



Government of Ontario IT Standard (GO-ITS)

GO-ITS Number 93

Power Management

Version 1.0

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Prepared for the Information Technology Standards Council (ITSC) under the delegated authority of the Management Board of Cabinet

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1. Foreword

Government of Ontario Information Technology Standards (GO-ITS) are the official publications on the guidelines, preferred practices, standards and technical reports adopted by the Information Technology Standards Council (ITSC) under delegated authority of the Management Board of Cabinet (MBC). These publications support the responsibilities of the Ministry of Government Services (MGS) for coordinating standardization of Information & Information Technology (I&IT) in the Government of Ontario. Publications that set new or revised standards provide enterprise architecture guidance, policy guidance and administrative information for their implementation. In particular, GO-ITS describe where the application of a standard is mandatory and specify any qualifications governing the implementation of standards.

2. Introduction

2.1. Background

The *OPS Green Transformation Strategy* was approved by the Cabinet Committee on Ontario's Economic Future (CCOEF) on April 22, 2009 and is led by the **OPS Green Office**.

The *OPS Green Transformation Strategy* was endorsed to reduce the Ontario government's GHG emissions that include:

- Emissions reduction targets that align with the Go Green Action Plan commitments for the province as a whole – equivalent to 19% below 2006 levels by 2014 and 27% below 2006 by 2020.
 - Achieving these targets through actual reductions rather than purchased offsets
- Start to drive progress through setting of multi-year consumption reduction strategy led by the OPS Green Office in the Ministry of Government Services.
- An accountability structure for results with implementation led by the OPS Green Office in the Ministry of Government Services, in consultation with ministries through creation of a Green Government Task Force
- Driving results and emissions reductions through quarterly reports to the Climate Change Action Committee and Climate Change Secretariat dashboard.

The *OPS Green Transformation Strategy* will:

- Demonstrate that Ontario is a leader in environmental responsibility and is prepared to undertake the hard work to make our operations as sustainable as possible
- Show that Ontario is serious about reducing GHG emissions and reducing environmentally harmful consumption
- Show that “going green” can drive efficiencies and permanently reduce the cost of government operations
- Position the Ontario government as an employer of choice by virtue of its commitment to environmental responsibility
- Enable continuous improvement in our environmental performance by rigorously tracking and monitoring progress.

The *OPS Green Transformation Strategy* will implement new business practices including:

- **Fuel Consumption** - Smart Travel + Carpooling + Fuel Efficient Vehicles + Driver Training to Reduce Idling and Improve Driving Habits
- **Air Travel** - Fewer Flights + Telework / Videoconferencing + Web Collaboration
- **Facilities Energy** - Reduced Space + Power Management Strategy + Fewer and More Energy Efficient Devices + Green Leases + Green Data Centres
- **Paper** - Duplex Printing + Paperless Meetings + User Training
- **Devices** - Elimination of Non-Duplex Printers + Reduction of Non-Networked and Single Function Devices + Reduction of Colour Printers + Energy Star Requirements
- **Waste** - Fewer Consumables + Less Packaging + More Robust Recycling Programs

The *Beyond e-Ontario: Strategic Plan 2009-2014* outlines the top priorities of *Ontario's Five Year Corporate I&IT Plan*. Among the top priorities listed in the strategic plan, there is a focus on providing “more reliable, cost effective IT solutions” through the “increased reliability & cost effectiveness of technology solutions and services”. One of the major strategies for achieving this is to “develop and implement a Green Ontario I&IT strategy” that includes:

1. Implementing a Green I&IT strategy to support a Green Ontario.
2. Using I&IT to reduce the paper burden on small business

Members of the *Information Technology Executive Leadership Council (ITELC)* identified suitable Key Performance Indicators (KPIs) and Green Champions for the above listed strategies to help define and measure Ontario's progress towards reaching its I&IT environmental goals including:

1. All IT hardware to meet I&IT equipment Energy Star standard, and be disposed in an ecological manner.
2. Complete an energy audit of all Ontario Public Service (OPS) IT equipment by 2009, and implement an energy reduction plan by 2014.

