Office based companies

Maximising energy savings in an office environment

Contents

Preface

Reducing energy use makes perfect business sense; it saves money, enhances corporate reputation and helps everyone in the fight against climate change.

The Carbon Trust provides simple, effective advice to help businesses take action to reduce carbon emissions, and the simplest way to do this is to use energy more efficiently.

This overview for office based companies introduces the main energy saving opportunities for businesses and demonstrates how simple actions save energy, cut costs and increase productivity.

Introduction

Energy is one of the largest controllable overheads in office buildings which means there are many opportunities to make savings. Reducing energy consumption not only saves money but improves working conditions which can increase staff productivity. Furthermore, the environment will benefit from reductions in energy use and carbon emissions which enhances corporate reputation.

Using the simple and cost effective measures detailed in this guide could reduce your energy bills by as much as 20%

Who is this publication for?

Managers of office based companies – from small businesses to multinational organisations operating across multiple sites – can benefit from the advice in this publication. Focusing on low and no-cost measures which will have the quickest payback, this overview demonstrates the best energy saving opportunities applicable to most offices and will help managers to:

- Assess the potential for energy savings and indicate key areas for improvement

- Raise awareness of energy conservation amongst staff and motivate them to reduce waste

- Appraise the overall energy performance of an office.

In some sectors, businesses routinely analyse energy use and employ experts to monitor performance. Office based companies usually do not consider this as an option, and energy consumption often takes a low priority on the business agenda.

However, there are big savings to be made and opportunities for staff to contribute to improving their working environment.

Energy consumption in office buildings

Businesses which are based in an office environment are diverse, yet there are several key areas where energy is commonly wasted. Figure 1 shows the average energy consumption, by end use, in a typical air-conditioned office. The end uses where the greatest savings can be made are in: lighting, heating, ventilation, air conditioning and office equipment.

Note that proportions of energy use will vary according to occupancy levels and whether the building has air conditioning or mechanical cooling installed. In an office without cooling, the greatest energy user is heating.

In each of the end uses identified in the chart, there are three main opportunities to save energy:

Switching off – All energy consuming equipment should be switched off when not required. This can be done by staff, by timer switches or by adjusting building control systems and need not cost any money.

Maintenance – A number of energy efficiency measures can be carried out as part of routine maintenance procedures for no extra cost.

Refurbishment/replacement – Energy saving measures taken when planning building refurbishment or replacement of equipment can be extremely cost effective. When completing office refurbishments, businesses should ensure that new developments adhere to sustainable guidelines and good practice. Assessment schemes such as **SKA rating** offer the chance for businesses to do this, through certifying the sustainability of new developments.
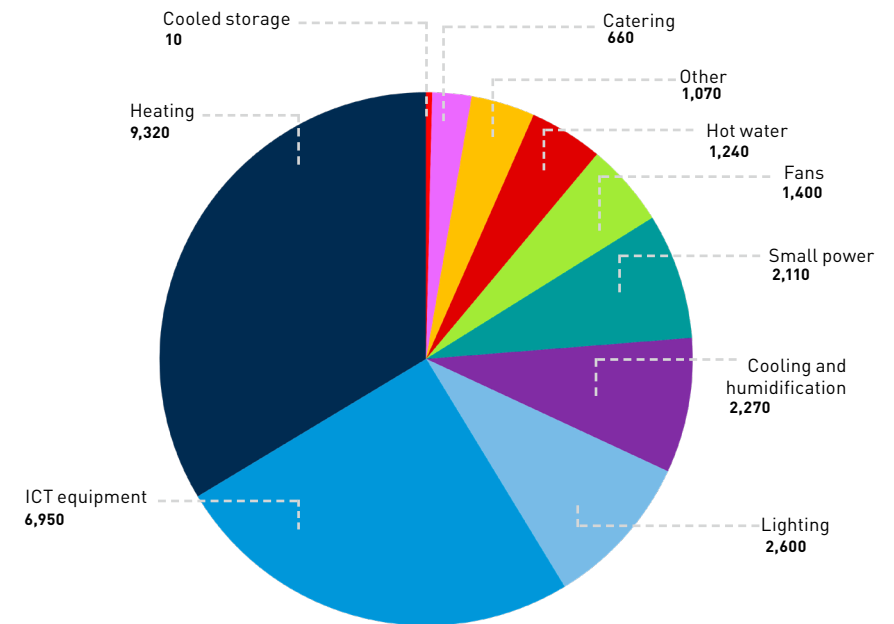

Figure 1 Breakdown of energy use within a typical air-conditioned office
Source: (Building Energy Efficiency Survey 2016)

Opportunities for energy saving

There are many low and no-cost solutions you can use to reduce consumption in the main areas of energy use, without adversely affecting the working environment.

Lighting

Lighting is a significant energy cost in an office and good savings can be achieved through careful consideration of equipment, maintenance and staff habits. There are many simple and inexpensive ways to reduce the energy consumption and costs associated with lighting without compromising health, safety or comfort levels.

