vents. Planning and maintaining landscaping using best management practices may also conserve water. Other conservation options involve leak detection and repair, industrial process improvements, and changing the way fixtures and equipment are operated and maintained. However; specific quantitative criteria for what constitutes a water-conserving product are not well developed.

Definition of Water Conserving as an Environmental Attribute

The FEMP performance recommendations for water conserving plumbing fixtures are recommended for integration into the FLIS. Based on available data, the recommended

³ Key: gpm= gallons per minute; gpc = gallons per cycle; gpf = gallons per flush

definition of water conserving as an environmental attribute for integration into the FLIS database is as follows:

Water-conserving products are any plumbing fixtures that meet or exceed the Department of Energy (DOE) Federal Energy Management Program (FEMP) recommended performance standards for flow rates.

Further information about the DOE FEMP recommended performance standards and fact sheets defining “best available” products are available at the DOE World Wide Web site: www.eren.doe.gov/femp/procurement. This information is updated as needed by DOE.

Life-Cycle Cost Assessment

The specific *water-conserving* criteria defined above result in less water usage and waste; therefore, direct cost savings from purchasing less water will be realized. FEMP estimates that the Federal-sector expenditures for water and sewer run between \$0.5 billion and \$1 billion annually, and that the Federal Government could save as much as \$240 million per year by installing water conservation measures. Expenditures, and consequently potential savings, will increase as the cost of water continues to rise; rates have already increased 100% to 400% in major cities during the past 10 years, and FEMP expects this trend to continue.⁴

The definition of *water conserving* as an environmental attribute affects products available through the FLIS in Federal Stock Class 4510, which is for plumbing fixtures and accessories fixtures, including faucets, showerheads, toilets, and urinals. FEMP has developed specific recommendations for products that meet or exceed regulatory requirements; therefore, products resulting in additional water conservation relative to similar products can be easily identified and recorded in the FLIS catalog. In addition, use of these products will result in significant overall life-cycle cost savings from products manufactured and installed prior to 1994; further savings will be achieved by ensuring that newly purchased and installed plumbing fixtures meet FEMP’s recommended requirements. FEMP estimate of savings associated with certain *water conserving* fixtures are shown in Exhibits 6 and 7.

The savings included in the FEMP estimates are supported by the commercial literature of varying manufacturers. Whereas the FEMP estimates depict a value of \$4/1,000 gallons of water as average cost and a value of \$10/1,000 gallons as a high cost, commercial estimates include water costs in multiple ranges. Bottom line, the range of savings for a given flow and usage as described in Exhibits 6 and 7 will vary by the cost of water in the area where these fixtures are installed.

⁴ <http://www.eren.doe.gov/femp/techassist/waterconserve.html>

Exhibit 6
Annual Cost Savings Associated With Using Water-Conserving Plumbing Fixtures
(Compared against products that only meet the current Federal standards, based on
ASME standard test conditions.)

Fixture	Standard	Cost Savings in Water Use	Cost Savings in Energy Use (Electric Heating)	Cost Savings in Energy Use (Gas Heating)
Faucet ¹	Recommended	\$7	\$4	\$1
	Best Available	\$22	\$16	\$4
Showerhead ²	Recommended	\$9	\$15	\$5
	Best Available	\$29	\$50	\$15
Toilet ³ (Average Water Costs)	Recommended	\$60	-	-
	Best Available	\$65	-	-
Toilet (High Water Costs) ⁴	Recommended	\$145	-	-
	Best Available	\$150	-	-
Urinal ⁵ (Average Water Costs)	Recommended	\$60	-	-
	Best Available	\$90	-	-
Urinal (High Water Costs) ⁴	Recommended	\$150	-	-
	Best Available	\$230	-	-

¹ Residential kitchen and bathroom sink faucets, and commercial bathroom sink faucets. Cost-Effectiveness assumptions are as follows: faucet use is assumed to last for 1 minute, 30 times per day, and 260 days per year. The faucet water temperature is assumed to average 80°F and the inlet water pressure 60 psi. The assumed electricity and gas prices are 6 cents/kWh and 40 cents/therm, the 1996 Federal average energy prices in the US. The assumed combined water and waste-water price is \$4/1,000 gallons.

² Showerhead use is assumed to be 10 minutes per shower, 2 showers per day, and 365 days per year. The showerhead water temperature is assumed to be 106°F and the inlet water pressure 80 psi. The assumed electricity and gas prices are 6 cents/kWh and 40 cents/therm, the 1996 Federal average energy prices in the US. The assumed combined water and waste-water price is \$4/1,000 gallons.

³ Savings estimates are based on an existing flush rate of 3.5gpf. Toilet use is assumed to be 30 flushes per day, and 260 days per year. The water price is assumed to be \$4/1,000 gallons.

⁴ The water price is assumed to be \$10/1,000 gallons.

⁵ Savings estimates are based on the flush rate for an existing unit of 3.0 gpf. Urinal use is assumed to be 30 flushes per day, and 260 days per year. The water price is assumed to be \$4/1,000 gallons (supply + wastewater treatment).