The *Climate Change Secretariat*, *OPS Green Office* and the *Greenhouse Gas (GHG) Initiative* project are working together to reduce energy consumption, foster conservation efforts and address climate change. The *OPS Green Office* is coordinating many exciting initiatives involved in “greening” the OPS including the development and implementation of a *Green I&IT Strategy* with actionable and measurable results. The current action plan supports the KPIs and strategies underpinning the *Beyond e-Ontario Strategic Plan* and focuses on four pillars:

1. Procuring Green I&IT Products
 - (a) I&IT products purchased will use less energy and avoid more carbon emissions. In addition, new Green Certification Standards (see appendix for details on Green Certification Standards), recognize efforts by manufacturers to reduce the environmental impact of their I&IT products.
2. Running Green Data Centres and Equipment
 - (a) An opportunity exists to Green our data centres and the I&IT equipment used on a daily basis. The new data centre planned in Guelph, and the introduction of multifunctional devices and power-down software will assist in reducing energy consumption.
3. Supporting Green Work Practices
 - (a) A reduction in the amount of travel and carbon emissions from airplanes and automobiles can be accomplished through the use of videoconferencing, telecommuting, and increased broadband access.
4. Ensuring Green Disposal of I&IT Equipment

2.2. Purpose

Power management is one initiative under the *OPS Green Transformation Strategy* that aims to achieve energy savings and GHG reductions. Power management is a feature on many electronic devices that is able to place desktops, laptops, monitors and printers in standby mode when they are not in use and allows them to easily “wake up” when prompted by a user.

Findings from a recent pilot project determined that if power management was rolled out enterprise-wide across the OPS this could result in:

- 19.7m Kwh in energy savings annually,
- Approximately \$26 per computer in savings annually, and
- \$1.3M in cost savings annually.

The purpose of the power management GO-ITS is to prescribe the power management policy of electronic equipment and the exceptions for critical services and business operations. The objectives of the standard are to:

1. Establish a comprehensive power management standard that will provide clear guidance across the OPS as a power management policy is launched and settings are deployed enterprise wide.
2. Support the goals laid out in the Green I&IT Strategy and Ontario’s Action Plan on Climate Change by reducing energy consumption and GHGs.

2.3. Scope

2.3.1. In Scope

(Devices capable of holding power management settings)

All OPS desktops, integrated desktop computers, monitors (connected to a computer system), notebooks, workstations printing devices, multifunctional devices, printers, copiers, fax and mailing machines (capable of holding power management settings) are within the scope of this standard, unless identified as exempt under the business exclusions.

2.3.2. Out of Scope

(Devices not capable of holding power management settings)

All other OPS devices, including mobile printers (used by Police, Inspection Teams, and LRC Enforcement Officers etc.), rugged printers, plotters and legacy line printers (If they are not capable of holding power manager settings) are not within the scope of this standard

2.4. Applicability Statements

2.4.1. Organization

Government of Ontario IT Standards and Enterprise Solutions and Services apply (are mandatory) for use by all ministries/clusters and to all former Schedule I and IV provincial government agencies under their present classification (Advisory, Regulatory, Adjudicative, Operational Service, Operational Enterprise, Trust or Crown Foundation) according to the current agency classification system.

Additionally, this applies to any other new or existing agencies designated by Management Board of Cabinet as being subject to such publications, i.e. the GO-ITS publications and enterprise solutions and services - and particularly applies to Advisory, Regulatory, and Adjudicative Agencies (see also procurement link, OPS paragraph). Further included is any agency which, under the terms of its Memorandum of Understanding with its responsible Minister, is required to satisfy the mandatory requirements set out in any of the Management Board of Cabinet Directives (*cf.* Operational Service, Operational Enterprise, Trust, or Crown Foundation Agencies).

As new GO-IT standards are approved, they are deemed mandatory on a go-forward basis (Go-forward basis means at the next available project development or procurement opportunity).