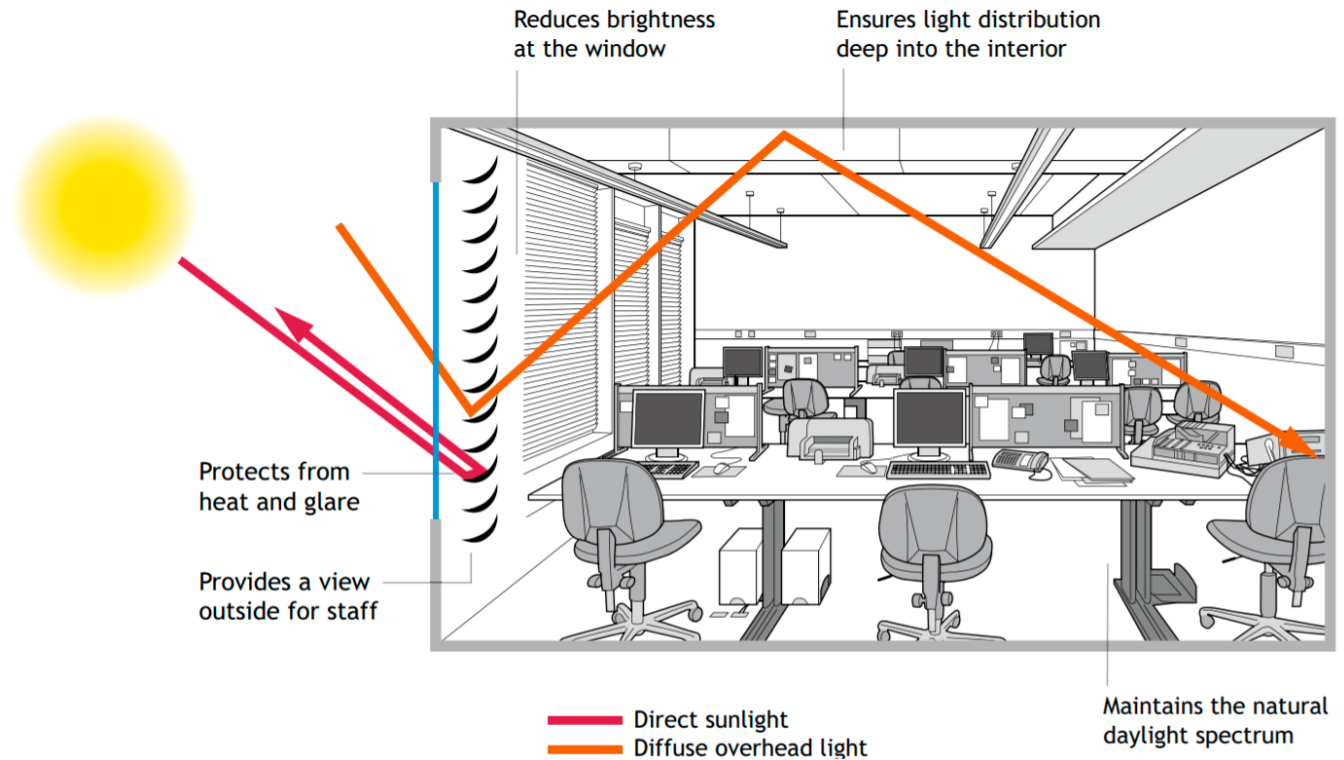### 'Switch off' policy – involve staff and increase awareness

In many offices, especially open plan ones, lights often remain on much longer than necessary. Staff at all levels should be involved in making savings – appoint someone to take responsibility for turning the lights off. Use emails, intranets and staff meetings to remind people, and place stickers above light switches and posters around the building. Encourage staff to report failing lights and replace them immediately. This will help maintain the desired light output and in turn, provide a safer working environment.
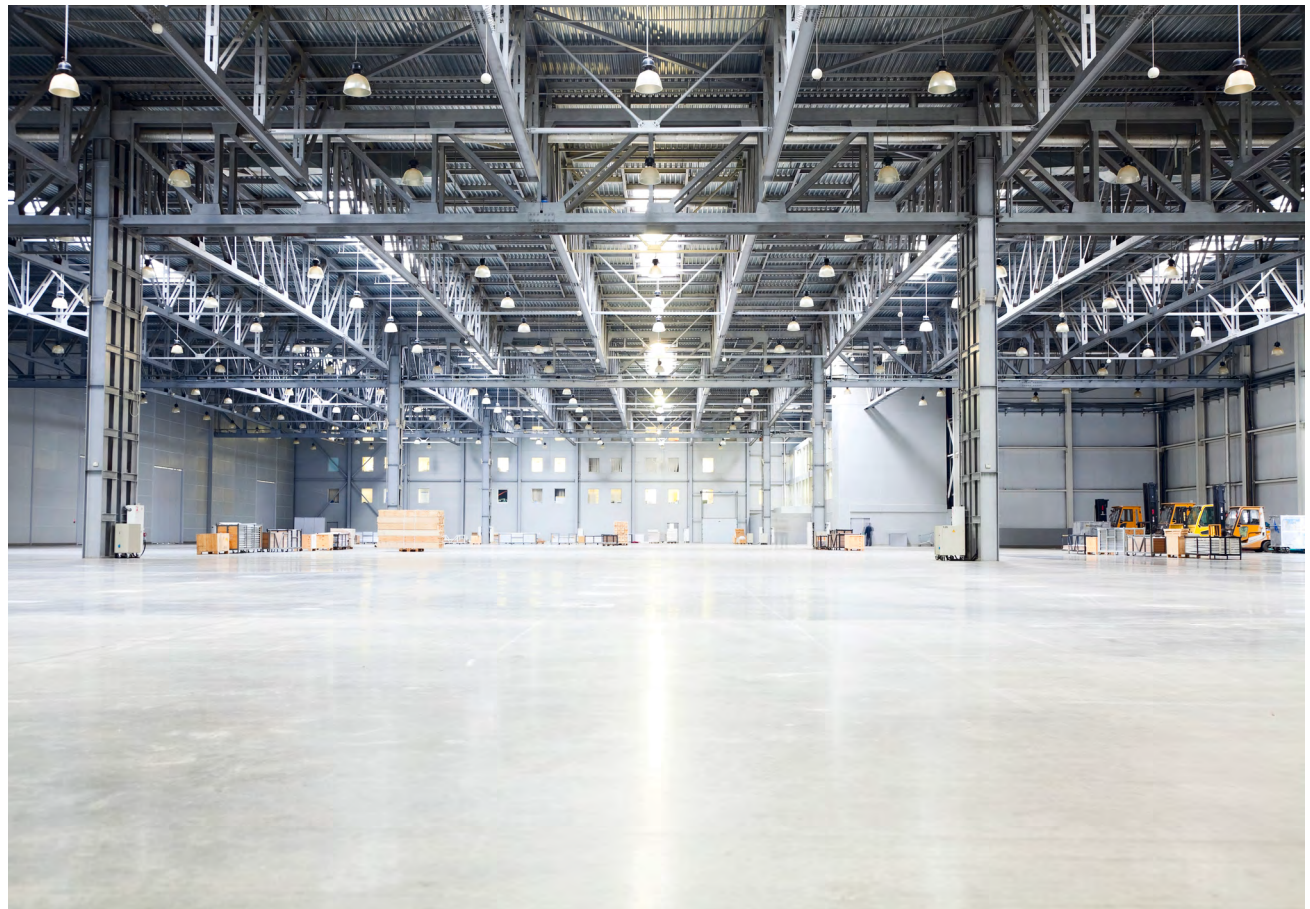
Avoid blinds down and lights on

A familiar scene in offices is the use of blinds to control glare when it is bright outside. Where possible, encourage staff to adjust blinds so they make the most of natural light while cutting the glare.

