STATE ADMINISTRATIVE MANUAL

MANAGEMENT MEMO

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SUBJECT: STATE AGENCY REQUIREMENTS REGARDING PREVENTIVE ENERGY MANAGEMENT	DATE ISSUED: AUGUST 1, 2001
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INTRODUCTION

The State of California is facing an unprecedented period of electricity shortages. The Department of General Services is taking the lead role in alerting State agencies when immediate action is required to reduce electrical energy demand to reduce the likelihood of emergency actions such as rolling blackouts. Management Memo 01-05 lists demand reduction actions that State agencies are to take in the event of an energy emergency. This memo can be found at http://www.dgs.ca.gov/energy. When emergency notifications or updates are sent by DGS, they also include specific references to where departments can find information regarding steps to take to reduce energy use.

This memo addresses three procurement actions to be implemented by State agencies related to procurement and implementation of information technology (IT) hardware and software in order to provide reduced energy requirements and more effective power management capabilities on a long-term basis:

(1) Purchase equipment that is sized to meet realistic business needs; i.e., do not purchase equipment with unnecessary additional capacity and corresponding additional energy consumption,

(2) Purchase equipment that is Energy Star compliant, and

(3) Purchase software that supports implementation and administration of power management features.

This Management Memo specifically focuses on LAN-based office computing equipment (computer, computer monitors, laser printers, inkjet printers, scanners, etc.) and any other standard "office technology" equipment (e.g., fax machines, copiers, etc.). However, these same principles apply in general to all IT-related purchases (servers, network devices, etc.)

PURCHASE EQUIPMENT THAT MEETS REALISTIC BUSINESS NEEDS – Unneeded capacity usually translates into unnecessary energy consumption

Organizations are sometimes inclined to purchase equipment with expandability or redundancy capabilities beyond what is realistically required for the intended use of the equipment. For example, mid-tower or full size desktop computer systems often have extra drive bays and motherboard bus slots (e.g., PCI) to allow the installation of additional disk drives, video cards, sounds cards, etc. Of course, these systems must have larger power supplies (e.g., 225 W) to accommodate the additional load that would be introduced if all drive bays and slots were populated. Due to the increasing levels of component integration, more and more "devices" are being integrated onto the computer motherboard, which provides fully adequate performance for standard office computing needs along with reduced power needs (e.g., 90 W power supply) due to the reduced use of separate components such as video cards, sounds cards, etc. For perhaps 90% to 95% of all

desktop computer systems there is never the need to install additional disk drives or PCI or similar cards. Consequently, 90% to 95% of the computers purchased within organizations should be the Mini CPU-type system with power supplies of less than 100 W. Of course, the actual proportion of expandable (5%) and non-expandable (95%) systems in use or procured for use in an organization must be based upon the specific business needs for that organization.

This same caveat concerning sizing equipment to meet realistic business needs applies to the purchase of all IT-related equipment, including computers, monitors, printers, etc.: **Carefully assess your office IT equipment needs and purchase the level of processing capability and expandability needed to meet realistic business needs within the expected life of the equipment.**

Related to the issue of equipment capacity is the issue of shared versus dedicated equipment, or network-attached versus directly attached devices. The use of network-attached peripheral devices such as printers, scanners, etc., provides the immediate benefits of reduced energy consumption due to reduced amounts of equipment, and the long-term benefits of more effective management of technology through network-based technology management software. Except for those circumstances in which there are actual requirements related to security, equipment capability, or convenience that cannot be met with the use of network-attached and shared devices, **all devices such as printers, scanners, copiers, fax machines (e.g., fax servers), and multifunction devices should be purchased and implemented as network-attached, shared devices.**

In general, whenever there is the option of shared versus dedicated equipment, the use of shared equipment is preferred unless it fails to meet a specific and actual business need. An obvious example of "shared" equipment is the use of a KVM switch (Keyboard, Video, Mouse) to allow access to multiple servers via a single monitor-mouse-keyboard. For example, eight servers connected to an eight-port KVM switch with a single monitor-mouse-keyboard would eliminate the energy required to support seven (7) monitors, reducing overall energy use by the eight servers by approximately 50%.

