



# The Green Office Guide

How to run a more cost-effective and environmentally sustainable office



**EUROPE & SCOTLAND**  
European Regional Development Fund  
Investing in a Smart, Sustainable and Inclusive Future

**Working in an office in Scotland?**

**Is it as green as you would like it to be?**

**Would you like to make a difference and reduce your office's environmental impact with some quick low- and no-cost ideas?**

**If so, this guide has been written for you.**

**Inside you'll find a host of great ideas that will help you reduce waste, save energy and water, and make your workplace greener – and more profitable too.**

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A photograph of a modern office building with large windows and a brick facade, partially obscured by a teal diagonal graphic.

# Introduction

Most organisations, regardless of sector and size, have an office or administration space of some kind. This guide has been designed to help these organisations save money, improve environmental performance, comply with legislation and respond to the increasing environmental demands of customers.

The information in this guide covers the common environmental impacts of a typical office:

- Resource use (e.g. energy, water and office supplies).
- Waste disposal (e.g. food waste, paper, office equipment or worn-out fixtures and fittings).
- Air emissions (e.g. from boilers or heating and cooling systems).
- Noise pollution (e.g. from car parks or site maintenance).
- Water pollution (e.g. from unauthorised discharges from catering facilities, contaminated run-off from car parks or through the use of cleaning and chemical products).

The guide will help office workers, managers and Green Champions to assess current practice, take practical action to reduce environmental impact, assign responsibility and set targets to encourage continuous improvement. It will also enable more effective internal and external communication.

The tried-and-tested principles used are equally applicable to larger offices and are compatible with some of the requirements of ISO 14001, BS 8555 2016 and the EU Eco-Management and Audit Scheme (EMAS).

Zero Waste Scotland research shows that if Scottish organisations put simple waste reduction measures in place, then there is the potential for them to save about 1% of annual turnover. If all organisations in Scotland did this, the total annual savings would be over £2 billion.

**‘Businesses must overcome the perception that going green adds cost – the opposite is true. Those companies that have addressed their environmental performance with even small changes have measured savings in their bottom line.’**

Iain Gulland, Chief Executive,  
Zero Waste Scotland.



## Where to start?

If you're just getting started on your journey to improve your office's environmental performance, knowing where to start can be a little daunting. So, this guide has been structured to help you tackle the key issues in a logical progression with a focus on helping you make quick wins first.

If you have already taken some steps to improve efficiency in your office, simply dip into whichever section is relevant to you now.

Several other guides are available from the Resource Efficient Scotland website and cover specific skills in energy, water and waste management. Where relevant, you'll find handy links to these other resources should you wish to dive in a little deeper.

## Why bother?

To reduce harmful or unsustainable practices, a variety of policies and laws have been introduced in Scotland. Therefore, the legislative burden on organisations has steadily increased over recent years. In addition, as preventing future climate change has become a high priority for the UK Government, further legislation has been introduced aimed at reducing greenhouse gas (GHG) emissions.

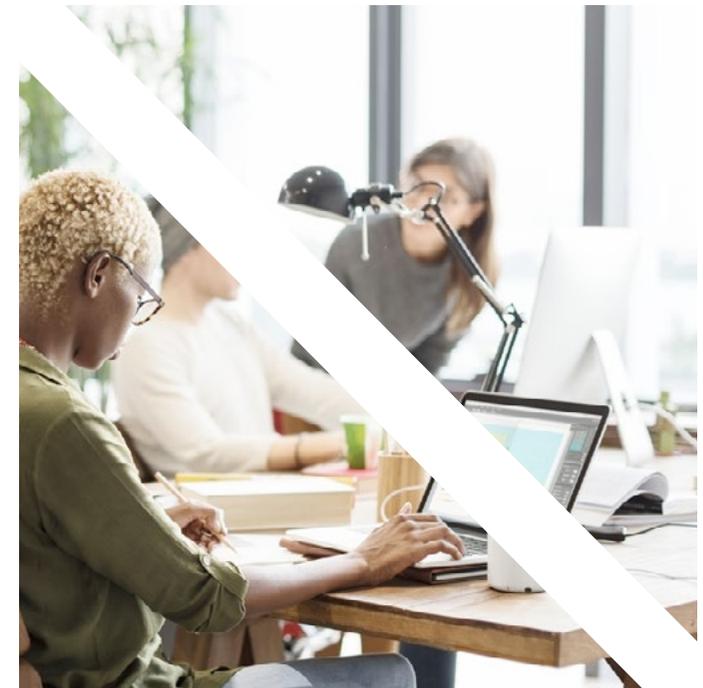
To respond to these requirements and those of the EU Waste Framework Directive, the Scottish Government introduced the Climate Change (Scotland) Act 2009 and, in 2010, the Zero Waste Plan set out its vision for a zero-waste society. These provide further incentives for organisations.