One effective way of achieving this is to use daylight blinds. These enable the natural light to enter the space by re-directing the light onto the ceiling, thereby allowing the 'free' daylight to enter the space and alleviate any discomfort felt by the occupants from glare. Many daylight blinds also have perforated blades to enable a view outside, which is often appreciated by staff.

Reduces brightness at the window

Ensures light distribution deep into the interior

Protects from heat and glare

Provides a view outside for staff

Maintains the natural daylight spectrum

Direct sunlight
Diffuse overhead light

Did you know?

Without regular maintenance, light levels can fall by up to 30% in 2-3 years. Establishing a basic lighting maintenance programme can reduce costs by up to 15% as well as improving office appearance.

Label light switches

Light switches should be clearly labelled to help staff to select only those lights they need. Lights in unoccupied areas should be switched off but remember to consider health and safety implications, particularly in corridors and stairwells.

Maintenance

- Lighting is essential for providing a pleasant and productive working environment so it is important to keep windows, skylights and light fittings clean.

- Replace old dim lamps and keep controls in good working order by ensuring timers are set to match occupancy hours and that occupancy sensors are clean.

- Replace blackened, flickering, dim or failed fluorescent rubes with retrofit LED tubes. Effective LED fittings are now available and have been developed across most lighting technologies.

Install low-energy lighting

Light Emitting Diodes (LEDs) were developed for use in electronics over 60 years ago, and in the last ten years have become the light source of choice, providing illumination at a fraction of the cost of legacy sources.

LEDs have the highest efficacy and lamp life of all widely used lighting types, are easy to control and have no warm up period:
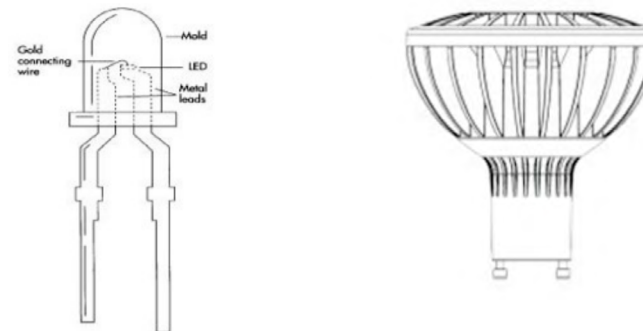
For more information on the types of LED fittings that are appropriate for office environments, please see the Carbon Trust lighting guide.

The benefits of switching to LED
The relative performance of LED fittings in comparison to existing lighting sources

Lamp Type	Lamp Life	Colour Temperature	Colour Rendering	Efficacy*
Standard Incandescent	2,000 - 3,000 Hours	2,500 – 3,000K	100 Ra	5-20 lm/W
Tungsten Halogen	2,000 Hours	3,200K	100 Ra	15-24 lm/W
Tubular Fluorescent	10,000 – 12,000 Hours	2,700 - 6,500K	>85 Ra	60-105 lm/W
Compact Fluorescent	6,000 – 15,000 Hours	2,700 - 4000K	>85 Ra	45 -80 lm /W
High Pressure Sodium	12,000 -30,000 Hours	2,000 – 2,700K	25-85 Ra	25-85 lm/W
Metal Halide	6,000 -20,000 Hours	3,000-6,000K	65-93 Ra	50-113 lm/W
LED	**25,000 -75,000+**	**2,700 – 8,000K**	**65-97 Ra**	**70-150+lm/W**

*For a description of efficacy measures, please refer to the Carbon Trust lighting guide.

Occupancy sensors

An office where staff or cleaners work late may benefit from occupancy sensors. These help to ensure lights only operate when there is somebody there to require them. Sensors can achieve savings of up to 30% on lighting costs and are especially useful in:

- storerooms
- toilets
- meeting rooms

If lighting systems in general office areas are zoned then sensors can be used, however, if the zoning is not sufficient people may not be moving frequently enough to be detected.

Daylight sensors

Light sensors or 'photocells' can be used to control artificial lighting when there is sufficient natural daylight. As daylight hours vary throughout the year, sensors help to provide closer control and thus, substantial savings. They can be particularly useful externally for lighting car parks or signage and can often pay back their costs in less than a year. Daylight and occupancy controls are sometimes combined, and can also incorporate time switches.

Switching in parallel

Consider wiring light switches to control lights that are parallel to windows. This enables staff to make the most of natural daylight without leaving those spaces further away from the windows in shadow. As a result, less lighting is used which reduces energy consumption. This also cuts additional heat generated by the lights meaning that less cooling is required.

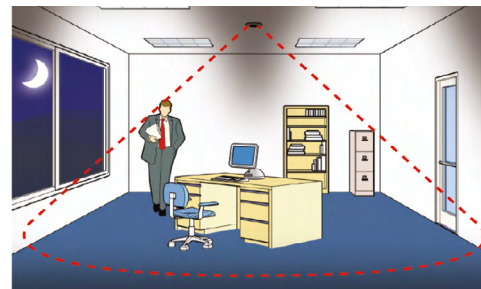Always consult a qualified lighting technician before upgrading lighting systems.