Exhibit 7
Lifetime Cost Savings Associated With Using Water-Conserving Plumbing Fixtures¹
(Compared against products that only meet the current Federal standards, based on
ASME standard test conditions.)

Fixture	Standard	Cost Savings in Water Use	Cost Savings in Energy Use (Electric Heating)	Cost Savings in Energy Use (Gas Heating)
Faucet ²	Recommended	\$50	\$40	\$10
	Best Available	\$170	\$130	\$35
Showerhead ³	Recommended	\$70	\$110	\$30
	Best Available	\$240	\$380	\$110
Toilet ⁴ (Average Water Costs)	Recommended	\$480	-	-
	Best Available	\$500	-	-
Toilet ⁵ (High Water Costs)	Recommended	\$1,200	-	-
	Best Available	\$1,250	-	-
Urinal ⁶ (Average Water Costs)	Recommended	\$500	-	-
	Best Available	\$750	-	-
Urinal ⁷ (High Water Costs)	Recommended	\$1,300	-	-
	Best Available	\$1,900	-	-

¹ 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 4.1% are based on Federal guidelines (effective from April 1998 to March 1999). Future water and waste water treatment costs are conservatively assumed to increase only at the rate of inflation.

² Residential kitchen and bathroom sink faucets, and commercial bathroom sink faucets. Cost-Effectiveness assumptions are as follows: faucet use is assumed to last for 1 minute, 30 times per day, and 260 days per year. The faucet water temperature is assumed to average 80°F and the inlet water pressure 60 psi. The assumed electricity and gas prices are 6 cents/kWh and 40 cents/therm, the 1996 Federal average energy prices in the US. The assumed combined water and waste-water price is \$4/1,000 gallons.

³ Showerhead use is assumed to be 10 minutes per shower, 2 showers per day, and 365 days per year. The showerhead water temperature is assumed to be 106°F and the inlet water pressure 80 psi. The assumed electricity and gas prices are 6 cents/kWh and 40 cents/therm, the 1996 Federal average energy prices in the US. The assumed combined water and waste-water price is \$4/1,000 gallons.

⁴ Savings estimates are based on an existing flush rate of 3.5gpf. Toilet use is assumed to be 30 flushes per day, and 260 days per year. The water price is assumed to be \$4/1,000 gallons.

⁵ The water price is assumed to be \$10/1,000 gallons.

⁶ Savings estimates are based on the flush rate for an existing unit of 3.0 gpf. Urinal use is assumed to be 30 flushes per day, and 260 days per year. The water price is assumed to be \$4/1,000 gallons (supply + wastewater treatment).

⁷ Water price is assumed to be \$10/1,000 gallons.

Chapter 4. Summary and Conclusions

The JG-EnvAtt Coordinating Committee's approach for adding environmental attributes to the FLIS is to identify and evaluate potential environmental attributes based on their policy priority, definability, and life-cycle cost savings. This approach was used to evaluate *water-conserving* as an environmental attribute.

Water conserving is strongly supported by Federal policies because of the mandates set forth in the Energy Policy Act of 1992 and Executive Order 12902. *Water conserving* has accepted definitions. EPA's Water Conservation Plan Guidelines include the following definition for water conservation: "any beneficial reduction in water losses, waste, or use." Another EPA publication, "Cleaner Water Through Conservation," defines water conservation as "finding ways to use less water to begin with." On the DOE Consumer Energy Information World Wide Web site, conservation is defined as follows: "to reduce or avoid the consumption of a resource or commodity."⁵

DOE's FEMP has developed specific recommendations for products that meet or exceed water conserving requirements. Use of these products will result in significant overall life-cycle cost savings. FEMP estimates of savings associated with certain *water conserving* products are discussed in Chapter 3.

The FEMP performance recommendations for water conserving plumbing fixtures are recommended for integration into the FLIS. Based on available data, the recommended definition of water conserving as an environmental attribute for integration into the FLIS database is as follows:

Water-conserving products are any plumbing fixtures that meet or exceed the Department of Energy (DOE) Federal Energy Management Program (FEMP) recommended performance standards for flow rates.

This definition of *water conserving* as an environmental attribute affects products available through the FLIS in Federal Stock Class 4510, which is for plumbing fixtures and accessories fixtures, including faucets, showerheads, toilets, and urinals. Further information about the DOE FEMP recommended performance standards and fact sheets defining "best available" products are available at the DOE World Wide Web site: www.eren.doe.gov/femp/procurement. This information is updated as needed by DOE.

Water-conserving meets the evaluation criteria established by JG-EnvAtt as an environmental attribute that should be included in the FLIS system.

⁵ <http://www.eren.doe.gov/consumerinfo/>

Appendix A - Acronyms

ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
DLA	Defense Logistics Agency
DOE	Department of Energy
EO	Executive Order
EPA	Environmental Protection Agency
FAR	Federal Acquisition Requirements
FEMP	Federal Energy Management Program
FLIS	Federal Logistics Information System
gpc	gallons per cycle
gpcd	gallons per capita per day
gpf	gallons per flush
gpm	gallons per minute
GSA	General Services Administration
JG-EnvAtt	Joint Group on Environmental Attributes
JLC	Joint Logistics Commanders
USGS	United States Geological Service

Appendix B - References

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