



## Environmentally Preferable Purchasing Guide

# Greening Your Purchase of Electronics

## Why Green Your Electronics?

- Federal agencies spent approximately \$5 billion on computers alone in FY 1996. This represents about 3.7 percent of the total market (EPA, BEA Analysis).
- Electronics are the fastest-growing portion of the municipal solid waste stream. In 1998, more than 20 million computers became obsolete, but only 11 percent were recycled (National Safety Council).
- By 2004, as many as 315 million obsolete computers could potentially be disposed of in landfills, introducing 4 billion pounds of plastic, 1 billion pounds of lead, 2 million pounds of cadmium, and 400,000 pounds of mercury into the waste stream (Clean Computer Campaign).

## Environmental & Human Health Concerns

### Solid Waste

In today's high-speed, technological world, faster, more powerful electronics quickly replace each other, with "up-grade" cycles of 2 or 3 years. Most equipment is designed for disposal—it does not come apart easily, and parts cannot be upgraded separately. This results in large amounts of electronic junk, even with re-furbishers, recyclers, and donators diverting some electronics from trash.

### Energy Usage

Computers and monitors can consume significant amounts of energy in government offices. Unfortunately, much of the energy consumed by computers is wasted because machines often are kept on while not in use. This is why it is important to purchase a computer that automatically "goes to sleep" when inactive. Computer systems that meet ENERGY STAR® requirements can save up to 80 percent of the energy that might otherwise be wasted when the machines are on but not in use.

### Toxic Waste

Besides wasting materials and energy, the manufacturing and disposal processes release toxic pollutants into the air and water, affecting the environment and human health. Electronic equipment—especially those that include cathode-ray tubes (CRTs), printed wiring boards, mercury switches, capacitors, and batteries—contains persistent, bioaccumulative toxics such as mercury, lead, cadmium, and chromium, all of which can pose a threat to the environment if they are not managed carefully at the end of their useful life. Specifically, desktop color monitors typically contain about 4 or more pounds of lead; lead can be found in the circuit boards of the computer as well. Most desktop computers use some type of on-board battery that may contain lead, cadmium, or other heavy metals, and laptop computers often are powered by a rechargeable battery that must be specially disposed of or recycled.

### What's Inside:

- What Can You Do?
- Model Criteria and Contracts
- Success Stories
- Contacts & Resources

Produced by EPA's Environmentally Preferable Purchasing (EPP) Program, this is one in a series of purchasing guides aimed at helping procurement officials identify and purchase "greener" products and services. Check out all our EPP tools and resources at [www.epa.gov/oppt/epp](http://www.epa.gov/oppt/epp).



# What Can You Do?

The costs of frequent replacement, plus energy usage and hazardous waste disposal for some items, can add up quickly. What seemed to be a good price for electronic equipment might carry significant hidden costs in the long term. You can send a message to manufacturers and suppliers by choosing products that are less toxic, conserve natural resources, and reduce waste. Learn from these steps and the success stories on the adjacent pages, and you too can use your purchasing decisions to affect the electronics market.

- Consider leasing programs or purchase agreements that require the retailer, distributor, or manufacturer to take the equipment back at the end of its life. Take-back options put the responsibility for the management of toxic materials on those who provide the equipment, thereby encouraging manufacturers to develop and design cleaner products. And, depending on the replacement schedule, your machine or its components could have value for reuse.
- Choose computers that are designed for disassembly, that can be easily upgraded without special tools, and that include expandable memory capacity, which can reduce the number of times a product must be replaced. This can save money by avoiding the purchase of entire replacement equipment and reducing the number of times an office must pay to manage discarded machines.
- Find computers designed for disassembly by considering what raw materials are used in the product's manufacture, distribution, reuse, operation, maintenance, packaging, and disposal, as well as their durability and adaptability.
- Ensure that environmental and energy requirements are included from the outset in the contract specifications for the purchase of information technology equipment, as well as other equally important criteria, such as: value for money, performance, support, and availability.
- Specify that packaging adequately protects the goods and materials supplied, while avoiding over-packaging. Crates, pallets, and, if feasible, boxes and cartons, should be reusable. Several companies use only cardboard packaging for internal cushioning for most products. Cushioning and other forms of packaging that are not reusable should be recycled.
- Give suppliers the responsibility for removing their packaging: preferably for reuse; secondarily for recycling.
- Encourage manufacturers to design cleaner computers without using hazardous materials. Manufacturers can make circuit boards and housings without brominated flame retardants. They can use lead-free solder and polyvinyl chloride-free plastics that are safe to recycle. Many countries in Europe and Asia have passed laws to make producers responsible for their waste. Use your purchasing power to ask for these attributes the next time you purchase electronics.