Figure 3 Use of an occupancy sensor with a photocell override to give the option of keeping lights off on bright days
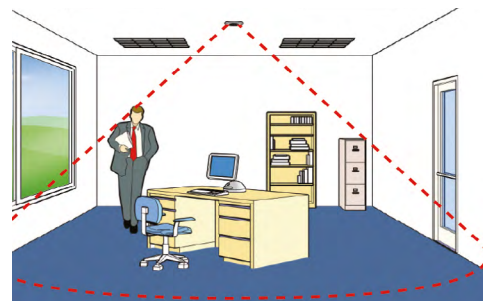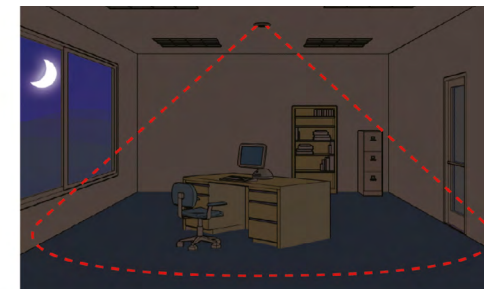

Enough daylight, occupied – lighting OFF
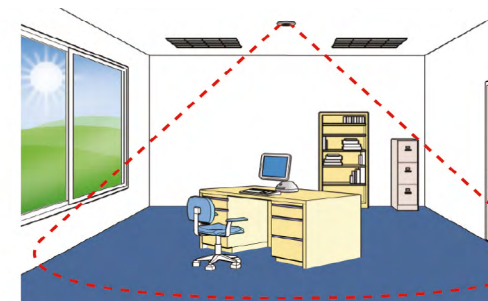
Enough daylight, unoccupied – lighting OFF

Night, occupied – lighting ON

Night, unoccupied – lighting OFF

Illustrations supplied courtesy of Danlers Limited.

Myth

It is better to leave fluorescent lights on as starting them up wastes more energy than if they remain permanently switched on.

False
Fluorescent tubes use only a few seconds worth of power in start up – therefore, it is always better to switch them off when leaving a room.

Heating

Heating accounts for 20-40% of energy costs in a typical office environment, which means that there are big opportunities to make savings. It is possible to minimise the cost of heating, regardless of which system is in place. Some businesses have shaved up to a third off their heating costs through the implementation of some simple energy saving measures.

Obtain feedback from staff

Office workers usually have strong views about the internal temperature. This is valuable information, so encourage staff to report areas that are too hot, cold or draughty. Look for trends and investigate problem areas. There may be maintenance issues which, if addressed, will make workers less likely to bring in portable electric heaters and fans or to open windows whilst heating or cooling is on. It will also discourage staff from tampering with thermostats and may resolve disagreements.

Consider comfort and temperatures

Most people feel comfortable in a temperature range of between 18-26ºC, provided the temperature is in line with outdoor conditions. If it is cold outside, staff and visitors will typically be wearing warmer clothing, so ensure temperatures are set accordingly. Encourage staff to dress for the conditions and ensure workspaces are shielded from draughts and direct sunlight. These are no-cost solutions that save money and help maintain comfort.

The recommended temperature for offices and sedentary work is 21–23ºC. However, when setting temperatures, it may be sufficient to to set thermostats to 19-20ºC. This is because internal heat gains from equipment and lighting will bring the temperature up to a level that most workers find comfortable. For more information on setting temperatures, see the top tip on page 14.
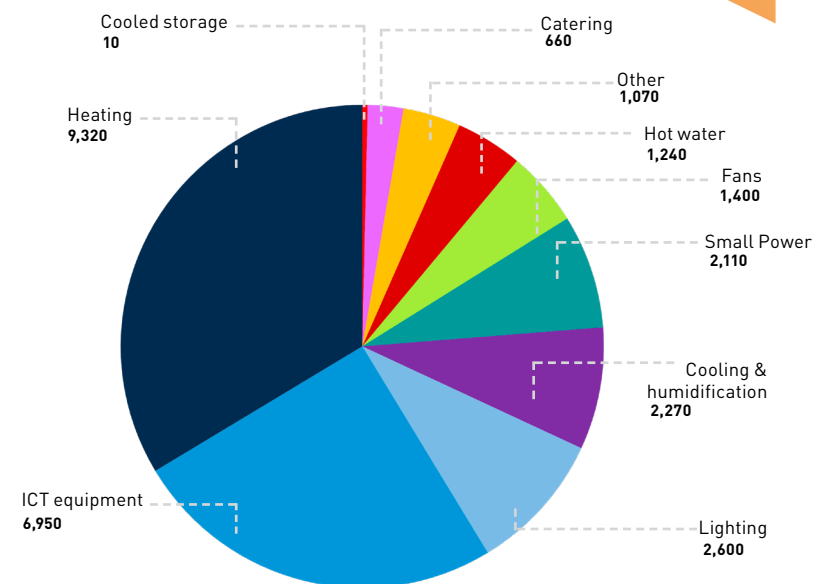
Match working hours

Check that the system operating hours match the times when heating, ventilation and cooling are required, as needs vary throughout the day and in different seasons. Observe the working patterns and make adjustments to the controls.

A good first step is to use inexpensive time controls to automatically switch off the heating at the end of a typical work day. See the Controlling systems section, on the next page, for more ideas.

Did you know?

Reducing heating temperatures by just 1ºC can cut fuel consumption by 8%. In a large office this can save enough energy to print over 40 million sheets of A4 paper.

Cooled storage **10**
Catering **660**
Other **1,070**
Hot water **1,240**
Fans **1,400**
Small Power **2,110**
Heating **9,320**
Cooling & humidification **2,270**
Lighting **2,600**
ICT equipment **6,950**

Figure 4 Breakdown of energy use within a typical air-conditioned office Source: (Building Energy Efficiency Survey 2016)

Investing in energy efficient equipment makes sound business and environmental sense.

Controlling systems

Many businesses find that controlling temperature is difficult. Some signs of poor control include:

- Heating being on when the building is unoccupied, because timers are not set correctly

- Heating being on too high or not high enough, because the thermostat is located where sunlight, radiators or office equipment affect its reading.

Often, simple adjustments to the location and setting of controls can reduce costs without affecting staff comfort.

Controls can affect the switching time, heating temperature or the system functioning, and range from simple to the very complex. It is recommended not to rely solely on controls, but to ensure settings are reviewed every month or so to check that they are correct for the office usage and the season.

Many systems function inefficiently because someone made a short term adjustment and then forgot about it.

For more information, see the Heating control technology guide (CTG002), available from the Carbon Trust.

Keep systems clear and unobstructed

Radiators, fans and ducts should be clear of furniture and other obstructions. Keep fans and ducts clean and replace any filters at manufacturers' recommended intervals.

Maintain boilers and pipe work

Have boilers serviced regularly by a reputable firm. Gas-fired boilers should be serviced once a year; oil boilers twice a year. A regularly serviced boiler can save as much as 10% on annual heating costs.

Boilers, hot water tanks, pipes and valves should be insulated to prevent heat escaping. Payback can usually be expected within a few months of installation, with additional savings in subsequent years.

