

PURPOSE

This document will guide you through some simple steps that your facility can take to improve the operation and maintenance of your electronics in three areas: energy conservation and efficiency; printing and copying; and extending product life.

ELECTRONICS OPERATIONS AND MAINTENANCE

Operation and maintenance activities encompass a variety of electronics issues, including: energy conservation and efficiency; printing and copying; and extending product life.

Improving operation and maintenance of electronics serves many functions, including:

1. Reducing energy consumption.
2. Reducing resource use.
3. Keeping viable equipment out of the waste stream.
4. Reducing demand for new electronic products.

ENERGY CONSERVATION AND EFFICIENCY

What?	Purchase ENERGY STAR®/energy efficient products.
How?	<ol style="list-style-type: none"> 1. Find ENERGY STAR/energy efficient electronic products. <ul style="list-style-type: none"> ○ ENERGY STAR maintains a database of qualified products that meet ENERGY STAR requirements. ○ U.S. General Service Administration (GSA) maintains a list of energy efficient products offered through the GSA Schedules. 2. Require ENERGY STAR/energy efficiency in procurement by incorporating requirements into guide specifications, product specification language and other purchasing procedures. <ul style="list-style-type: none"> ○ Sample language is available online from ENERGY STAR. ○ Include a requirement for Electronic Product Environmental Assessment Tool (EPEAT) registered products, when possible. EPEAT-registered products must meet applicable ENERGY STAR requirements.

What?	Enable ENERGY STAR/energy efficiency features.
How?	<ol style="list-style-type: none"> 1. Evaluate the viability and efficacy of power management for electronic products. <ul style="list-style-type: none"> ○ Consider existing hardware, software and network restrictions. ENERGY STAR has a guide for determining appropriate power management for specific hardware/software configurations. ○ Consider remote management needs (for software patches and updates). Many power management software solutions can work with remote management tools.

	<ol style="list-style-type: none"> 2. Investigate software options for local and network power management. <ul style="list-style-type: none"> ○ EZ Wizard is a free software tool for end-user monitor power management, available for download from ENERGY STAR. ○ EZ Save is a free software tool for network monitor power management, available for download from ENERGY STAR. ○ EZ GPO is a free software tool for network monitor and computer power management, available for download from ENERGY STAR. ○ ENERGY STAR also provides information about, and hyperlinks to, other commercially available power management systems online. 3. Activate power management. <ul style="list-style-type: none"> ○ Ensure that ENERGY STAR features are enabled on hardware products prior to distribution to users. ○ Consider a gradual phase in of network power management; many users will not notice a difference and adjustments can be made as problems arise. ○ ENERGY STAR provides online instructions for each of the EZ software products. Commercial products generally have instructions and user support available through each vendor. ○ EPA also provides free technical assistance for power management implementation. Contact information is available online at the ENERGY STAR web site.
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What?	Establish best energy practices and educate employees.
How?	<ol style="list-style-type: none"> 1. Develop a policy for best energy practices, including: <ul style="list-style-type: none"> ○ Energy efficiency purchasing requirements (see above). ○ Local and remote power management practices (see above). ○ Encouraged employee activities, such as powering off computers. ○ Ongoing employee awareness and training activities (see below). 2. Inform and educate employees on the best energy practices policy through promotional materials and training. <ul style="list-style-type: none"> ○ ENERGY STAR provides educational materials online. ○ The Federal Electronics Challenge (FEC) provides a “power down” poster, available at: http://www.federalectronicchallenge.net/resources/docs/powerdown.ppt. ○ ENERGY STAR provides training on energy efficiency and power management.

PRINTING AND COPYING

What?	Purchase products with duplex features and enable them.
How?	<ol style="list-style-type: none"> 1. Find products with duplex features. 2. Require duplex features in procurement by incorporating requirements into guide specifications, product specification language and other purchasing procedures. <ul style="list-style-type: none"> o Include a requirement for EPEAT-registered products, when possible. 3. Enable, and set as default, duplex features on the equipment and on users' machines.

What?	Implement managed print services.
How?	<ol style="list-style-type: none"> 1. Minimize local printers and maximize network printers and copiers. <ul style="list-style-type: none"> o Instead of providing individual printers for users who print sensitive information, consider implementing a code system for a network printer. Users can send sensitive documents to the network printer and the printer will spool the job until the user enters their code at the printer. 2. Utilize Managed Print Services (MPS) <ul style="list-style-type: none"> o MPS provides outside management of printer and copier needs – including hardware, supplies, service, technical support and reporting – which optimizes and centralizes imaging services. o MPS delivers supplies when needed, reducing stockpiling; provides technical and service support, increasing productivity and reducing frustration; and has been shown to result in significant cost savings.