When implementing or adopting any Government of Ontario IT standards or IT standards updates, ministries and I&IT Cluster must follow their organization's pre-approved policies and practices for ensuring that adequate change control, change management and risk mitigation mechanisms are in place and employed.

For the purposes of this document, any reference to ministries or the Government includes applicable agencies.

2.5. Requirements Levels

Within this document, certain wording conventions are followed. There are precise requirements and obligations associated with the following terms:

Must	This word, or the terms "REQUIRED" or "SHALL", means that the statement is an absolute requirement.
Should	This word, or the adjective "RECOMMENDED", means that there may exist valid reasons in particular circumstances to ignore the recommendation, but the full implications (e.g., business functionality, security, cost) must be understood and carefully weighed before

2.6. Contact Information

2.7. Roles and Responsibilities

Accountable Role Definition

The individual ultimately accountable for the process of developing this standard. There must be exactly one accountable role identified. The accountable person also signs off as the initial approver of the proposed standard before it is submitted for formal approval to ITSC and ARB. (Note: in the OPS this role is at a CIO/Chief or other senior executive level)

Accountable Role:

Ministry/Cluster: Government Services

Division: OPS Green Office

Job Title: Assistant Deputy Minister

Name: Neil Sentance

Phone: 416-327-3536

E-mail: neil.sentance@ontario.ca

Responsible Role Definition

The organization responsible for the development of this standard, There may be more than one responsible organization identified if it is a partnership/joint effort. (Note: the responsible organization provides the resource(s) to develop the standard)

Responsible Role:

Ministry/Cluster: Government Services

Division: OPS Green Office

Job Title: Director, Strategy

Name: Ruth Bayne

Phone: 416-327-7644

Email: ruth.bayne@ontario.ca

Support Role Definition

The support role is the resource(s) to whom the responsibility for actually completing the work and developing the standard has been assigned. There may be more than one support role identified. If there is more than one support role identified, the following contact information must be provided for each of them. If there is more than one support role, the first role identified should be that of the editor – the resource responsible for coordinating the overall effort.

Support Role (Editor):

Ministry/Cluster: Government Services
 Division: Office of the Corporate Chief Technology Officer
 Branch: Technology and Applied Architecture Branch (TAAB)
 Job Title: Manager, Breakthrough Technologies
 Name: Rizwan Akhtar
 Phone: 416-325-4240
 Email: rizwan.akhtar@ontario.ca

2nd Support Role:

Ministry/Cluster: Government Services
 Division: Office of the Corporate Chief Technology Officer
 Branch: Technology and Applied Architecture Branch (TAAB)
 Job Title: Lead, Breakthrough Technologies
 Name: Victor Chan
 Phone: 416-212-6744
 Email: victor.chan@ontario.ca

3rd Support Role:

Ministry/Cluster: Government Services
 Division: Office of the Corporate Chief Strategist
 Branch: I&IT Strategy, Policy & Planning Branch
 Job Title: Senior IT Policy Advisor
 Name: Scott Greene
 Phone: 416-327-4152
 Email: scott.greene@ontario.ca

Consulted

Please indicate who was consulted as part of the development of this standard. Include individuals (by role and organization) and committees, councils and/or working groups.

(Note: consulted means those whose opinions are sought, generally characterized by two-way communications such as workshops):

Consulted Organizational Areas	Date
Executives	
ITELC – OPS Power Management Implementation Project	April 16, 2009
Ministry of Government Services	

Informed

Please indicate who was informed during the development of this standard. Include individuals (by role and organization) and committees, councils and/or working groups.

(Note: informed means those who are kept up-to-date on progress, generally characterized by one-way communication such as presentations):

Informed Organizational Areas	
Executives	
Ministry of Government Services	

2.8. Recommended Versioning and/or Change Management

Changes (i.e. all revisions, updates, versioning) to the standard require authorization from the “responsible” organization.

Once a determination has been made by the responsible organization to proceed with changes, the Standards Section, Technology Adoption Branch, OCCTO, will coordinate and provide assistance with respect to the approvals process.