For further information on waste regulation and legislation, visit the [Scottish Environment Protection Agency](#) (SEPA) or [Business Gateway](#) websites. For regular updates, subscribe to [NetRegs](#).

Becoming a green office isn't just about complying with legislation or protecting the environment. Going green is also good for your bottom line. In fact, Resource Efficient Scotland's advisers have already identified over £140 million worth of savings opportunities for Scottish businesses, with a massive 24% average energy saving per business.

## Benefits of becoming a green office:

- **Reduced costs.**
- **Improved resource efficiency.**
- **Reduced 'carbon footprint'.**
- **Improved environmental performance.**
- **Improved corporate image.**
- **Employees are more environmentally aware.**



## Why not become your office's certified Green Champion?

Resource Efficient Scotland's Green Champions Training Course is a free CPD-certified online training course. It will give you all the skills and tools you need to improve the resource efficiency and environmental performance of your office – and, of course, save money too.

Over 1,000 professional from organisations across Scotland have already become Green Champions and are taking the lead in making their workplaces more efficient. Create your free Green Champions Training account and join them.



# Measure and monitor resource use



Measuring and monitoring resource use should be one of the first steps your office takes in improving its environmental performance. Without a good understanding of use, you will be unable to manage resources in an efficient manner. To identify opportunities for making environmental improvements, it is recommended that you conduct a review of current practice.

The first step is to understand how your office uses resources (e.g. paper, office consumables, water and energy) and why waste is produced. Decide what measurements you need to take to monitor performance and then gather this data on a regular basis (see Table 1 for suggested sources of data, units of measure and frequency).



It is recommended that offices regularly monitor and measure:

- Key materials used (e.g. paper and packaging).
- Solid waste produced.
- Water used.
- Energy used.

The data you collect will help you to:

- Track your performance over time and see the impact of any campaigns you run or changes you make.
- Highlight areas for improvement by enabling you to compare your performance against established key performance indicators (KPIs) – see page 9 for more information on KPIs.

Monitoring can be as simple as taking meter readings regularly or tracking purchasing information from invoices.

**Table 1. Suggested sources of data, units of measure and frequency**

	Source of data	Units of measure	Frequency
Paper	Invoices	Number of sheets, reams or boxes	Weekly or monthly
Solid waste	Invoices	Tonnes, kilograms, per waste container (size and density)	Weekly or monthly
Water	Invoices, meter readings or estimates (if no meter)	m <sup>3</sup>	Daily, weekly or monthly
Energy	Invoices, meter reading	kWh or m <sup>3</sup>	Daily, weekly or monthly

A close-up photograph of a person's hand typing on a laptop keyboard. The background is a blurred office setting. A large teal triangular overlay covers the bottom-left portion of the image, containing text and several data visualization charts. The charts include line graphs, bar charts, and pie charts, all in various colors like blue, green, and purple. The text is white and positioned on the teal background.

## Free templates

Spreadsheets are a great way to track and analyse trends in your office's resource use and identify opportunities for improvements.

We have produced three handy templates - one for **water**, one for **waste** and one for **energy**. These will help you to collate your data and easily produce graphs to illustrate performance. Each has an introductory video to guide you through getting the most out of them.

## Benchmarking

Many organisations benchmark themselves against data from previous years. If you don't have the data to do this, then you could:

- Go through invoices and sales information to gather data appropriate for a 'baseline' year.
- Use the current year to monitor and measure resource use, and then generate a baseline year against which future years can be compared.

