



# The PC Energy Report

REPORT BY THE NATIONAL ENERGY FOUNDATION AND 1E



# Introduction

1E, a leading provider of Windows management solutions, has developed a product which enables the centralised power management of corporate PCs – NightWatchman®. Because the energy savings potential of such software is enormous, I asked the National Energy Foundation (NEF) to look at what businesses currently do to save energy, what the government emissions targets are, and how much energy could be saved if UK business adopted NightWatchman®.

The PC is now a ubiquitous and essential tool in workplaces across the world, with an estimated 10 million office PCs in active service in the UK alone. In our experience, a lot of PCs users (especially in large organisations) don't shut down their PCs at the end of the day and don't have the hibernation setting turned on.

Computers still consume substantial amounts of energy when they are left on overnight or during weekends, even when they're not in use. This energy could be easily saved, helping businesses reduce costs and meet government emissions targets.

This report is a précis of the study undertaken by the National Energy Foundation, which combined research into worker behaviour with energy consumption data and detailed analysis. The results show that worker apathy and a lack of business systems are together wasting a large amount of energy. Fortunately, however, the introduction of some relatively simple measures can put this right so that business can play its part in reducing greenhouse gases and helping to meet the UK's emissions targets.



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# Key Findings

- Over 40% of the UK adult population regularly use a PC at work, and as many as one-sixth (18%) of these computers are never switched off at night or weekends, with a further seventh (13%) not switched off on some days each week.
- The resulting energy wastage is estimated to amount to 1.5 billion kWh (1.5TWh) of electricity per annum, at a cost in the region of £115m.
- Translated into emissions, this equates to 700,000 tonnes of CO<sub>2</sub> being produced as a result of workers not bothering to shut down their PCs.
- A product such as 1E's NightWatchman® that automatically shuts down networked PCs could immediately prevent this waste, reducing the UK's carbon emissions by almost 0.2MtC.
- In simple terms, this saving equates to the approximate annual CO<sub>2</sub> emissions of:
  - 200,000 small family cars, or
  - 120,000 4x4 vehicles, or
  - A typical gas-fired power station, or
  - A local authority area such as Chesterfield
- For a large office-based business employing 20,000 staff, the research suggests that roughly 2,500 PCs are unnecessarily left on overnight, every day. The direct saving of having all these PCs shut down by NightWatchman® is £175,000 in electricity, the equivalent of almost 1,000 tonnes of CO<sub>2</sub> per annum.
- In the public sector the government estimates that by replacing equipment with products meeting current best practice in energy efficiency, savings of about 40,000 tonnes of carbon per year could be made from IT equipment and lighting. Comparatively, the use of NightWatchman® across the estimated 2m government PCs would save 140,000 tonnes of carbon per year.
- If all UK businesses shut down their PCs when not in use, this would make a significant contribution to UK national emission targets. For example, the 700,000 tonnes of CO<sub>2</sub> saved would deliver:
  - 10% of the government's Climate Change Levy target, or
  - 10% of the carbon savings anticipated from voluntary reductions in the first stage of the Emissions Trading Scheme, or
  - As much as 40% of the energy efficiency measures being pursued by the Carbon Trust
- Two strategies are required to put an end to this avoidable waste of energy:
  - Make staff aware of the environmental costs of not shutting down their PC and make doing so a requirement of firms' best practice guidelines
  - Introduce centralised IT systems such as NightWatchman® that guarantee all PCs are shut down every night, even when individuals forget

# Context

The government's Climate Change Programme set targets for the reductions of CO<sub>2</sub> emissions by businesses.

Measure	Carbon Savings (MtC)*
Climate Change Levy, including CHP and renewables	2
Climate Change Agreements with energy intensive sectors	2.5
Energy Efficiency measures under the CCL package agreed with the Carbon Trust	0.5
Voluntary reductions targets through the first stage of the Emissions Trading Scheme	At least 2
Reform of the Building Regulations in England & Wales	1.3 (incl. domestic)
<b>Total</b>	<b>7.8 MtC</b>

\* Carbon tonnes millions

The UK government has admitted that much needs to be done if the UK is to meet its climate change target of a 20% reduction in CO<sub>2</sub> emissions by 2010. According to the November 2000 Royal Commission on Environmental Pollution report into 'Energy – the Changing Climate', 10% of final energy use in offices is devoted to computers and other information technology equipment.

More recently, Tim Yeo MP, chairman of the Parliamentary Environmental Audit Committee, reported that the offices sector has the fastest growing energy use apart from aviation. Office energy use has a particularly high carbon footprint and as memory and processing power increases, so electricity use is projected to have increased by 45% by 2020 over the preceding 30 years.

## Current Forecasts

The Market Transformation Programme (MTP) is the UK government's main initiative on reducing energy consumption in appliances, including Information and Communications Technology (ICT).

According to the MTP, non-domestic ICT equipment was responsible for over 7% (or 16.5 TWh) of non-domestic energy consumption in 2004 (excluding servers and data centres) and has increased by over 70% between 2000 and 2006.

On a business-as-usual scenario, non-domestic ICT consumption is expected to continue to grow by a further 40% between 2006 and 2020, given continuing increases in equipment functionality and networking capabilities.



# Analysis of Worker Behaviour

The consumer research of worker behaviour explored PC users' attitudes and actions regarding energy saving. The results have been analysed by NEF and the key findings are as follows:

- 69% of workers claim to switch off their office PC every night
- 18% admit that they never turn off their office PC
- 13% say they leave it on for at least one night per week

Those who don't shut down argue:

- It's because of the hassle (17.5%)
- I don't because no-one else does (10%)
- It's not important (10%)
- I forget in the rush to go home (8%)
- I don't want to lose my work (1.8%)

A massive 87.7% of those questioned said their boss had never asked or reminded them to shut down their PC before leaving work. Moreover, only 6% of those who regularly shut down their PC do so because they want to reduce carbon emissions.