The approval process for changes to standards will be determined based on the degree and impact of the change. The degree and impact of changes fall into one of two categories:

***Minor changes** - requiring communication to stakeholders. No presentations required. No ITSC or ARB approvals required. Changes are noted in the “Document History” section of the standard;*

***Major changes** - requiring a presentation to ITSC for approval and ARB for approval (Note: ARB reserves the right to delegate their approval to ITSC)*

Below are guidelines for differentiating between minor and major changes:

Major:

- represents a major version change to one or more specifications
- impacts procurement
- requires configuration changes to current solutions
- impacts other standards
- responds to legislative, policy or procurement changes

Minor:

- represents incremental version changes to one or more specifications
- does not impact procurement (other than informational)
- does not require configuration changes to current solutions
- does not impact other standards
- is not related to legislative, policy, or procurement changes

2.9. Publication Details

All approved Government of Ontario IT Standards (GO-ITS) are published on the ITSC Intranet web site. Please indicate with a checkmark below if this standard is also to be published on the public, GO-ITS Internet Site.

Standard to be published on both the OPS Intranet and the GO-ITS Internet web site (available to the public, vendors etc.)	<input checked="" type="checkbox"/>
--	-------------------------------------

2.10. Compliance Requirements

In FY 2009-10 Power Management has been implemented through settings on OPS desktops and laptops, excluding exempt computers.

On an ongoing basis, all computers, monitors and printers that are purchased or leased by the OPS will have the Power Management settings deployed, unless the computer falls under one of the business exclusions outlined.

2.11. Compliance Reporting Templates

Compliance reports will help clusters and ministries to establish baselines, track Green IT hardware acquisitions, and show progress towards compliance with OPS Green policies and standards.

The compliance reporting templates below **should** be used by all clusters and ministries to report the status of Green I&IT improvement on an Annual basis (on or before 30th of September).

Head of Desktop & Server at ITS is responsible for recording and submitting this final report to OPS Green Office (Ruth Bayne, Director & Owner of this GO-ITS 93 Standard).

INSTRUCTIONS: HOW TO USE THE COMPLIANCE REPORTING TEMPLATE FOR POWER MANAGEMENT

Date of Installation: Indicate the date of Installation which is used to show when environmentally friendly products were first introduced into the IT environment. Therefore, it indicates the first time EPEAT and Energy Star product(s) have been purchased and implemented by a particular cluster or ministry according to the following date format:

- **YYYY-MM-DD:** Y represents the year, M represents the month and D represents the day.

Power Settings Implemented: Indicate what power settings from the standard were implemented for the particular product type/class. Please include the quantity of products that implemented each setting according to the following format:

- **Power Setting Implemented:** # minutes/hours – # of compliant devices out of total # of devices

Power Settings Not Implemented: Indicate what power settings from the standard were not implemented for the particular product type/class. Please include the quantity of products that didn't implement each setting according to the following format:

- **Power Setting Not Implemented:** # minutes/hours – # of compliant devices out of total # of devices

Business Exclusions: Indicate the business exclusion category(ies) that apply(ies) for the particular product type/class. Please include the quantity of exempt products according to the following format:

- **Business Exclusion Category #** – # of exempt devices out of total # of devices

Please see appendix for some examples that use the above-mentioned formatting.

3. Technical Specification

Overview

The tables below outline the requirements for the Power Management project. The packages will set the power profile values for desktops for all users in scope of the deployment.

All of the power profiles described below are the default names that ship with Windows XP. Each desktop must be using one of these power profiles, unless a user has made a profile with a custom name and selected that profile.

Today on non-CORPORATE DESKTOP machines modifying power profiles details requires administrator privileges. On CORPORATE DESKTOP machines, a group policy is in place that lets regular users modify power profile details.

By default, Windows XP only permits regular users to select which power profile to use.

Where a user is currently using a power profile that is being modified by the deployment, the user will begin to use the modified settings transparently.

Below, "No change" means the existing setting on the computer will not be modified.