What?	Reduce resource use.
How?	<ol style="list-style-type: none"> 1. Promote electronic alternatives: <ul style="list-style-type: none"> o Post electronic copies of meeting and project materials on the internet or local intranet. o Develop and encourage the use of electronic forms. o Utilize electronic document sharing and editing features. 2. Promote efficient printing/copying by encouraging: <ul style="list-style-type: none"> o Reductions in color printing. o Use of draft print quality for non-critical printing. o Printing of individual pages instead of whole documents. o Printing text without graphics. o Condensing large print or presentation slides.

What?	Establish best printing/copying practices and educate employees.
How?	<ol style="list-style-type: none"> 1. Develop policy for best printing/copying practices, including: <ul style="list-style-type: none"> ○ Duplex purchasing requirements (see above). ○ Print management services (see above). ○ Encouraged employee activities, such as reducing resource use (see above). ○ Ongoing employee awareness and training activities (see below). 2. Inform and educate employees on best printing/copying practices policy through promotional materials and training. <ul style="list-style-type: none"> ○ FEC provides a “print duplex” poster, available online at: http://www.federalelectronicschallenge.net/resources/docs/double-sided.ppt. ○ FEC provides a “recycle printer cartridges” poster, available online at: http://www.federalelectronicschallenge.net/resources/docs/toner_cart.ppt.

EXTENDING PRODUCT LIFE

What?	Evaluate the need for electronic purchases.
How?	<ol style="list-style-type: none"> 1. Assess each new electronics request. <ul style="list-style-type: none"> ○ Develop and implement a system to evaluate new equipment requests: can existing equipment be upgraded; can other resources provide similar functionality; is the new product necessary? ○ Consider requiring a needs assessment or similar standard form for all new electronics requests. ○ Smaller printers (generally used locally) can be problematic because they have a shorter lifespan and are too costly to repair relative to replacement costs. Consider purchasing a more robust and versatile network printer instead of replacing many individual local printers. 2. Conduct economic analyses to clarify need and identify cost savings. <ul style="list-style-type: none"> ○ Determine the life-cycle cost of electronic products and evaluate upgrade and replacement policies. This exercise may be more effective for computers and monitors that are replaced relatively frequently, than with other electronic products (such as printers) which have varying life spans. ○ Update policies and practices to reflect results of analyses.

What?	Examine alternatives to electronic purchases.
How?	<ol style="list-style-type: none"> 1. Consider remote desktop solutions (such as Thin Client) to reduce hardware and software distribution to individual users. <ul style="list-style-type: none"> ○ Implement server-centralized/network-based software solutions for specific software applications that require special hardware and/or must be utilized at various locations. ○ Implement server-centralized/network-based software solutions for small facilities to reduce costs for individual's hardware and software. 2. Strive for internal reuse. <ul style="list-style-type: none"> ○ Utilize the "trickle-down" approach: hardware that is obsolete for one application may be useful for a less sophisticated application. ○ Develop a network of IT professionals within your organization to facilitate information sharing and internal reuse. 3. Limit the number of PCs per user to one (either desktop or portable). <ul style="list-style-type: none"> ○ Provide infrastructure that allows users to utilize a portable computer at their office desk.

What?	Consider end of life of electronic purchases.
How?	<ol style="list-style-type: none"> 1. Consider needs of recipients for your donated electronics <ul style="list-style-type: none"> ○ Save instruction manuals and hardware driver diskettes/CDs/etc. 2. Consider recycling requirements during O&M <ul style="list-style-type: none"> ○ Make recycling of paper and toner cartridges as easy as possible.

REFERENCES

General information about the ENERGY STAR® program, a database of ENERGY STAR qualified products, sample solicitation language, power management guides and software (including EZ Wizard, EZ Save, and EZ GPO), and information on ENERGY STAR support from EPA are all available online at the ENERGY STAR web site:
<http://www.energystar.gov/>.



Electronics Operations and Maintenance

Updated: 03/15/2006

The General Services Administration provides information about ENERGY STAR Compliant Products and Other Energy Efficient Products online, at: <http://www.gsa.gov/>.

The Lawrence Berkeley National Laboratory published a "User Guide to Power Management in PCs and Monitors" which is available online at: <http://eetd.lbl.gov/EA/Reports/39466/>.

The FEC provides a document outlining how ENERGY STAR can assist FEC partners with energy conservation, available online at:
<http://www.federalectronicchallenge.net/resources/docs/estar.pdf>.

The FEC provides a sample personal computer energy saving policy, available online at:
http://www.federalectronicchallenge.net/resources/docs/pc_energy.pdf.

The Lawrence Berkeley National Laboratory maintains a web site devoted to reducing office paper use, at: <http://eetd.lbl.gov/paper/index.html>.

CONTACT INFORMATION

If you have questions related to this resource or need other assistance with the Federal Electronics Challenge, please contact your Regional Champion. The list of FEC Regional Champions is available at <http://www.federalectronicchallenge.net/champions.htm>.

Partners may also request technical assistance via email to partner@electronicschallenge.net.

FEDERAL ELECTRONICS CHALLENGE

Web site: <http://www.federalectronicchallenge.net/>
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