## Five Guiding Principles

To help government purchasers incorporate environmental considerations into purchasing decisions, EPA developed five guiding principles. The guiding principles provide a framework purchasers can use to make environmentally preferable purchases. The five principles are:

1. Include environmental considerations as part of the normal purchasing process.
2. Emphasize pollution prevention early in the purchasing process.
3. Examine multiple environmental attributes throughout a product's or service's life cycle.
4. Compare relevant environmental impacts when selecting products and services.
5. Collect and base purchasing decisions on accurate and meaningful information about environmental performance.

For more information, go to the five guiding principles on EPA's EPP Web site at [www.epa.gov/oppt/epp/fivegp.htm](http://www.epa.gov/oppt/epp/fivegp.htm)

## It's Policy

The federal government has undertaken various initiatives to mandate the consideration of the environment in purchasing decisions. A growing number of state and local governments also have implemented green purchasing policies or programs. In 1995, EPA established the Environmentally Preferable Purchasing (EPP) Program to encourage federal employees to consider a broad range of environmental factors, such as reduced toxicity and lower volatile organic compound (VOC) content, in their purchasing decisions. In 1997, the Federal Acquisition

Regulation (FAR), which provides broad purchasing guidance to federal employees, was amended to support federal procurement of green products and services. In addition, executive agencies, under Executive Order 13101, have been directed to identify and give preference to the purchase of products and services that pose fewer environmental burdens. Executive Order 13123 and FAR Section 23.704 direct agencies to purchase products in the upper 25 percent of energy efficiency, including all models that qualify for the ENERGY STAR® labeling program.

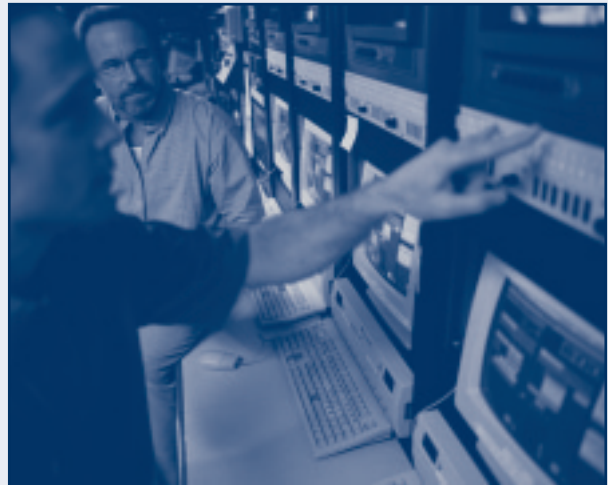
## EPA's ENERGY STAR® Sample Contract Language

The vendor must:

1. Provide ENERGY STAR® labeled computers that are configured so that they automatically enter a low-power mode after a period of inactivity.
2. Provide computers in low-power mode that will automatically return to active mode upon resumption of system activity or receipt of external input (e.g., mouse movement, keyboard activity, typing of a password, modem interruptions).
3. Ship computers with the power management feature enabled.
4. Provide computers that will include one or more mechanisms through which they can activate the low-power modes of an ENERGY STAR® labeled monitor.
5. Provide ENERGY STAR® labeled computers that are capable of entering and fully recovering from the low-power "sleep" mode while running in at least one of the operating systems pre-installed before shipping.
6. Provide ENERGY STAR® labeled monitors that can automatically enter two successive low-power modes.
7. For networked environments, provide computers that will sleep on networks and respond to wake events.
8. Provide integrated computer systems, where the computer and the monitor are combined in a single unit, that will enter a low-power mode of no more than 45 watts after a specified period of inactivity.