There are many more savings to be found by optimising boilers.

Upgrade controls

Heating system control can be problematic with old, inefficient time controls. Upgrades are well worth implementing as they can pay for themselves very quickly through energy and cost savings.

Technology has made it possible for heating systems to adjust themselves in line with the changeable UK climate. A compensator is a form of control for heating systems that automatically regulates the heating temperature based on the weather. An optimum start controller learns how quickly the building reaches the desired temperature and brings the heating on at the optimum time prior to building occupancy, again depending on the weather.

These types of controls can save hundreds or thousands of pounds and will pay back their investment in just a couple of years. Consult a qualified heating technician to discuss the range of options available.

Consider a Building Energy Management System (BMS or BEMS)

A BEMS is based on a network of controllers and offers closer control and monitoring of building services performance, including heating, ventilation and air conditioning. This is shown on a computer screen in real time and allows settings to be changed quickly and easily. BEMS can reduce total energy costs by 10% or more so they are well worth considering in medium to large offices.

For more detailed heating system advice, take a look at the Carbon Trust's HVAC guide.

Ventilation and Air Conditioning

Ventilation using fans and ducting and the use of cooling, including air conditioning is becoming commonplace due to an increase in heat-gains from lighting, staff and office equipment. The more heat that is generated, the harder the ventilation and cooling systems have to work to maintain the desired temperature.

Reduce the need

It takes energy to heat and cool the air inside an office. If that air is removed via a ventilation system, the money used to heat and cool it is also lost. The lost air then has to be replaced with the same amount of air from outside which needs to be heated or cooled to match inside temperatures – and that also costs money.

Optimising ventilation will reduce unnecessary expenditure on heating and comfort cooling.

Take advantage of natural ventilation and free cooling to halve energy costs

As simple as it sounds, natural ventilation and cooling relies on natural air flow between openings on opposite sides of a room or building – or rising warm air being replaced with cooler air sucked in through windows or vents. It may be possible to use windows and doors to provide good levels of natural ventilation, allowing mechanical ventilation to be switched off or turned down to save money. When opening vents, doors and windows, always consider security implications.
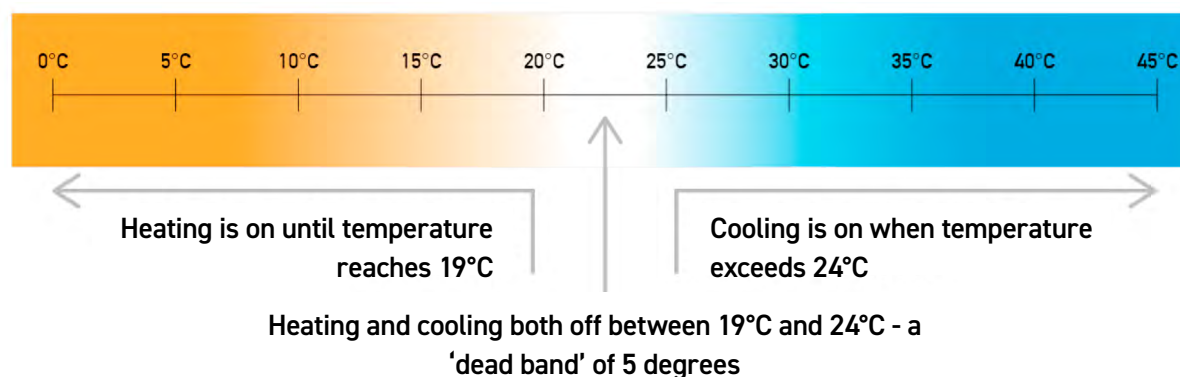
Stay cool at night

Use the lower external temperatures at night to cool the building ready for the following day, thus delaying the switching on of air conditioning. This is known as 'night cooling'. Information on this topic can be found in the Carbon Trust's publication, Heating ventilation and air conditioning (CTV046).

Top tip

Don't let heating and cooling operate at the same time.

This can be avoided by setting a temperature control 'dead band' – a wide gap between the temperatures at which heating and cooling cut in (see figure 4). In an office environment, the heating should switch off when a temperature of 19ºC has been reached and cooling should not come on until the temperature exceeds 24ºC.

Figure 4 'Dead band' control providing recommended temperatures

0°C   5°C   10°C   15°C   20°C   25°C   30°C   35°C   40°C   45°C

Heating is on until temperature reaches 19°C

Cooling is on when temperature exceeds 24°C

Heating and cooling both off between 19°C and 24°C - a 'dead band' of 5 degrees

Maintain system components to ensure efficiency

Energy consumption can increase by up to 60% if regular maintenance is not undertaken. Dirty or faulty fans, air ducts and components directly affect system efficiency and will increase running costs and risk of breakdown. The performance of the whole system should be reviewed annually and replacement parts ordered as necessary. Always consult a maintenance technician.

The need for mechanical cooling will reduce if you control your heat gains – which can come from the sun or from lighting and equipment

Consider fitting variable speed drives (VSDs)

In an office ventilation system, fans often do not need to operate at full speed all of the time and VSDs can help to reduce costs by enabling the output speed of the fans to match requirements at different times of the day. This reduction in speed saves energy and there are corresponding heating and cooling cost savings too. The Carbon Trust can provide further information and advice on VSDs.

Recover heat from exhaust air

It costs money to heat the air in a building – so why not recover some of that energy? The simplest way to recover the heat from exhaust air is to simply re-circulate a proportion of the exhaust air along with fresh air. More advanced solutions are available which allow the heat from the exhaust air to be used to pre-treat fresh incoming air. This is a worthwhile technology, but expert advice should be sought.

Consider cooling options

Full air conditioning is not usually required in UK offices, and should only be considered when careful control of humidity is also required. Cheaper cooling options are available and should be investigated before the decision to install full air conditioning is made. Using natural ventilation or night cooling techniques can reduce or eliminate the need for mechanical air conditioning, or there are options such as mixed-mode systems which can reduce energy use.

Myth

Leaving air conditioning on overnight reduces energy costs as the system stays at the required temperature.

False
The result is a much higher energy consumption than necessary.

Remedy
An office only needs a fraction of overnight energy to reach adequate temperatures for the start of the day. Air conditioning may not be needed at all at this time if 'night cooling' is used (see page 14).