## Hibernation

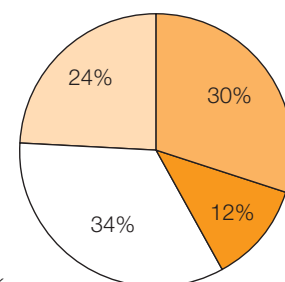
Some PC users believe it's not important to shut down a PC because most have an automatic power save setting installed\*. Unfortunately, the US Energy Star scheme under which many PCs are manufactured does not require computers to be shipped with power management settings enabled. The worker behaviour research backs this up:

- 30% say hibernation mode is activated on their office PC
- 12% say hibernation is not activated
- 35% don't know if hibernation is activated

### Hibernation Settings

Source: ICM Research

- YES – hibernation activated
- NO – hibernation not activated
- DON'T KNOW about settings
- DO NOT use a computer at work



With only 30% certain that power management is activated, the need for a centralised system to shut down PCs is apparent. What's more, these figures may be conservative as the government's Market Transformation Programme suggests that on average only 5-7% of desktops have power management enabled (although most laptops do, to help conserve battery power).

\* The automatic power save setting referred to here is the hibernation setting computers automatically instigate when it's enabled. We have knowingly omitted the effects of the stand-by mode that users may select when shutting down their PC.

# Business Savings

There is no such thing as a typical company, but for a large office-based company employing 20,000 staff, the savings could be significant.

- Assuming that one-sixth (18%) of employees fail to shut down their PCs
- Estimating 75% of employees to have exclusive access to a PC (there will be some hot-desking, or shared usage)
- There could be as many as 2,500 PCs left on each night unnecessarily
- Total costs:
  - £175,000 in electricity, based on average business rates
  - 1,000 tonnes of CO<sub>2</sub> per annum, equivalent to the annual emissions of 286 small family cars

Of course, no company will exactly meet these assumptions, and a company without an existing policy of switching off might realise much higher savings, whereas a tightly managed one may have less need to install centralised software like NightWatchman®.

To calculate how much energy your business could save please visit [www.turnitalloff.com](http://www.turnitalloff.com)

## Potential for Energy Saved in the UK

- The research revealed that 43.5% of workers use a computer at work
- According to National Statistics, there are 28.97 million people in work in the UK (July 2006)
- The estimated workplace PC population is 12.6 million (assuming exclusive use) or around 10 million\* units (allowing for shared use, hot-desking etc.)
- The research also found that over one-sixth (18%) of PCs are habitually left on overnight and could potentially benefit from a product such as NightWatchman®
- The full potential savings would then be in the order of 1.5TWh\*\* (1.5 billion kWh), with a value around £115 million annually
- In carbon dioxide terms this would equate to potential savings of 700,000 tonnes of CO<sub>2</sub> (equivalent to almost 0.2MtC)

As noted in the table on the previous page, total savings from the business sector under the Climate Change Programme are planned to be around 8.0MtC, so this single action could make a significant contribution (2.5% reduction) to total UK national targets.

\* This estimate is lower than some commentators use, in order to avoid over-stating the potential benefits. National Office of Statistics states on its website: "Although it is not possible to identify from the Labour Force Survey the number of people using computers in their work, it is possible to measure the numbers employed in the occupations most closely linked to Information Technology (IT)".

\*\* This is lower than the MTP estimates of total savings from better management, as the latter includes the effects of activating power management during normal working hours. We have also knowingly omitted the PCs that the market research revealed were left on for one to four nights per week, partly because a more precise answer may have indicated a defined reason for the omission – such as internal software updates, or sharing of computers by part-time staff. Nonetheless, in the first instance, there is no reason why a central PC management product should not be able to be used by a centralised IT department after the software updates had been installed.



# About

## About National Energy Foundation (NEF)

The National Energy Foundation (NEF) has worked for over 15 years to offer impartial advice to households and businesses about cost-effective ways of reducing their energy bills and carbon dioxide emissions, and has always supported responsible suppliers and installers, for example through its management of the Solar Trade Association. [www.nef.org.uk](http://www.nef.org.uk)



## About 1E

1E is a leading provider of software products and consultancy, focusing solely on Windows Management. 1E has been listed, for the third time, in the recent edition of The Sunday Times Microsoft Tech Track 100. As a Microsoft Gold Certified Partner, 1E creates software solutions and provides complete infrastructure management for businesses throughout the UK and EMEA. Key products include NightWatchman®, SMSWakeUp™ and DeskMon®. 1E is an international organisation with representatives in Europe, the United States of America and Australasia. It has over 750 enterprise customers in 37 countries and over four million licensed users of its software products worldwide. Customers include Microsoft, HSBC, British Airways, Department for Education and Skills, Marks & Spencer and SAB Miller. [www.1e.com](http://www.1e.com)



## About NightWatchman®

NightWatchman® from 1E reduces energy waste problems and protects data by closing all applications, safely avoiding potential user data loss and application error prior to shut down. It enables computers to be centrally turned off overnight, safely, remotely and at a specified time – and all the while providing powerful reports for senior management. It is easy to install and uses very little memory. NightWatchman® works in tandem with SMSWakeUp™, which repowers PCs from a centralised command to enable deployment of security patches or new applications out of office hours.

The PC energy report by 1E is printed on Cyclus® 100% recycled paper made from post consumer de-inked waste and produced using an ecologically sound process.





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