After production rollout is completed, this information in this document will become part of the OPS Desktop Services Functional Specification for the image.

3.1. Monitor AC Power

3.1.1. Settings

SETTINGS	VALUE
Home/Office Desk	5 MINUTES
Portable/Laptop	5 MINUTES
Presentation	NO CHANGE
Always On	NO CHANGE
Minimal Power Management	5 MINUTES
Max Battery	5 MINUTES

3.1.2. Scripting methods

These are the command lines that will be executed through the package:

```
powercfg /CHANGE "Home/Office Desk" /monitor-timeout-ac 5
powercfg /CHANGE "Portable/Laptop" /monitor-timeout-ac 5
powercfg /CHANGE "Minimal Power Management" /monitor-timeout-ac 5
powercfg /CHANGE "Max Battery" /monitor-timeout-ac 5
```

3.1.3. Packaging

The package will meet the following requirements:

- Monitor settings will be an independent service that can be deployed separately from other power saving packages
- Installs only on Windows XP
- Functions on CORPORATE DESKTOP and Legacy computers running Windows XP

3.1.4. Monitor DC Power Settings

The power management project is not changing DC power options during the deployment

SETTINGS	VALUE
Home/Office Desk	NO CHANGE
Portable/Laptop	NO CHANGE
Presentation	NO CHANGE
Always On	NO CHANGE
Minimal Power Management	NO CHANGE
Max Battery	NO CHANGE
System Hibernates	NO CHANGE

3.2. Standby AC Power

3.2.1. Settings

SETTINGS	VALUE
Home/Office Desk	15 MINUTES
Portable/Laptop	15 MINUTES
Presentation	NO CHANGE
Always On	NO CHANGE
Minimal Power Management	15 MINUTES
Max Battery	15 MINUTES
System hibernates	NO CHANGE

3.2.2. Scripting methods

These are the command lines that will be executed through the package:

```
powercfg /CHANGE "Home/Office Desk" /standby-timeout-ac 15
powercfg /CHANGE "Portable/Laptop" /standby-timeout-ac 15
powercfg /CHANGE "Minimal Power Management" /standby-timeout-ac 15
powercfg /CHANGE "Max Battery" /standby-timeout-ac 15
```

3.2.3. Packaging

The package will meet the following requirements:

- Standby settings will be an independent service that can be deployed separately from other packages
- Installs only on Windows XP
- Functions on CORPORATE DESKTOP and Legacy computers running Windows XP

3.2.4. Hibernation

The power management project is not changing the hibernation capability of computers during the deployment.

SETTINGS	VALUE
Enable Hibernation	NO CHANGE

3.2.5. Multifunctional Devices, Printers, Copiers, Fax and Mailing Machines

All multifunctional devices, printers, copiers, fax and mailing machines that have such capabilities before such electronic equipment is deployed to end users.

Enable Sleep Mode	Sleep Mode after 20 minutes
Shutdown	Shutdown at night (manually or automatic)

3.3. Business Exclusion

Exclusion categories represent special circumstance. Individual users are not allowed to change their power management setting without prior approval from their department heads and ITS representatives.

These exclusions will be managed through clusters CIO for their approval and then implemented through ITS-Service Desk request process. Responsible department should initiate a service desk request by contacting OPS Service Desk at 416-246-7171 to initiate a request/ticket (i.e. Service Desk will assist with the changing of power option settings) based on one of the below mentioned categories.

3.3.1. Exclusion Category 1 – Kiosk

A kiosk requires a simple user interface that can be used without training or documentation. It is capable of operating unattended for long periods of time, enables users to enter information and provides & displays information on the same device.

- Information on regular and/or special instructions or directions;

3.3.2. Exclusion Category 2 – Support systems

Computers systems that must be available on the internal network and secured in use of process policies and practices; and, must remain available on the network to perform diagnostic, observation, monitoring and management of core systems. Resources involving the following procedures are exempt:

- Information obtained in such a manner that computer cannot be disrupted, directly or indirectly through third party processes and procedures
- Reduces the overall effectiveness of isolation
- Creates a larger management burden

In addition to the infrastructure services mentioned, there might also be other services on the network that cannot experience disruptions. These services will be added to the exclusion categories once identified and vetted.