PURCHASE EQUIPMENT THAT IS ENERGY STAR COMPLIANT

Energy Star is a government/industry partnership designed to help businesses and consumers save money and protect the environment by selecting products from manufacturers who participate in this voluntary labeling program designed to identify and promote energy-efficient products. Energy Star was introduced by the U. S. Environmental Protection Agency (EPA) in 1992. In 1996, EPA partnered with the U. S. Department of Energy to promote the Energy Star label, with each agency taking responsibility for particular product categories. More recently, Energy Star has expanded to cover new homes, most of the building sector, residential heating and cooling equipment, major appliances, office equipment, lighting, consumer electronics, and more product areas.

The equipment of particular relevance for this Management Memo includes computers, monitors, printers, fax machines, copiers, scanners, and multifunction devices. Virtually all major manufacturers in each of these equipment categories offer Energy Star-compliant products. A primary feature of Energy Star-compliant products is the ability to automatically power down to a low energy "sleep" mode after some specified period of inactivity. This reduces the amount of energy consumed by the equipment. In some

cases, Energy Star features offer additional benefits such as reduced "wear" (e.g., extends the life of scanner light sources). In all cases, the Energy Star features are designed to be compatible with the intended business use of the device (e.g., fax machines in "sleep" mode are immediately ready to respond to incoming fax calls; monitors in "sleep" mode take only about 10 seconds to "awaken", etc.).

More detailed information on the Energy Star program and listings of vendors providing Energy Star-compliant devices in each of these equipment categories can be found at http://www.energystar.gov/.

Whenever there is an Energy Star-labeled device available in the equipment category for which purchases are anticipated, then State organizations shall specify and purchase Energy Star-labeled equipment.

Per the current requirements for Energy Star 'labeling', equipment shipped by the vendor should have power management features implemented as the default. More importantly, **when a computer system is put into service on an end-user's desktop, the final software configuration of the computer system must have the relevant power management features activated.**

The table below provides some examples of energy usage by type and size of equipment, and the expected energy reductions during "sleep" mode operations. These are worthwhile guidelines for understanding which devices consume the most electrical power in a typical organization, and for determining potential benefits from the use of Energy Star-compliant equipment.

Device Type	Active Use (Watts)	Power-manage (Watts)[1]
Pentium Computer	45	25
Laptop Computer	15	3
15" Monitor CRT	75	5
20" Monitor CRT	120	5
15" Flat Panel LCD Display	35	5
Fax Machine	35	15
Inkjet Printer	15	5
Laser Printer	140	90

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[1] Based upon values reported in the "User Guide to Power Management for PCs and Monitors", Bruce Nordman, Mary Ann Piette, Kris Kinney, Carrie Weber, Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory, January 1997.

PURCHASE SOFTWARE THAT SUPPORTS ENHANCED ADMINISTRATION AND IMPLEMENTATION OF POWER MANAGEMENT FEATURES

Successful implementation of effective power management features requires the use of both hardware and software capable of supporting power management. To ensure that the State continues to improve the capability to manage electrical energy consumption by IT equipment, all installed software products must operate with and not negatively impact the hardware-based power management capabilities of IT equipment, where applicable.

In order to more effectively monitor, control, and adjust the advanced power management configurations on individual desktop computer systems and other network-attached devices, automated network management toolsets should be purchased and implemented (if not already done) to allow centralized administration of the power management settings for network-attached devices (e.g., desktop computers, printers, etc.).

Information Technology managers within State organizations must have the capability to adjust power management features to meet the needs of reduced energy consumption, and to ensure that power management settings are not tampered with or made inactive. Ultimately, this must be accomplished through the use of automated toolsets; hand-configuring individual desktop computers is an important short-term strategy for enabling power management features, but it does not provide a long-term solution.

INQUIRIES AND FURTHER INFORMATION

We hope that these recommendations will assist you in making procurement decisions that will maximize the potential for long-term energy reductions related to the use of IT equipment. Please direct all press inquiries and questions regarding this information to:

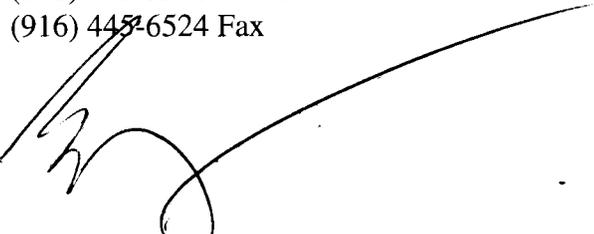Department of Information Technology
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