9. For state and local governments making blanket purchases, include the provision that the vendors will:
  - Deliver new and repaired machines configured properly for automatic energy-saving features as per current ENERGY STAR® specifications.
  - Provide customer support with respect to power management features so that these features remain properly enabled.

In addition to the contract language above, the EPP Database's Computer Store contains voluntary standards and guidelines from Germany's Blue Angel, the European Union's Eco-Label, the Nordic Countries' Nordic Swan, and Sweden's TCO Development, which may provide purchasers with information about environmental attributes. See <[www.epa.gov/oppt/epp/database.htm](http://www.epa.gov/oppt/epp/database.htm)>.



### Massachusetts Contract Excerpt for Computers, Peripherals, and Services

It is desirable that bidders demonstrate that all computer equipment offered in their responses was not manufactured or assembled using the toxic ingredients listed below. Further, it is desirable that bidders demonstrate that computer equipment does not contain some or all of the following toxic/hazardous constituents:

1. CFC or HCFC compounds included on the A, B, and C annex of the "Montreal Protocol on Substances that Deplete the Ozone Layer."
2. Chlorinated solvents, e.g., carbon tetrachloride, trichloroethylene, perchloroethylene, dichloromethane or 1,1,1-trichloroethane.
3. Cadmium in any part of the CRT, electronic components, batteries for backup or internal clocks (not to exceed 25 mg/kg total), photo semiconductors, or in packaging or packaging ink.
4. Mercury in the background lighting system, batteries, and other electronic components.
5. Selenium, unless equipment can be returned to manufacturer.
6. Flame-retardant materials in any plastic components that contain any organically bound chlorine or bromide.

# Green Purchasing Model Criteria and Contracts

## City of Seattle, Washington

<[www.ci.seattle.wa.us/oem/GreenPurchasing/GreenPurchasing.htm](http://www.ci.seattle.wa.us/oem/GreenPurchasing/GreenPurchasing.htm)>

Purchasing criteria for desktop computers includes: ENERGY STAR® compliance, manufacturer take-back of packaging, pre-installed programs, and no extra manuals or disks required. Eliminating individual packaging is being discussed. Requires take-back plus “multi-paks.”

## State of Texas

<[www.dir.stat.tx.us/oversight/lvp](http://www.dir.stat.tx.us/oversight/lvp)>

The state of Texas developed “Guidelines for Lease vs. Purchase of Information Technologies,” which is available through the Department of Information Resources in Austin, Texas, and published in May 1998.

## State of Minnesota

<[www.moea.state.mn.us/res/productstewardship.cfm](http://www.moea.state.mn.us/res/productstewardship.cfm)>

Minnesota’s Office of Environmental Assistance (MOEA) has developed a state product stewardship policy and has formed three task forces focused on priority products: CRT-containing electronics, carpet, and paint. The electronics task force will make recommendations for recycling and recovery goals within the state, identify alternative (non-governmental) financing mechanisms, and obtain commitments for managing end-of-life products

from manufacturers and others involved in selling and using products.

## Commonwealth of Massachusetts:

<[www.magnet.state.ma.us/osd/enviro/products/computer.htm](http://www.magnet.state.ma.us/osd/enviro/products/computer.htm)>

Massachusetts’ “Request for Response” (OSD RFR No. ITCO5, April 1999) for computer equipment required ENERGY STAR® products and rated vendors on a full range of environmental features, including recycled content and recyclability; labeling plastic resins and non-welding parts; avoiding toxic substances; upgradability; taking back equipment and packaging for recycling at the end of useful life; and ergonomics and reduced worker exposure to radiation or electromagnetic fields. The process also recognized independent third-party certifications.



## Success Stories

### Agencies Sign Federal Memorandum of Understanding for Electronics

Concern about the environmental impact of electronic equipment has prompted a memorandum of understanding (MOU) among the U.S. Postal Service, the Department of Defense, the Department of Interior, the Department of Energy, Council of Environmental Quality, the White House Task Force on Recycling, and EPA. The MOU, signed by the agencies in early 2001, will help these federal agencies and others develop and implement environmentally preferable and energy-efficient practices and technologies for electronic equipment. The MOU addresses areas such as acquisition, design, material choices, manufacturing, reuse, demanufacturing, and recycling processes. The agreement’s ultimate objective is to increase demand for environmentally preferable electronic equipment, promote best lifecycle management, share management successes with the private sector, and encourage infrastructure growth for electronics reuse and recycling in the United States.