Below are some typical figures that can be used to benchmark office performance:

**Waste** – a good-practice office produces fewer than 200kg of waste per staff member per year.

**Recycling** – a good-practice office – operating efficient recycling schemes for paper, glass, cardboard, cans and toner cartridges – can achieve a recycling rate of between 60% and 70%.

**Paper** – a best-practice office can use as little as seven reams of paper per staff member per year (there are 500 sheets of paper in a ream).

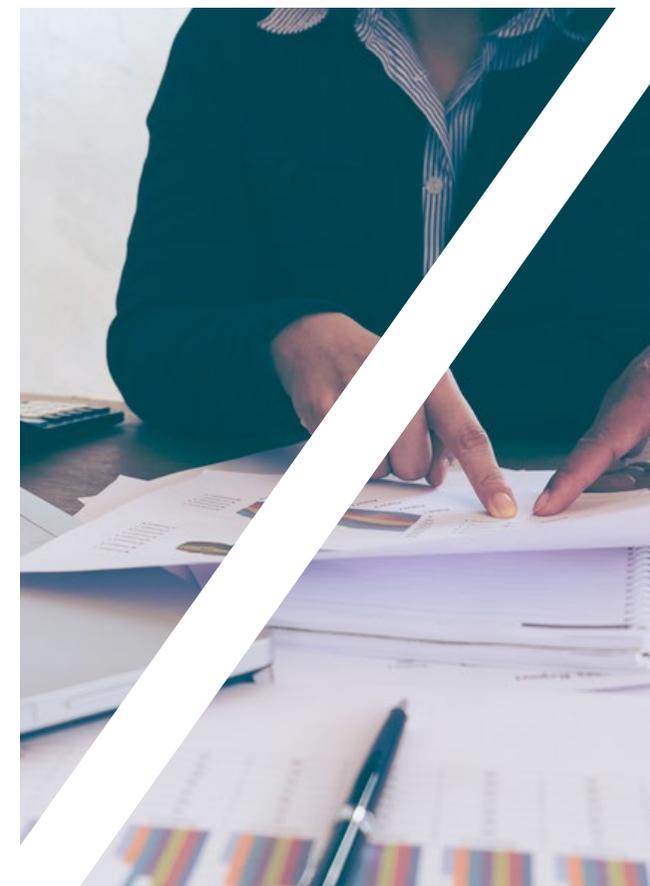
**Water** – a good-practice office building should be using no more than 6.5m<sup>3</sup> (6,500 litres) of water per person per year (or 25 litres per staff member per day). Where an office has a canteen – that cooks meals from raw ingredients – then the water use associated with the preparation, cooking and cleaning will increase to around 40 litres per staff member.

**Energy** – energy use and emissions are best assessed as consumption per m<sup>2</sup> of treated floor area<sup>1</sup>, as shown in Table 2<sup>1</sup>.

Typical practice for energy use in an office can often be almost twice the level of good practice. That means twice the cost, double the energy bills.

**Table 2. Good practice energy use and emissions per m<sup>2</sup> of treated floor area**

	Gas/oil consumption (kWh/m <sup>2</sup> )	Emissions (kgCO <sub>2</sub> /m <sup>2</sup> )
Naturally ventilated smaller office	79	32.2
Naturally ventilated, open-plan office	79	43.1
Air-conditioned, standard office	97	85.0
Air-conditioned headquarters	107	143.4



1. Treated floor area (TFA) is the gross floor area (total area inside external walls) excluding plant rooms and other areas not heated (e.g. stores, covered car parks and roof spaces). Ideally, it should be measured, but an estimate of TFA can be made by multiplying the gross floor area by 0.9.

## Key performance indicators (KPIs)

Remember that raw data alone will not provide the full picture. Comparisons to production, sales or number of employees can help to illustrate efficiency in a more meaningful way. Consider setting up KPIs to track performance and drive improvements.

For example, a KPI could be the number of reams of paper used per number of office-based employees per year.



Good KPIs should follow the Six 'A's...