3.3.3. Exclusion Category 3 – Performance Delivery

Delays that cause performance and timeout errors for many services. Resources involving the following procedures are exempt:

- If the computer must run business critical, public facing applications such as RSS feeds for Cabinet Office that require systems to be in the ALWAYS ON state
- If the services running on a computer are required to support clients carrying out business critical functions such as running bi-monthly payroll processing for OPS employees or monthly mainframe utilization reports to complete vendor billing processes
- If an external computer connects to the OPS internal network. For example, a consultant or OPS employee accessing internal GO applications via an external network to carry out system maintenance or upload of information

3.3.4. Exclusion Category 4 – Emergency Management

General categories for early response and emergency and OPP include, but are not limited to, the following:

- **Internal;** for providing incident handling services to municipalities and ministries of Ontario.
- **Provincial;** for providing incident handling services. Examples include: Coordination Center and Emergency Response Team.
- **Coordination Centers;** for coordinating and facilitating the handling of incidents across various sectors. Examples include: OPP, Forestry, public works and Emergency Readiness Team.
- **Analysis Centers;** for focusing on synthesizing data from various sources to determine trends and patterns activity. This information can be used to help predict future activity or to provide early warning when the activity matches a set of previously determined characteristics.
- **Miscellaneous Teams;** for working within the OPS to determine and develop remediation and mitigation strategies.

4. Related Standards

4.1. Impacts to Existing Standards

Identify any Standards that reference or are referenced by this Standard and describe the impact.

GO-IT Standard	Impact	Recommended Action
GO-ITS 90 – Acquisition of Electronic Equipment	This standard has been aligned to GO-ITS 90 for all product types/classes indicated in the compliance reporting template. In addition, GO-ITS 90 references this standard for Power Management requirements.	Ensure ongoing alignment of GO-ITS 93 with GO-ITS 90 and other 'Green' standards.

4.2. Impacts to Existing Environment

Impacted Infrastructure	Impact	Recommended Action
All OPS desktops, integrated desktop computers, monitors, notebooks and workstations	Simple policy updates in the form of scripting commands will be executed on all relevant desktop infrastructure to configure Power Management settings.	All computers that are purchased or leased/rental by the OPS will have the Power Management settings deployed as a part of the standard desktop image unless the computer falls under one of the business exclusions.
All OPS Multifunctional Devices, Printers, Copiers, Fax and Mailing Machines	Power Management settings on all relevant print devices.	All relevant print devices that are purchased or leased/rental by the OPS, will have the Power Management settings deployed unless the print device falls under one of the exclusions.

5. Appendices

5.1. Best Practices in Power Management

According to Energy Star, hundreds of organizations use system standby and hibernate settings enabled by a wide range of methods and tools. The following are case study articles of some organizations who have successfully implemented power management plans ranging from activating Windows power management settings to using multiple software applications.

VERIZON is planning on activating power management features on 185,000 PCs to save \$7 million net of project costs. http://www.energystar.gov/ia/products/power_mgt/VerizonCaseStudy.pdf

- Activated Windows sleep features on about 11,000 PCs in a pilot study conducted at 14 company locations in 2008.
- Based on the study, Verizon estimates that a wider implementation across approximately 185,000 PCs could save about \$7M per year net of project costs (based on Energy Star power management calculator). Anticipates reduced office maintenance costs from using less air conditioning in the summer to offset heat generated by electronic equipment.
- PC Powerdown software was installed on 11, 000 computers to put PCs into standby after 30 minutes and monitors after 15 minutes.
- Plans to continue rolling out PC Powerdown and computer sleep settings, ultimately deploying the application to as many as 185,000 computers across the company (no updates on Verizon web site/ Energy Star web site)

DELL cut energy use by 40% with a new power management plan. http://www.dell.com/downloads/global/casestudies/688_2007_DellonDellEnergy_79991399.pdf