### EPA’s ENERGY STAR® Program

Introduced in June 1993, ENERGY STAR® now boasts more than 2,000 compliant products covering personal computers, monitors, printers, copiers, and fax machines. EPA found that a single ENERGY STAR® computer and monitor can save anywhere from \$7 to \$52 per year in electricity bills.

# Contacts and Resources

## ENERGY STAR® U.S. EPA

<[www.energystar.gov](http://www.energystar.gov)>

ENERGY STAR® provides energy use standards and lists of manufacturers and products.

## EPA WasteWise Project

<[www.epa.gov/wastewise](http://www.epa.gov/wastewise)>

WasteWise is a free, voluntary EPA program through which organizations reduce their MSW generation, to benefit their bottom line and the environment. WasteWise gives partners flexibility in designing their own solid waste reduction programs tailored to their needs.

## EPA's Product Stewardship Program

<[www.epa.gov/epr/products/electronics.htm](http://www.epa.gov/epr/products/electronics.htm)>

EPA provides general information on electronics product stewardship at the international, federal, state and local levels.

## Electronic Industries Alliance (EIA)

<[www.eia.org](http://www.eia.org)>

EIA represents the government relations interests of the diversified electronics industry. EIA's Environmental Issues Council maintains an extensive database of resources related to environmental issues affecting the electronics industry.

## The Silicon Valley Toxics Coalition (SVTC)

<[www.svtc.org](http://www.svtc.org)>

SVTC, a California-based environmental group, believes that product manufacturers should be required to take back outdated electronic equipment to reduce toxic

waste. They advocate a method of managing unwanted computer equipment, or "e-waste," similar to the method used by the European Union. Europe's Waste from Electrical and Electronic Equipment (WEEE) Directive bans the use of certain toxic chemicals and requires greater producer responsibility.

## The Clean Computer Campaign: 2000 Clean Computer Report Card

<[www.svtc.org/cleancc/2000report.htm](http://www.svtc.org/cleancc/2000report.htm)>

The Clean Computer Campaign, a project of the SVTC, evaluated the environmental information contained on the Web sites of 44 of the world's largest high-tech companies. The resulting report evaluates eight key indicators to determine if the manufacturers are providing consumers with enough information to make informed decisions about buying green electronic products.

## Northwest Product Stewardship Council

<[www.productstewardship.net](http://www.productstewardship.net)>

The mission of the Northwest Product Stewardship Council is to integrate product stewardship principles into the policy and economic structure of the Pacific Northwest. It has developed a guide to economically preferable computer products, available at its Web site.

## INFORM

<[www.informinc.org/leasingbook.htm](http://www.informinc.org/leasingbook.htm)>

INFORM has written a report analyzing take-back policies on electronic equipment as a strategy for increasing resource productivity and encouraging a closed-loop pattern of materials.

## EPA's Purchasing Tool Suite

EPA's EPP Program has developed the following Web-based tools to help purchasers consider the environment, along with price and performance, when buying a product or service.

**Database of Environmental Information for Products and Services** — A searchable database of product-specific information (e.g., environmental standards and guidelines or contract language) developed by government programs, both domestic and international, as well as third parties.

<[www.epa.gov/oppt/epp/database.htm](http://www.epa.gov/oppt/epp/database.htm)>

**Promising Practices Guide for Greener Contracts** — A series of short case studies highlighting successful

strategies for incorporating environmental factors into a variety of product and service contracts.

<[www.epa.gov/oppt/epp/ppg](http://www.epa.gov/oppt/epp/ppg)>

**General EPP Training Tool** — Covers basic EPP principles and mandates, along with some more in-depth applications of EPP, in an entertaining and multimedia format.

<[www.epa.gov/oppt/epp/gentt/](http://www.epa.gov/oppt/epp/gentt/)>

**Tips for Buying Green with the Government Credit Card** — Tips to help government credit card holders make greener choices when buying products, such as electronics.

<[www.epa.gov/oppt/epp/creditcard.htm](http://www.epa.gov/oppt/epp/creditcard.htm)>



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Official Business  
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**Greening Your  
Purchase of  
Electronics**