### Aligned

Make sure the KPIs you are choosing align with the strategic goals and objectives of your organisation.

### Attainable

The KPIs you choose to measure should have data that can be easily obtained.

### Acute

KPIs should keep everyone on the same page and moving in the same direction.

### Accurate

The data flowing into the KPI should be reliable and accurate.

### Actionable

The KPI should give you insight into the business that is actionable.

### Alive

Your business is always growing and changing. Your KPIs should evolve as well.

Choosing the right KPI is important. The following KPIs may be appropriate:

- Waste (tonnes) sent to landfill.
- Percentage of waste recycled.
- Water used (m<sup>3</sup>) per member of staff.
- Energy used (kWh for gas and electricity) per floor area (m<sup>2</sup>).
- Paper used per member of staff (reams or kg).
- Office and canteen waste recycled per member of staff (%).

# Reduce the amount of waste in your office

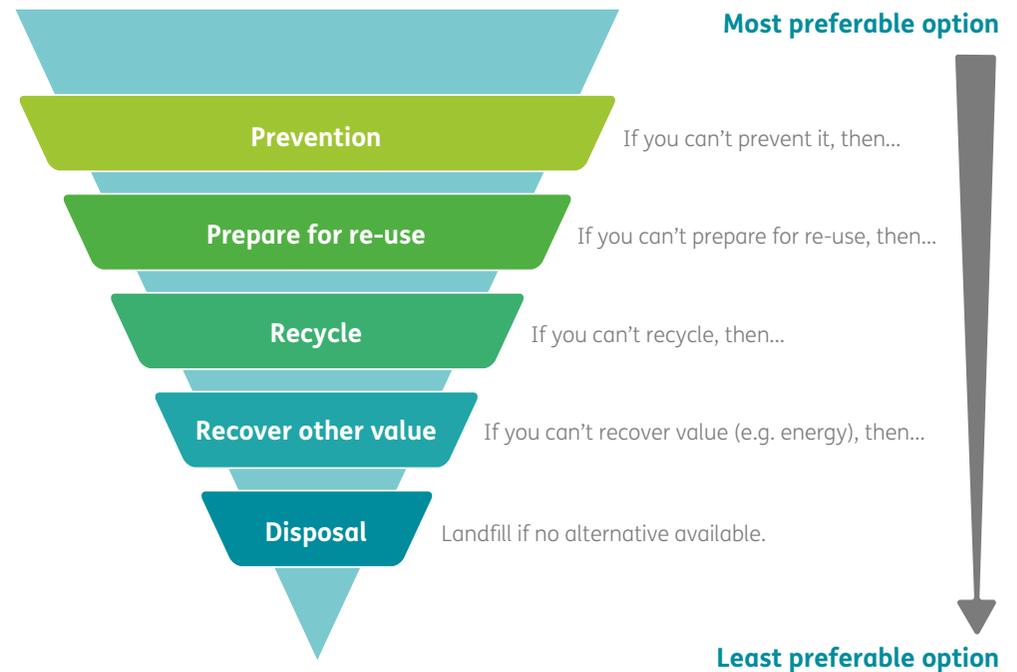
Stay competitive – Zero Waste Scotland research has shown that 54% of Scottish businesses are already ensuring raw materials and other resources are not discarded unnecessarily, 43% are changing employee behaviour, 41% are working more effectively with suppliers and 23% are reducing water use.

Waste is expensive, it costs UK industry at least £15 billion per year. However, half of all companies do not know how much they actually spend on waste. As our [The truth about how your business is wasting profits](#) infographic shows, when you consider the value of raw materials, energy and wasted labour, the real cost of waste is often between 5 and 20 times the cost of disposal alone.

The waste hierarchy (see Figure 1) illustrates how you should try to prioritise the way you deal with your waste.

Preventing waste being generated in the first place through careful purchasing and better utilisation of materials is the best way to make dramatic savings in your waste costs and reduce your impact on the environment.

