

**Procuring Energy-Efficient Products**  
**A Guidebook for**  
**State and Local Government Purchasing Organizations**

**Prepared for the Consortium for Energy Efficiency**

**Revised April 3, 2000**

**Paul P. Hlavac & Associates**

# Procuring Energy-Efficient Products

## A Guidebook for State and Local Government Purchasing Organizations

This guidebook is designed to help procurement professionals in state, county and local governmental bodies learn more about the many important reasons to buy energy-efficient products for their customer agencies and departments. It discusses:

- The many advantages of specifying energy-efficient products
- Steps to take to identify and buy these products
- How to estimate your savings from purchasing them
- How to be an “energy-efficiency champion”
- Where to go for more information and assistance.

In addition, there are two appendices:

- Appendix A discusses how to calculate the savings achievable by energy-efficient products.
- Appendix B contains sample procurement language for purchasing energy-efficient computers and monitors.

### **Why Buy Energy-Efficient Products?**

Many of the products your procurement organization buys – items such as lighting products, HVAC equipment, water heaters and other appliances, office equipment, motors, and so forth – are costly to operate. A major reason is that they use a great deal of energy (electricity, gas, or oil). You can save a lot of expense, and benefit everyone, with a properly structured program for buying energy-efficient products. As their name suggests, these products use less energy than their inefficient counterparts. How much less? ENERGY STAR®, a collaboration of the U.S. Department of Energy, the Environmental Protection Agency, and private companies, was created to help procurement organizations buy energy-efficient products. Specific brands and models of products with an ENERGY STAR rating exceed minimum federal standards. For example, ENERGY STAR compliant air-conditioning systems exceed federal standards by 20%, and ENERGY STAR labeled furnaces exceed them by 15%. Products without federal standards must meet specified high levels of efficiency to be ENERGY STAR qualified.

In fact, there are actually three important types of benefits that result when you buy ENERGY STAR labeled or equivalent products:

#### ***Cost Savings***

- **Utility bills are significantly reduced.** ENERGY STAR compliant products use less energy, so utility bills decrease. For example, ENERGY STAR labeled office equipment, such as computers, typically uses half the electricity of “regular”

**Toledo, Ohio upgraded to energy-efficient lighting and HVAC systems in 30 buildings, reducing annual utility bills by \$440,000.**

office equipment. High-efficiency 25 hp motors can save \$150 to \$300 per year in electricity. The University of California at San Francisco now saves over \$2 million annually on utility bills just because it installed energy-efficient lighting. The University of Cincinnati replaced old motors with ones that use less electricity because they operate at 97% efficiency. Now, the University saves \$120,000 per year, and the department that generated the savings is allowed to keep 25% of them.

- **Maintenance costs are lower.** Many ENERGY STAR labeled products last far longer than the typical product of their type. This results in lower maintenance costs because energy-efficient products are replaced less frequently. For example, compact fluorescent lamps typically last 10 times as long as standard incandescent lamps.

**Montgomery County, Maryland recoups the cost of lighting retrofits in 4 years just from reduced maintenance costs.**

- **Special financing is often available.** Some energy providers offer rebates to customers who install ENERGY STAR compliant products and equipment, and others offer 0% or low-rate financing. Below-market financing or other financial incentives may be available from the federal government and from state energy financing programs.

**Portland, Oregon received \$420,000 in rebates because of its energy efficiency program.**

What all this means is that **ENERGY STAR labeled products are very often cheaper** than their

**Energy efficient products free up substantial tax dollars for other purposes, such as teachers' salaries and more public services.**

inefficient counterparts when all of the costs (such as purchasing cost, energy cost, and maintenance cost) are considered over the products' entire lifetime. This is called *life cycle cost*, and it is a proper way to compare products to decide which provides the best value. The purchase price of some ENERGY STAR compliant products may be higher, but their life cycle costs are usually lower, so you

will **save taxpayer dollars** when you buy them. (Appendix A explains cost savings and life cycle cost in more detail.)