Office equipment

Office equipment is the fastest growing energy user in the business world; the electricity it consumes represents 15% of total energy consumption in offices. As most equipment is often left on when not being used, there are opportunities to make significant savings.

Turn off and power down

Switch off all equipment when not in use and enable power down modes. As well as clearly reducing the energy consumption, it also reduces the heat produced by equipment which in turn, lowers cooling costs. Equipment lifespan will also be extended and maintenance costs and risk of breakdown should be reduced.

To take immediate steps and for some specific instructions, see the Carbon Trust's office energy efficiency guides here.

Use the most appropriate equipment for the task

For internal printing, use a black and white printer. Set default printing to double-sided (duplex) and try to print in batches where possible to allow the machine to spend more time in standby than idling mode. Take care though; machines with a very deep-sleep
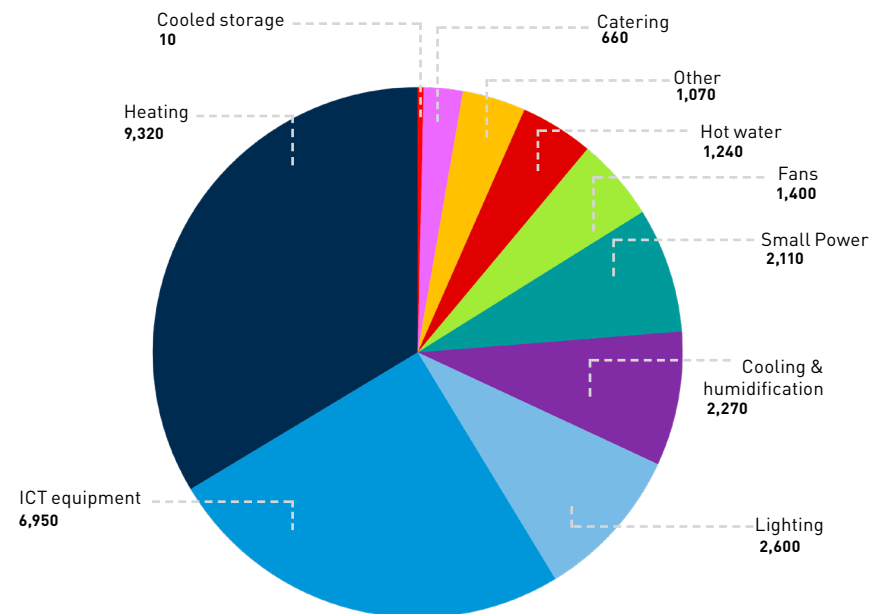
mode can take longer to reach the right temperature which can result in staff disabling the standby feature, thereby missing out on savings.

Minimise cooling loads

Place heat emitting equipment such as printers and photocopiers in a separate, naturally-ventilated area with good airflow. This helps minimise air conditioning costs and excessive noise. Colder areas on the north side of buildings are ideal.

Did you know?

A computer and monitor left on 24 hours a day will cost around £45 a year. Switching them off out of hours and enabling standby features could reduce this to less than £10 a year and prolong the lifespan of equipment.

Cooled storage 10
Catering 660
Other 1,070
Hot water 1,240
Fans 1,400
Small Power 2,110
Cooling & humidification 2,270
Lighting 2,600
ICT equipment 6,950
Heating 9,320

Figure 5 Breakdown of energy use within a typical air-conditioned office Source: (Building Energy Efficiency Survey 2016)

Maintain equipment for optimum performance

Printers and copiers should be checked and cleaned regularly. Keep parts clean and free of dust and blockages and follow manufacturers' advice on servicing schedules in order to maintain optimum efficiency.

Raise awareness

Most workers in this sector see equipment as a means to complete their jobs and do not put too much thought into the expense of running it. However it is an area that staff can affect directly, so awareness and training is very important. Staff should know about switch-off policies and be informed of the savings and improvements to working conditions they can achieve by taking responsibility.

The Carbon Trust's free publication, Creating an awareness campaign (CTG001), outlines an approach to making energy saving a priority for staff, with top tips and resources.

Importance of behavioral change

Encouraging thoughtful behaviours within an office environment can contribute towards good cost and energy savings. Areas to highlight include the running costs of lighting, computers and air conditioning units. When attempting to shift behaviours within an office environment, it is important to highlight the benefits to the employee as well as the wider company benefits.

Install plug-in seven-day timers

These can be bought for a few pounds from most DIY stores and will help to reduce the likelihood of machines being left on out of hours. Plug in energy monitors offer a cheap alternative to managing energy efficiency, and can be used on a multitude of devices to track their energy usage. This can be useful to determine how much can be saved from e.g. turning down the brightness of monitors, but do take note of health and safety factors. Timers can also be fitted to communal equipment such as printers, photocopiers and even vending machines, although it is advisable to check with your supplier first about how this may affect your service agreement.

Energy efficient purchasing

Choose equipment that caters for current business needs and predicted requirements only. Do not over specify – high spec PCs with large screens and fast processors use more energy; ask how many of your staff really need them. Always take running costs into account as well as initial purchase cost.

Ensure all new equipment has energy saving features meeting at least 'ENERGY STAR' performance specifications. ENERGY STAR products have become widely recognised by consumers for adhering to stringent efficiency criteria, and can therefore present substantial energy saving opportunities.

Consider upgrading existing PCs

Some computers can simply be upgraded with newer, more energy efficient components. Look into this option before purchasing new machines. Alternatively, laptops tend to be more efficient than desktops and easier to use within an office environment.

Did you know?

- Office equipment left on standby during bank holidays and weekends could cost small and medium sized office based businesses nearly £6000 over the course of a year

- The energy bill of a typical office based company could cost over 65% more than that of an equivalent energy efficient office.

Building fabric

Improving an office's building fabric makes good sense for many reasons:

- Better temperature control – it can lower ventilation costs and prevent overheating

- Improved productivity – staff morale and output can be enhanced by providing a more comfortable working environment through reducing draughts, solar glare, overheating and noise

- Lower capital expenditure – a more efficient, well-insulated office needs smaller heating and cooling systems

- Good investment – better insulation can increase an office's value and attractiveness.