- Forecasts indicating that energy consumption and cost for organizations will rise in the next decade have prompted organizations to look for ways to reduce consumption and to adopt power management plans.
- Dell chose NightWatchman and SMSWakeUP software applications from IE to manage their power management plan.
- Despite the minimal impact of the power management plan on users, Dell made sure to educate users before deploying the power management the applications to 55, 000.
- Energy consumption for desktop computers dropped from 89 Watts/ hour to 5 Watts/ hour; notebook energy consumption dropped from about 15-25 Watts/ hour to 3 Watts/ hour.
- Anticipating a savings of \$US 1.8M in savings.

GENERAL ELECTRIC activated system standby on 75,000 computers to save \$2.5 million annually. http://www.energystar.gov/ia/products/power_mgt/GE_CPM_Case_Study.pdf

- Activated Windows power management settings, first in a trial setting with 48, 000 PCs, then full rollout to 75, 000 PCs to date.

- The settings are:
 - Turn off monitors after 15 minutes of inactivity.
 - Turn off hard drive after 30 minutes.
 - System standby after 2 hours.
 - Hibernation after 3 hours.

YALE UNIVERSITY saves over \$40 per PC by shutting down their PCs after hours, waking them only for nighttime backups and software updates.

http://www.energystar.gov/ia/products/power_mgt/Yale_Case_Study.pdf

- Yale has asked 105 clients to shut down their desktops at the end of the day, saving approximately \$4,700/ year.
- The computer can be remotely started up and shut down for updates.
- They manually set up timed auto-wakeups which trigger updates to take place. They also inserted a shutdown code into the updates system to automatically power down once the updates were complete.
- Yale has approximately 10, 000 PCs and estimates that an expansion of this power management plan produce savings of \$400, 000/ year.

LAKE WASHINGTON SCHOOL DISTRICT saves over \$200, 000 annually.

<http://stage.verdiem.com/docs/Lake%20Washington%20School%20District%20CaseStudy.pdf>

- Fifth largest school district in Washington State, with 23, 500 students, 48 schools and 11, 000 PCs.
- Worked with Verdiem to develop its power management strategy.
- Baseline measurements (of 83 computers over a two-week period) indicated that the 11, 000 PCs accounted for 6.4 million kWh of annual energy consumption, equivalent to \$450, 000 per year in energy costs.
- The school district implemented Verdiem's Surveyor solution which is centrally managed over the network.
- The school district conserves approximately 2.5 million kWh annually which is equivalent to \$200, 000 per year in cost savings.
- An added benefit is the increased security and visibility of PCs on the network which assists with updates, maintenance and asset management.

PETERBOROUGH CITY COUNCIL in the UK saves \$50, 000 per year on electricity.

http://www.sustainableit.co.za/pdfs/Peterborough_CC%20_Case_Study.pdf

- Peterborough has a population of 170, 000 people, with a staff of 4, 500 on the council which includes schools.
- Involved in an extensive corporate transformation program which includes improving performance and reducing costs. The power management initiative is also driven by national climate change targets and trends.
- Peterborough provided education to the staff and encouraged them to power down at the end of the day. However, because the computers had standby features activated, people continued to leave their computers on overnight.

- The council worked with 1E to come up with automatic, centralized power management. NightWatchman is used to automatically power down PCs.
- The power management project delivered a return on the council's investments in less than three months.

5.2. Disk Imaging and Security Audit

When power management settings are enabled, PCs shift into standby/power saving or hibernation mode after a pre-determined period of time. This can create an impact on security auditing and disk imaging processes.

Corporate Security Branch (CSB) and ITS have developed a workaround which involves remotely changing the power management settings temporarily then restoring them when imaging is completed. In those instances, however, where the workstation already in power save mode, if possible, CSB will contact the manager at the local site to turn on the computer selected for auditing or disk imaging. Once CSB is able to access the machine they will work with ITS to temporarily change the power management setting on that device in order to complete disk imaging or computer audit processes, as per their normal protocols.