### ***Better Operating Efficiency***

- **Greater reliability and longer product life.** Many energy-efficient products provide more reliable performance, often over a much longer life. The City of Bowling Green, Ohio has replaced old incandescent traffic signals with LED lamps that last 10 times longer. LED exit signs last 10 to 20 times as long as conventional signs and are more reliable because they are less likely to burn out.
- **Improved operating characteristics, comfort, and quality.** Often, ENERGY STAR compliant products work better and are higher quality. For example, energy-efficient lighting can offer more light, with better colors and less flickering. The University of Cincinnati replaced old boilers with energy-efficient ones that increased efficiency from 76% to 86%. This higher efficiency caused energy consumption to

**The G. Pierce Wood Memorial Hospital in Arcadia, Florida retrofitted with T8 lamps that increased lighting levels by 21%.**

decrease by 88 million BTUs per year, reducing annual energy costs by \$300,000.

### *Environmental Responsibility*

**The energy saved by 500 ENERGY STAR compliant laser printers yields pollution reductions equivalent to taking 68 cars off the road for a year.**

- **A cleaner, healthier environment.** Most energy is produced by burning coal, oil, or natural gas. Unfortunately, carbon dioxide and other greenhouse gases are created and emitted into the atmosphere during the process, and these gases are

extremely harmful to the environment. Because they use less energy, ENERGY STAR compliant products are responsible for fewer of these dangerous emissions, resulting in a cleaner, healthier environment for everyone. And ENERGY STAR labeled products save a great deal of nonrenewable energy resources (coal, oil or natural gas).

**The bottom line:  
Energy efficient products save money, work better,  
and are environmentally responsible.**

### Steps To Take

How do you go about buying ENERGY STAR compliant products, especially when you must consider your client agencies/departments and adhere to governmental policies, regulations and guidelines? Here are some steps to follow:

1. **Access the ENERGY STAR website.**
  - Become familiar with it and the ENERGY STAR Toolkit.
2. **Share this brochure with your immediate supervisor and anyone else who would want to help save taxpayer dollars, purchase better products, and help the environment.**
  - With more supporters, the chances of success are much greater.
3. **Find out if your organization is already buying any ENERGY STAR labeled or equivalent products.**
  - Learn how successful they have been.
  - If you aren't yet buying ENERGY STAR compliant compact fluorescent lamps or LED exit signs, those are excellent places to start. They save tremendous amounts of energy and have a much longer life, so their payback is very short.
4. **Contact your energy providers.**

What people are saying about the  
ENERGY STAR Toolkit:

"I liked seeing specific wattage criteria. The summary information was useful and that level of detail is refreshing." Dan Wehrman, Environmental Purchasing Specialist, Wisconsin.

"It is easy to read and understand." Denise Lea, Director, Division of Administration, Office of State Purchasing and Travel, Louisiana.

- See if they offer rebates, low-interest financing or other assistance to purchasers of ENERGY STAR labeled or equivalent products.
  - Ask if they can assist you in selecting the ENERGY STAR compliant products that best meet your organization's needs.
  - See if they are aware of other purchasers (or groups of purchasers) in your area who have similar programs, and who may help you.
5. **Make sure your purchasing policies and guidelines are consistent with buying ENERGY STAR compliant products.**
- They may state that product specifications cannot be unnecessarily restrictive. That is fine, because many manufacturers make ENERGY STAR compliant or equivalent high efficiency products, and there is a very good reason to specify them.
  - Your policies may require that a contract be awarded to the *lowest cost responsible and responsive bidder* (or similar words). If *lowest cost* may be based on life cycle cost (and many procurement policies allow this), then no policy change is needed. Otherwise, the policy must be modified slightly. Because modifications can take time, determine if the policies allow for exceptions, and if *lowest life cycle cost* may be such an exception.
6. **See if any environmental, “green,” or energy-related legislation or resolutions apply to your organization.**
- Increasingly, governmental bodies choose to demonstrate leadership in environmental and energy conservation, as well as in cost-containment.
  - For example, Ohio House Bill #264 allows non-standard bid processes for energy-efficiency projects and also permits payment to be made from the savings achieved.
7. **Identify the energy-using products that your organization buys, or that your client agencies/departments buy under contracts you administer.**
- Select two or three of those products that are bought in significant volumes, and that are not energy-efficient. If possible, choose products for which your procurement organization can either set the specifications or influence those who do set them.
  - Try to select product types that are already part of the ENERGY STAR program, because finding energy-efficient brands and models will be easier in those cases. The ENERGY STAR website include lists of those product types.
8. **Use the savings calculator to estimate the cost savings that would result from switching to ENERGY STAR compliant products.**
- Show the major user agencies/departments, and any other involved organizations, the savings that are possible, and work with them to agree on new ENERGY STAR or equivalent specifications for the selected product(s).
- The savings calculator shows that 50 ENERGY STAR compliant computers save \$3,930 over their lifetime.**
9. **Find out if any joint purchasing agreements include contracts for ENERGY STAR compliant products.**
- Your procurement organization may use contracts established by other governmental bodies (for example, if you work for a county or city, you may be able to use purchasing contracts established by the state), or you may be part of a cooperative purchasing group.

