

# CARBON SAVING STARTS HERE

The 100 days of carbon clean up starts on 12 September 2007

CARBON OFF  
100 DAYS OF  
CARBON CLEAN UP



Supported by  
CARBON  
TRUST  
Making business sense  
of climate change

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SWITCH|OFF  
TURN|OFF  
MONEY|OFF  
LIFT|OFF

The aim of this guide is to help you to save carbon in your building. Containing different ideas for saving carbon, facts to illustrate how effective carbon saving can be and information on the promotional toolkit, the guide will help you to get started and help ensure your carbon saving initiatives stay innovative and fresh throughout the 100 days.

For further information keep visiting the campaign pages at [www.100days.co.uk](http://www.100days.co.uk).

### A word from our sponsors E.ON

As one of the leading energy suppliers to businesses, E.ON accept our responsibility to reduce CO<sub>2</sub> emissions. But we can't do this alone. We need the help of everyone out there including you. We are working in partnership with CIBSE to encourage everyone to make a difference and start making changes to the way they use energy. The benefits of getting this right are immense, but it's not straightforward and that's where we can help. The challenges are huge – but so are the benefits.

## SWITCHOFF

Switching off a monitor at night can save as much energy as it takes to toast 20 slices of bread

## Why save carbon?

The overwhelming consensus of scientific opinion is that mankind's release of large amounts of carbon has the effect of changing the global climate. The evidence for climate change is all around us as we experience milder winters, warmer summers, melting glaciers, changing sea temperatures and more extreme weather events.

To mitigate the effect of climate change, the UK is committed to cutting its carbon emissions by 60% by 2050. The UK has also set itself an ambitious target of cutting carbon emissions by 20% by 2010.

As half of carbon emissions arise from the operation of buildings, energy efficiency in buildings, at home and at work, is a priority to meet these targets. A reduced demand for energy would reduce carbon emissions, either directly through the reduced burning of fossil fuels such as natural gas or indirectly through the reduced use of electricity supplied from the National Grid.

The purpose of this welcome pack is to provide you with the communication material required to encourage carbon savings within your organisation.

## How you can save carbon

Carbon emissions are directly related to the use of energy (i.e. fossil fuels and electricity) in your organisation.

This energy is used for different purposes, which can be classified in five different areas:

### 01\_Lighting

Energy is used to provide light to the occupants, to ensure comfort as well as productivity.

### 02\_Stationery

Everything your organisation purchases and disposes of is the result of a manufacturing process that required energy.

### 03\_Office equipment

Monitors, PCs and laptops require energy to work and stay on standby.

### 04\_Small power

All other electrical appliances also use energy: microwaves, kettles, chargers, etc.

### 05\_Heating, cooling and ventilation

Building services use fossil fuels and electricity to mitigate the effects of heat loss and heat gains and provide heat in the winter and cooling in the summer.

In these five different areas, simple measures can reduce the need for energy and therefore reduce carbon emissions. These simple measures are the focus of this campaign. They are pragmatic and could all have a direct impact on carbon savings within the 100 days of the campaign.

These measures, or 'carbon saving tips', are provided in the form of stickers included in this welcome pack. A different colour has been attributed to each area of energy use. A few other measures are also included in order to allow the senior management to identify longer term commitments that would cut the organisation's CO<sub>2</sub> emissions further, should it wish to do so.

## SWITCHOFF

Recycling 1 tonne of paper (400 reams) saves 15 trees, 2.5 barrels of oil, 2.26m<sup>3</sup> of landfill space, 31,320 gallons of water, 27kg of air pollutants

## SWITCHOFF

Ensuring that your windows are shut when you leave in winter can save 15kg CO<sub>2</sub> per night

## SWITCHOFF

Switching off the lights at lunchtime in a cellular office every day throughout the year can save 20kg CO<sub>2</sub>

## SWITCHOFF

Switching off or unplugging the microwave when not in use will save 80kg CO<sub>2</sub> a year

## SWITCHON

Keeping the lights **switched on** in an empty meeting room overnight can waste enough energy to make 250 cups of tea

## SWITCHOFF

Properly calibrated lighting controls in a 15m-long corridor can save 250kg CO<sub>2</sub>



# 01 LIGHTING

## Carbon saving tips

- Switching off the lights of a room when unoccupied, especially overnight and at weekends
- Calibrating occupancy and daylight sensors
- Changing exterior lighting schedules throughout the year according to the season

## Longer term commitments

- Installing energy-efficient lighting systems
- Using automatic controls (i.e. occupancy-, daylight- or time-based) to turn lights off or dim lights in daylight spaces

### On

Keeping the lights switched on in an empty meeting room overnight can waste enough energy to make 250 cups of tea.