Roof
22%

Windows
26%

Walls
9%

Floor
8%

Ventilation and
air infiltration
35%

Typically, two thirds of heat in an office is lost through the building fabric, with the remaining third being lost through air infiltration and ventilation
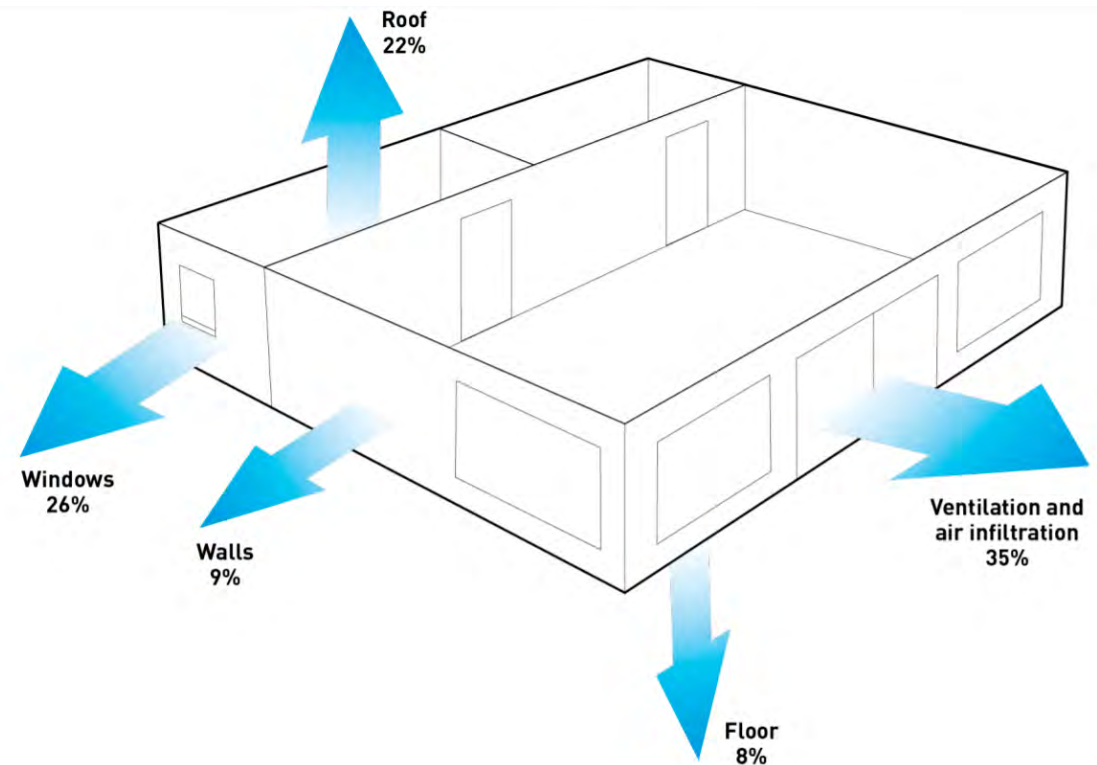
Undertake regular maintenance and avoid expensive problems later on

Maintaining buildings well means identifying potential problems and dealing with them promptly. In particular, gaps or holes in walls, windows, doors and skylights should be repaired immediately.

Establish a housekeeping schedule and involve staff

Compile a checklist to address areas where energy is lost via the building structure. A comprehensive schedule should include regularly checking window panes and frames, roof lights and doors. The larger a building, the more beneficial it would be to appoint a staff member to carry this out. Ask staff to report any problems and ensure these are promptly repaired.

Regularly check the building for damp

Damp causes significant damage to the building structure and reduces its insulating properties. Repair split downpipes, faulty gutters and leaky roof tiles. Check for signs of damp and condensation at least once a year, preferably prior to winter months.

Redirect heat and light from the sun

Overheating due to high levels of glazing is a growing problem in offices. Fit horizontal blinds or external shading to windows to direct light away from workstations and onto ceilings and walls. This will allow more daylight into the space, whilst minimising heat and glare from sunlight.

Insulate to accumulate

25% of a building's heat will escape via an un-insulated roof, which adds hundreds, or even thousands of pounds per year to heating bills. Insulating any roof spaces and unfilled external cavity walls is an effective and inexpensive way of reducing heat losses.

Gain control

The more complex a building is, the greater the need for a clear control strategy. The strategy should define how each service (heating, cooling and ventilation) is controlled. To be effective, controls need to be user friendly for managers and intuitive and accessible for occupants. Building control systems, coupled with building management policy have probably the most important influence on the energy performance of an office.

For more information and guidance on Building Fabric, please see the Carbon Trust's Building fabric guide.
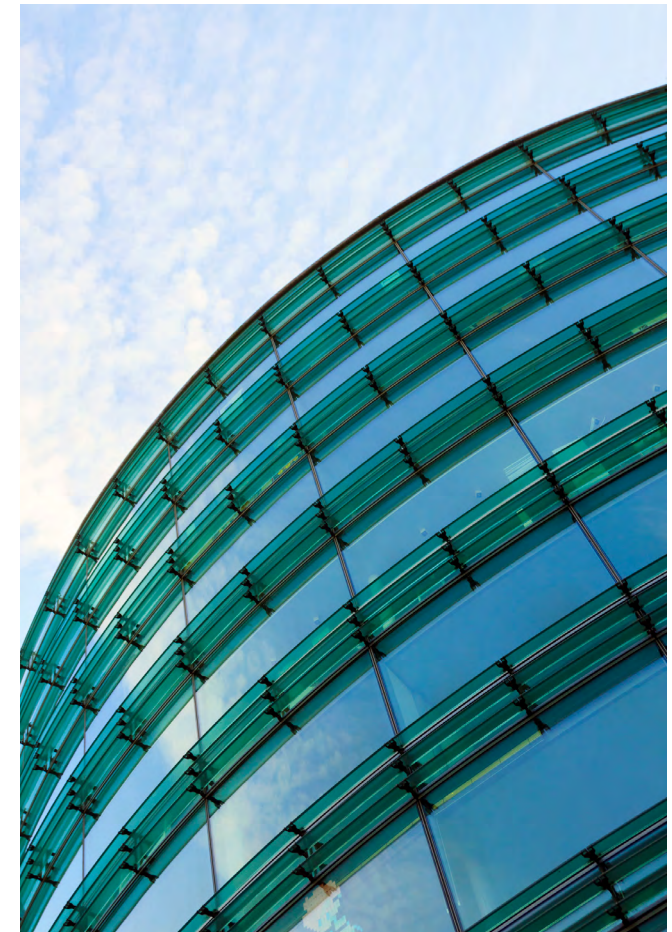
Did you know?