- If these contracts include ENERGY STAR labeled or equivalent products, buying them will be relatively simpler.

**10. Modify product specifications in your Invitation to Bid (or equivalent) documents and use them to make your next purchase energy-efficient.**

- Appendix B contains sample procurement language for purchasing ENERGY STAR labeled computers and monitors.
- Make certain that your product specifications require energy-efficiency.

**11. Keep track of the cost savings**

- They come primarily from reduced energy usage and lower maintenance and replacement requirements.
- You will then be able to demonstrate to others that sizable benefits are achieved and that more ENERGY STAR compliant product purchasing is worthwhile.

**How Big Are the Savings?**

How much money will buying energy-efficient products save your governmental body and thus its taxpayers? If you know the approximate annual volume of energy-using products that are

**If your organization paid an extra \$3,000 to purchase 100 ENERGY STAR compliant exit signs, the savings calculator estimates savings of more than \$41,000 over the 10-year life of the exit signs.**

purchased by your state, county or city, then you can use the Savings Calculator to estimate the savings for each major type of product. If you do not have this information, then you can look at the examples in the Savings Calculator and the “success stories” in this document and on the websites. The paybacks and savings you will see there are representative, often a **25% - 50% reduction in energy costs, and an investment payback of 1 to 7 years.**

**Become An Energy Efficiency Champion**

Once the process gets going, there is a lot more that can be done. Governmental bodies sometimes designate an “energy manager” who is knowledgeable about energy-efficient products and their benefits, and who is familiar with available information resources. This person plays a key role in implementing a complete energy-efficiency program by, for example:

- “Spreading the energy-efficiency word”
- Ensuring that procurement policies and guidelines are appropriate
- Assisting those who want to specify and buy ENERGY STAR compliant products
- Developing a means of providing recognition to organizations and individuals who specify ENERGY STAR labeled or equivalent products
- Representing the governmental body at energy-efficiency meetings and conventions, or even sponsoring such a group on a local or regional basis
- Working with external associations and groups on energy-efficiency issues. The National Association of Counties, National Institute of Governmental Purchasing, National

**Only you can commit yourself and get the process going. Everyone will benefit when you do.**

Association of State Purchasing Officials, and many others are involved in energy-efficiency and “green” programs.

### **Energy-Efficiency Resources**

The next step is yours, but you are far from alone. Many state and local procurement organizations are committed to buying energy-efficient products, and they have overcome the same hurdles you may face. The following are some resources you can use.

The EPA’s energy-efficiency website and toll-free number are:

[www.energystar.gov](http://www.energystar.gov) will introduce you to the ENERGY STAR program. If you click on “Institutional Purchasing” at the bottom of the home page, you will be directed to a site from which you can look up specific products, use the Savings Calculator, read success stories, obtain sample procurement language that specifies energy-efficiency, and more.

**For more information  
about state and local  
government  
procurement, go to:  
[www.energystar.gov](http://www.energystar.gov)**

**1-888-STAR-YES** will put you in touch with personnel involved in the ENERGY STAR program at the EPA.

The DOE’s energy-efficiency website at:

[www.eren.doe.gov/femp/procurement](http://www.eren.doe.gov/femp/procurement) contains the Federal Energy Management Program’s recommended product efficiency levels, a list of other resources, and contacts for technical information.