### Off

Switching off the lights overnight in an empty meeting room throughout the year can save 440kg CO<sub>2</sub>.

### On

Leaving the lights on in public and circulation areas wastes energy.

### Off

Properly calibrated lighting controls in a 15m-long corridor can save 250kg CO<sub>2</sub> per year.



## 02 STATIONERY

### Carbon saving tips

- Recycling paper
- Setting double-sided copying feature as default on the copier

### Longer term commitments

- Purchasing recycled stationery (e.g. paper, envelopes, etc.)

#### Off

Currently, only 15% of paper used in UK offices is actually recycled.

#### Off

Recycling 1 tonne of paper (400 reams) saves the following: 15 trees, 2.5 barrels of oil, 4,150 kWh of electricity (equivalent to providing heat and hot water for a home for a year), 2.26m<sup>3</sup> of landfill space, 31,320 gallons of water, 27kg of air pollutants.

#### On

A standard photocopier uses 1,000 reams of paper per year.

#### Off

Setting double-sided copying feature as default on a copier setting can save 1.5t CO<sub>2</sub> per year.



## 03 OFFICE EQUIPMENT

### Carbon saving tips

- Switching off the computers at night and during holidays
- Switching off the monitors at night and during holidays
- Activating sleep settings on computers
- Activating sleep settings on monitors (avoid graphical screen savers)
- Switching off photocopiers at night and weekends

### Longer term commitments

- Purchasing office equipment with energy efficiency logos (e.g. Energy Efficiency Recommended or Energy Star)
- Purchasing equipment with a limited standby energy consumption
- Purchasing laptops rather than desktops
- Replacing traditional CRT monitors with modern flat LCD monitors

#### On

A monitor consumes 3 times more energy when it is switched on than when it is on standby.

#### Off

Implementing a monitor management mode on a computer can save 170kg CO<sub>2</sub> per year.

#### Off

If all employees of a 4,000-people-large company switch off their monitors during their holidays and at weekends, it can save enough energy to provide heating for 100 houses throughout the winter.

#### Off

Switching off a photocopier at night and weekends (instead of leaving it on standby) can save 20kg CO<sub>2</sub> per month.



## 04 SMALL POWER

### Carbon saving tips

- Unplugging microwaves when not in use
- Unplugging chargers (e.g. mobile phone charger) and power supplies when not charging
- Fill the kettle with the appropriate quantity of water

### Longer term commitments

- Purchasing microwaves with no digital clock

**On**  
Switching off (or unplugging) the microwave when not in use will save 80kg CO<sub>2</sub> per year.

**Off**  
Switching off or unplugging the microwave has no costs and can save £10 per microwave per year.

**On**  
Standby power accounts for as much as 10% of power consumption.

**Off**  
If all employees of a small firm (c. 20 people) commit to plug in their chargers only when charging their phones, they will save 1 tonne of CO<sub>2</sub> per year.

## SWITCHON

Cooling requirements account for 10% of an office's energy consumption

## SWITCHOFF

Installing shading devices or window films on windows can reduce the office's overall carbon dioxide emissions by more than 2%

# 05 HEATING, COOLING AND VENTILATION

## Carbon saving tips

- Ensuring that windows are shut at night during winter
- Reducing the setting of the thermostat by 1°C in winter
- Increasing the setting of the thermostat by 1°C in summer
- Turning off the humidity control if it is not necessary
- Adjusting operating schedules to ensure equipment is on only when necessary

### Off

A 1°C reduction in the heating setting of the thermostat could reduce energy consumption by as much as 10%, without any significant reduction in comfort.

### Off

A 1°C reduction in the heating setting of the thermostat has no costs and could reduce energy bills by as much 10%.

### On

Cooling requirements account for 10% of an office's energy consumption.

### Off

Installing shading devices or window films on windows can reduce the office's overall carbon dioxide emissions by more than 2%.

## Longer term commitments

- Locating air leaks in the windows, doors, walls and roofs and sealing them with appropriate materials and techniques
- Installing shading devices or window films to reduce cooling load
- Replacing old windows with new double- or triple-glazed system with spectrally selective glass
- Implementing automatic controls (occupancy- or time-based) to turn ventilation off or reduce ventilation rates during unoccupied periods
- Periodically examining building equipment systems and maintenance procedures as compared to design intent and current operational needs
- Installing variable speed drives (VSDs) on pumps and fans
- Upgrading the boiler(s)
- Replacing the chillers with new, more energy-efficient, non CFC models
- Implementing a solar water heating system
- When involved in the design of a new office building, ensuring that it incorporates passive (e.g. natural ventilation strategy) and active energy-efficient measures

SWITCH|OFF  
THE LIGHTS

TURN|OFF  
THE PHOTOCOPIER

LIFT|OFF  
TAKE THE STAIRS

MONEY|OFF  
THE ELECTRICITY BILL

### Who can save carbon?

#### Everyone!

The above measures concern the whole organisation: some of the measures will have to be implemented by the employees, some of them by the management. And obviously what is crucial is that the campaign receives the clear backing from the senior management and that it is coordinated by a single person: the Carbon Champion.