If the building suffers from draughts through windows and doors, it is better to address these before improving the heating, ventilation or cooling systems.

Good housekeeping and people solutions

Savings are easily achievable in all offices and need not require any initial outlay. Many opportunities are within the control of staff which is an ideal way of involving people and raising awareness of the importance of reducing energy consumption.

Remind all staff that good energy management helps to achieve:

- Environmental benefits

- Healthier and more productive working conditions

- Cost savings

- An enhanced corporate image which can be promoted to shareholders.

Whether starting an energy conservation programme from scratch or simply checking the effectiveness of an existing management system, there are a number of basics to consider.

Responsibility and commitment

Commitment to energy efficiency has to come from the top and should be backed up by a personalised mission statement and energy policy. It is also important to appoint an 'energy champion'. In very small businesses, this may be the owner or manager but in larger companies, appointing a staff member will often improve involvement and awareness across the whole company.

Involve staff

All staff members are important in saving energy so they must be made aware of wastage areas and be trained to operate equipment and controls correctly. Motivate staff – ask their opinions and encourage them to review their own working practices to increase energy savings.

The Carbon Trust's publication Creating an awareness campaign (CTG001) includes a staff survey and useful tips that can increase awareness.

Make the most of available technology

Readily available office technologies can also play an important role in facilitating energy and cost savings for a business. The use of 'virtual meeting' technologies such as Skype or WebEx, can save considerable travel costs whilst also ensuring that travel emissions are kept to a minimum. Pursuing a behavioral change towards virtual meetings, where appropriate, can offer substantial cost and environmental savings.

Undertake regular housekeeping walk rounds

Note down and act on any maintenance measures needed in order to avoid expensive problems later on. As patterns of energy use vary throughout the day, it is advisable to carry out a series of walk rounds at different times to get a better idea of where and when energy is being wasted. A walk round helps to:

- Establish current operating practices

- Eliminate wasteful practices and ensure they do not recur

- Demonstrate commitment to improving energy performance

- Identify opportunities for savings

- Involve staff and raise awareness of the importance of reducing energy consumption.

An energy walk around checklist is available here.

Monitor energy use

Understand your energy consumption by reviewing energy invoices over the last year – you should be able to build a picture of your monthly performance. Larger companies generally have meters recording half-hourly electricity consumption and this data should be available from your energy supplier for comparison with your bills. However, if your office does not have half-hourly or 'Smart' electricity meters, you should check and record monthly meter readings yourself.

✓	Action	Savings
☐	Switch off all non-essential lighting out of business hours (Page 7)	10% of lighting costs
☐	Install photocell controls to switch off some lighting on brighter days (Page 11)	20% of lighting costs
☐	Replace traditional tungsten lamps with energy efficient, LED fittings to improve efficiency and reduce operating costs (Page 9)	80% of lighting costs
☐	Experiment with switch-on and switch-off times for heating and air conditioning and switch off before the end of the working day (Page 13)	20% of heating and cooling costs
☐	Ensure thermostats are set correctly — increase temperature set-point for cooling and reduce set-point for heating (Page 12)	A 1ºC reduction in temperature during the heating season can cut costs by 8%
☐	Set a gap or 'dead band' between heating and air conditioning control temperatures of about 5ºC to avoid them operating at the same time (Page 14)	10% of heating and cooling costs
☐	Turn off unnecessary equipment during the day and especially out of hours to reduce heat build-up and unnecessary electrical costs (Page 16)	5% of energy costs
☐	Check insulation levels and increase wherever practical to reduce heating requirements (Page 19)	5% of energy costs
☐	Walk around your office at different times of the day and during different seasons to see how and when heaters and coolers are working. Check time and temperature settings (Page 21)	5% of energy costs

Undertaking such measures will allow for areas of bad energy practice to be identified, which will help contribute towards effective target setting for reducing energy consumption in the workplace.

You can contact your energy supplier to request the installation of a smart energy meter. Smart meters will help you to track and understand your energy consumption and you will no longer receive estimated bills, as the meter communicates your consumption directly to the supplier. Electricity and gas suppliers need to demonstrate that they have done all they can to roll out smart meters to all their domestic and small business customers by the end of 2020.

Next steps

There are many easy low and no-cost options to help save money and improve the operation of your office.

Step 1. Understand your energy use

Look at your office and identify the major areas of energy consumption. Check the condition and operation of equipment and monitor the power consumption over, say, one week to obtain a base figure against which energy efficiency improvements can be measured.

Step 2. Identify your opportunities

Compile an energy checklist. Walk around your office and complete the checklist at different times of day (including after hours) to identify where energy savings can be made. An example checklist is shown on page 21.

Step 3. Prioritise your actions

Draw up an action plan detailing a schedule of improvements that need to be made and when, along with who will be responsible for them.

Step 4. Seek specialist help

It may be possible to implement some energy saving measures in-house but others may require specialist assistance. Discuss the more complex or expensive options with a qualified technician.

Step 5. Make the changes and measure the savings

Implement your energy saving actions and measure against original consumption figures. This will assist future management decisions regarding your energy priorities.

Step 6. Continue to manage your business for energy efficiency

Enforce policies, systems and procedures to ensure that your business operates efficiently and that savings are maintained in the future.

Step 7. Sourcing renewable energy energy efficiency

Purchasing certified sources of renewable energy will guarantee the energy being used within an office environment is 100% renewably sourced, and could offer longer-term cost savings for businesses/contributing to company-wide energy goals.

Related publications

Find more guides on the Carbon Trust website

Other relevant guides may include:

Office equipment (CTV005)

Heating, ventilation and air conditioning (CTV046)

Creating an awareness campaign (CTG001)

Building fabric guide (CTV069)

Lighting guide (CTV049)

Energy management (CTG054)

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to help you implement energy and carbon saving measures, no matter what your level of experience.

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