The CREST (Center for Renewable Energy and Sustainable Technology) websites are:

<http://solstice.crest.org> lists sites dedicated to energy-efficiency, contains case studies, and discusses funding sources.

<http://gem.crest.org> also includes case studies, and has a state-by-state guide to energy efficiency resources.

\* \* \* \*

If you have comments about this guidebook, the ENERGY STAR web site or the Toolkit, if you need more information, or if you would like to submit your own energy-efficient product “success story,” please call: 1-888-STAR-YES (1-888-782-7937).

## Appendix A

### Calculating ENERGY STAR® Product Cost Savings Using Life Cycle Cost and the Simple Savings Calculator

Products that meet high efficiency standards are given the ENERGY STAR rating by the Environmental Protection Agency and the Department of Energy. Typically, this means that they are in the top 25% of all similar products when ranked by energy efficiency.

The ENERGY STAR web site contains data on many ENERGY STAR labeled products, and it also references other web sites that contain additional product information. The web site contains a savings calculator (which is also included on a disk that comes with the ENERGY STAR Toolkit) that calculates the cost savings resulting from purchasing energy-efficient products.

Some energy-efficient products have a higher purchase price than their less efficient counterparts. Nonetheless, these products usually save you money because they use less energy, often have a longer life, and typically incur less maintenance cost. These savings, such as from lower energy bills, are achieved throughout the entire lifetime of the product. Thus, when deciding how much money an ENERGY STAR labeled product will save you, it is necessary to consider both initial cost (the purchase price) and the costs that will be incurred throughout the life of the product (such as energy and maintenance costs). This type of calculation is called *life cycle cost* analysis because it takes into account all costs incurred by the product throughout its useful life. Life cycle analysis determines the present value of all of these costs, i.e., what they would be if they were all incurred right now. The savings calculator does this using a spreadsheet. Comparing the *life cycle cost* of an ENERGY STAR compliant product with that of a less efficient product determines the savings that will be achieved.

The savings calculator has numerous user-determined parameters, such as energy cost per kWh, number of units being purchased, initial cost per unit, energy usage, and so forth. This information is required for both the ENERGY STAR compliant and the less efficient product. The savings calculator then determines the net savings that will be achieved from buying the energy-efficient product, and it also measures how much carbon emissions will be reduced because less energy is consumed.

The following table summarizes the results from using the savings calculator. It shows the savings that would be achieved from buying energy-efficient computers and monitors. The EPA's default parameters were used for energy cost, discount value of money, and so forth.

#### Computers and Monitors

	Energy-Efficient product	Non-Energy Efficient product
Number of units	50	50
Watts per unit (in sleep mode)	45	N/A
Initial cost per unit	\$1,400	\$1,400
Product life (years)	4	4
Total annual operating cost	\$868	\$1,950
Lifetime operating cost	\$3,150	\$7,080

Purchase cost	\$70,000	\$70,000
Total life cycle cost	\$73,150	\$77,080
Net savings over product lifetime	\$3,930	N/A
Carbon emission savings (1)	8.42	N/A

Note: (1) This is the number of cars that would have to be removed from the road for one year to equal the carbon emission savings generated by the energy-efficient product.

What this calculation says is that if you buy 50 computers that have a sleep mode, and you keep them 4 years, then using the sleep mode will save you (in current dollars) \$3,930. Also, the energy saved results in carbon emission reductions that are equivalent to taking 8.42 cars off the road for one year. (It should be noted that most computers sold today have a sleep mode and are therefore potentially energy-efficient. The issue is that the sleep mode is very often disabled, especially when the computers are networked, and then the energy savings are lost.)

## Appendix B

The following **sample procurement language** illustrates the type of information that should be included in Invitations to Bid (or equivalent documents) to ensure that the computers and monitors purchased will be ENERGY STAR compliant.