This welcome pack provides stickers and posters to promote carbon saving in each of these areas. Obviously the aim of the 100 days campaign is to save resources therefore we have printed limited numbers of stickers and posters. However, the artwork for these is contained on the CD for you to use as appropriate.

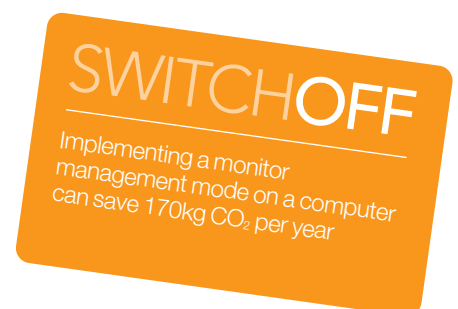
These stickers and posters are aimed at members of staff, they cover all the carbon saving tips listed and all energy usage types detailed above. A different colour is associated with each area of energy use. There is a proposed timeline enclosed with this document which suggests how the posters and stickers can be used.

### When can you start saving carbon?

#### Now!

The advantage of the carbon clean up campaign is that it is meant to be a simple, pragmatic and easy-to-implement campaign, which can give results within 100 days.

An implementation programme is suggested below. It is not the mandatory path towards the implementation of the carbon saving measures but following this programme is a means to ensure that the campaign is monitored, and that messages to staff members are not too complicated.



## General saving suggestions for successful carbon saving

- It's easy to tell how much energy and carbon you are saving, following on from your action pack you will receive a complimentary copy of TM22 Energy Assessment and Reporting Methodology, this is the CIBSE guide for measuring carbon emissions, also contained is some information on how to use the guide.
- It is suggested to leave two weeks between the distribution of stickers regarding two different areas of energy use (e.g. lighting and office equipment). That would allow staff members to understand each carbon saving tip and experience it. More generally, it will give them an understanding of the variety of little steps that help to mitigate climate change, and how easy these little steps are to take.
- There is a number of different ways to reinforce the message conveyed by the stickers: sending e-mails, SMS or setting a carbon saving tip as the background image on all computers are among the tools the Carbon Champion could use.

## How can you calculate your carbon emissions?

**Using your copy of TM22 and with a little help from your energy supplier, it is very easy! You simply type in the energy use for each fuel and the Carbon Dioxide calculation is worked out for you.**

Your energy supplier will have to provide you with your energy consumption. It will generally be split up into one or two categories: electricity only or electricity and fossil fuel (e.g. natural gas, oil, etc.) and will be expressed in kWh.

The accuracy of your energy consumption data will depend on your contract and your supplier but the more detailed it is (in terms of time as well as area of energy use) the better it is for you: you will have a better understanding of the impact of the carbon saving tips.

Once you have your energy consumption data, it is very easy to calculate your carbon emissions, you just have to multiply the energy consumption by the following CO<sub>2</sub> emission factors and add them all.

This is all done for you if you use the TM22 Simple Building Assessment option.

### Carbon dioxide emission factors

- Natural Gas: 0.194 CO<sub>2</sub>/kWh
- LPG: 0.235kg CO<sub>2</sub>/kWh
- Oil: 0.265kg CO<sub>2</sub>/kWh
- Biomass: 0.025 CO<sub>2</sub>/kWh
- Electricity: 0.422 CO<sub>2</sub>/kWh

For instance, let us assume that you have consumed, in March 2006:

- 14,500kWh of natural gas, and
- 8,900 kWh of electricity.

Your CO<sub>2</sub> emissions for March are:  
(14,500 x 0.194) + (8,900 x 0.422)  
**= 5,669kg CO<sub>2</sub>**

TM22 and guidelines for its usage will be sent to you shortly.

MORE|OFF  
BETTER|OFF  
BEST|OFF  
START|OFF

Good luck with your carbon saving, for more inspiration, ideas and initiatives look at [www.100days.co.uk](http://www.100days.co.uk), we will be updating this throughout the 100 days with carbon saving news, initiatives, events and ideas.

Remember to email [100dayscampaign@cibse.org](mailto:100dayscampaign@cibse.org) to tell us about how you are saving carbon and have your efforts promoted on the campaign website.



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