If the location is too remote or if there is no one available to power on the device, CSB will arrange for a resource to travel to the local site to perform this operation. This above mentioned process is a temporary fix until WAKE ON LAN becomes available. This workaround should be available to CSB until ITS enables WAKE ON LAN on all the connected machines.

5.3. Green Certification Standards

EnerGuide and ENERGY STAR

The EnerGuide initiative of Natural Resources Canada helps consumers purchase the most energy-efficient equipment. The EnerGuide label gives an estimate of the annual energy consumption of an appliance and ranks it according to other appliances of the same size and type.

Natural Resources Canada's Office of Energy Efficiency promotes the ENERGY STAR symbol. It is an international symbol that highlights the products that are among the most energy efficient on the market.

What kinds of products are covered by EnerGuide and ENERGY STAR?

The EnerGuide label is mandatory for all major electrical household appliances and room air conditioners sold in Canada. EnerGuide rates the energy consumption of major household electrical appliances and heating, ventilating and air-conditioning (HVAC) equipment. The ENERGY STAR symbol covers home appliances, HVAC equipment, lighting, electronics, office equipment, windows and doors.

Where can you buy EnerGuide and ENERGY STAR products?

EnerGuide and ENERGY STAR products can be found in a variety of department stores and home renovation stores.

EcoLogo^M

The EcoLogo is an initiative owned by Environment Canada and managed by TerraChoice Environmental Marketing Inc., which has been designed to help consumers and industry make more environmentally conscious decisions. The program began in 1988, and is now the most widely recognized and respected environmental certification program in North America.

What kind of products are EcoLogo certified?

The EcoLogo exists on a variety of products. Things like household and industrial cleaners, laundry detergent, paper and paper products, tissues and napkins, paint, fuels, office furniture, **printers**, flooring and other renovation and building supplies are all currently EcoLogo certified.

Where can you buy EcoLogo products?

EcoLogo products are sold by various retailers and other electronic stores across the country.

5.4. Sample Reporting

Sample Report - Green Desktop Technologies						
Ministry of Branch Reporting Period:						
Product Type/Class	Date of Installation	Power Settings Implemented	Total Number of Units	Number of Units Power Settings Implemented	Power Settings Not Implemented	Business Exclusions
Standard Desktop CPU	EXAMPLE 2009-09-09	EXAMPLE Monitor AC Power: 5 minutes	EXAMPLE 10	EXAMPLE 8	EXAMPLE 2	EXAMPLE Business Exclusion Category 2; 2 out of 10 devices
Monitor		Standby AC Power: 15 minutes	10	8	2	
		Monitor DC Power	10	10	0	
		Hibernation	10	10	0	
Performance Desktop		Monitor AC Power: 5 minutes				
		Standby AC Power: 15 minutes				
		Hibernation				
Power Desktop						
Workstation						
Standard Notebook						
Lightweight Notebook						
Performance Notebook						
Tablet PC Notebook						
Semi-Rugged Notebook						
Rugged Notebook						
19" Widescreen Monitor						
22" Widescreen Monitor						
24" Widescreen Monitor						
Integrated Desktop Computer						
Multifunctional Devices						
	EXAMPLE	EXAMPLE	EXAMPLE	EXAMPLE	EXAMPLE	EXAMPLE
B&W Personal MFD		Standby AC Power: 20 minutes				
		Hibernation				
B&W Workgroup MFD		Standby AC Power: 20 minutes				
		Hibernation				
B&W Departmental MFD						
B&W High Volume MFD						
Colour Personal MFD						
Colour Workgroup MFD						
Colour Departmental MFD						
Colour High Volume MFD						
Single Purpose Printers						
B&W Single Purpose Personal Printers						
B&W Single Purpose Workgroup Printers						
B&W Single Purpose Departmental Printers						
All-in-One Personal Desktop Printer						
Colour Single Purpose Workgroup Printer						
Colour Single Purpose Departmental Printer						
B&W Standalone Copiers						
Colour Standalone Copiers						
Facsimile Machines						
Mailing Equipment						