### The Vendor Must:

- **Provide ENERGY STAR-compliant computers that are configured so that they automatically enter a low-power mode after a period of inactivity.** A computer whose power supply has a maximum continuous output power rating less than or equal to 200 Watts ( $\leq 200W$ ) shall automatically enter a low-power "sleep" mode of 30 Watts or less within 30 minutes of inactivity. A computer whose power supply has a maximum continuous output power rating greater than 200 Watts ( $> 200W$ ) shall automatically enter a low-power "sleep" mode of no more than 15 percent of its maximum continuous output power rating within 30 minutes. The maximum continuous output power rating of a power supply is the value certified by a Nationally Recognized Testing Laboratory (NRTL).
- **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 interrupts, etc.).** An initial keystroke by the user shall not be passed through to the open application. In other words, while the computer is in a low-power mode, the initial keystroke/mouse click shall reactivate the system and shall not have any effect on an open application. When a system awakens from a "sleep" mode, the user shall return automatically to the same situation that existed prior to activation of the sleep mode, i.e., all files and software packages in use at the time the sleep mode is triggered shall be returned to the screen in the same condition. If a security code or password is required, the computer shall return to its previous condition after the user enters the security code or password.
- **Ship computers with the power management feature enabled.** To ensure that the maximum number of users take advantage of the low-power "sleep" mode, vendors shall ship their computers with the power-management feature enabled. The default time shall be preset for less than 30 minutes.
- **Provide computers that will include one or more mechanisms through which they can activate the low-power modes of an ENERGY STAR-compliant monitor.** The manner in which a computer can control ENERGY STAR-compliant monitors, and any special circumstances that must exist in order for the monitor's power management to be accomplished, shall be clearly specified in product literature. The monitor control requirement does not apply to integrated computer systems. However, integrated computer systems that are marketed and sold as part of a docking system shall have the ability to automatically control the power of an externally connected monitor.
- **Provide ENERGY STAR-compliant 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.** If an operating system that does not support power management is requested by the buyer, the vendor shall inform the buyer and suggest alternatives or options. If the computer is not shipped with operating system software, the vendor shall clearly specify which mechanism will render the computer ENERGY STAR compliant. In addition, if any special software, hardware drivers, or

utilities are necessary for the proper activation and recovery of the sleep mode, they must be installed in the computer. Vendor shall include this information in product literature (e.g., user's manual or data sheets) and/or on its Internet Web site.

- **Provide ENERGY STAR-compliant monitors that have the capability to automatically enter two successive low-power modes. In the first low-power "sleep" mode, the monitor shall consume 15 Watts or less within 30 minutes of inactivity.** If the monitor continues to be idle for a total of 60 minutes, upon instructions from the CPU, it shall enter a second low-power "deep sleep" mode. An ENERGY STAR-compliant monitor in this second low-power mode shall consume 8 Watts of electricity or less. Monitors that have the capability to automatically proceed from active mode to a low-power mode of 8 Watts or less are assumed to comply. If any software is required to initiate a monitor's low-power modes, the software should be shipped with the monitor. The user shall have the ability to change the time settings or disable the low-power modes if needed. Upon resumption of user activity, the monitor shall automatically return to full operational capability.
- **For networked environments, provide computers that will sleep on networks and respond to wake events.** If the computer is shipped with the capability to be on a network, it shall retain in sleep mode its ability to respond to wake events directed or targeted to the computer while on a network. If the wake event requires the computer to exit the sleep mode and perform a task, the computer shall reenter its sleep mode after a period of inactivity following the completion of the task requested.
- **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.**

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 US EPA ENERGY STAR specifications.**
- **Provide customer support with respect to power management features such that these features remain properly enabled.**

Lease and maintenance agreements for office equipment shall include the following provisions concerning power management features:

- **Installation and service performed as part of the agreement shall include the proper configuration of power management features according to the terms of the ENERGY STAR Program MOU current for that class of equipment, at the time of the service.** Personnel involved in system integration and service shall treat the malfunction of power management features as functional failures of the equipment, and shall diagnose and repair these problems rather than disabling the power management features.
- **If vendor representatives perform site customization and user training, these services shall be carried out so as to maximize the energy efficiency of the installed product.** Vendor staff shall state the facts that power management features promote long equipment life, save energy and reduce the introduction of heat and fumes into the workplace.