Figure 1. The waste hierarchy





Where waste cannot be completely prevented, try to re-use any that is produced. After that, you should aim to recycle. While recycling has many benefits and reduces our reliance on virgin materials, it is not without its own environmental impacts (e.g. the transportation of materials and the energy consumed in recycling processes). Therefore, it should be considered only after prevention and re-use options have been addressed. Re-use will cut purchase and disposal costs, whereas recycling will reduce only disposal costs.

The next stage in the waste hierarchy is recovering other value. This is where fuels, heat and/or power are generated from waste products through processes such as anaerobic digestion, incineration with energy recovery, gasification and pyrolysis.

Finally, the disposal option has the greatest impact on the environment and, typically, is the least cost-effective waste management solution. Therefore, it is best to aim to 'move up' the waste hierarchy so that you can save money, raw materials, water and energy – as well as improving your environmental reputation.

## Purchasing

There is a strong link between purchasing and waste management. However, communication between those responsible for these functions is surprisingly rare. You'll find it very helpful to encourage both parties to consider the whole life-cycle costs of the products your office purchases. This should include the source of raw materials, manufacturing processes used, packaging, distribution, use and potential for re-use, and the disposal requirements of the product.

What you buy has an effect on how much waste you produce. So, before you buy any product, ask yourself the following questions:

- Do I really need to buy it?
- Am I buying more than we need?
- How good is our stock control – is more being ordered than is required, resulting in materials being disposed of before they are used?
- Is it heavily over-packaged?
- Can it be re-used?

## TIP

**Regularly look in your bins and see if there is anything that should not be there. For instance, unused stationery or paper used on only one side. Take action to stop this happening again and again.**

## **Assess your**

**suppliers.** Where possible, choose those that can demonstrate good environmental performance.

- Buy locally – supporting local businesses can reduce transport emissions and the associated environmental impact.
- Rationalise deliveries to reduce transport emissions associated with your activities.
- Refurbish and repair – if possible, recondition existing equipment rather than buying a new replacement.

Discuss receiving deliveries in re-usable boxes, reducing the amount of raw materials used and waste materials that require disposal.

If you are using caterers, ensure that they deliver products in re-usable packaging and discourage the use of disposable items.

**Consider the life-cycle costs of the product. A light bulb that's cheap to buy may cost much more to run over its lifetime than the combined purchase and running costs of an energy efficient bulb.**

# Reduce paper use

Paper is the most common waste for offices. It has a major purchasing and disposal cost, yet the amount used can be reduced easily by following the principles of the waste hierarchy. It is estimated that the average office worker uses up to 45 sheets of paper per day, around two thirds of which is considered waste. In contrast, an efficient office can use as little as 16 sheets of paper per person per day.

There are a number of key environmental impacts associated with virgin paper production, such as loss of natural habitat, water stress in certain areas due to intensive tree farming, high chemical and energy use in manufacture, and detrimental effects from the landfilling or incineration of paper waste. However, paper is made from a natural resource and can be recycled up to five times, which substantially reduces these impacts. By buying recycled paper you can help boost the market for recycled products. This, in turn, will support the recycling industry and reduce the need for unnecessary virgin imports.

Recycled papers are as readily available and have equivalent quality, 'printability', appearance and range as virgin papers. As a rule, you should try to use papers with the highest percentage of post-consumer waste, preferably 100%, rather than paper that is composed of pre-consumer waste (i.e. printers' virgin offcuts and mill broke). There are a number of standards and labels that classify paper according to its raw material content and manufacturing process (see Table 3).

Before you buy paper, ask the following questions:

- What is its recycled content?
- How much post-consumer waste does it contain?
- Has the environmental impact of its manufacture been minimised?

**Table 3. Label/logo raw materials criteria**

Name of label	Symbol	What the label means
Blue Angel		Label awarded to paper and board products containing 100% waste paper (minimum 51% post-consumer waste).
Mobius Loop		There are two versions of the Mobius Loop – one denotes whether the product can be recycled, the other its recycled content. When using the latter, the percentage of recycled fibre used appears in the centre of the loop. Where the product comprises entirely recycled fibre, there is no figure. These symbols are often used without authority and in a misleading manner. Always check the basis for using these labels with your supplier.
ECF, TCF and chlorine free		<p>Elemental chlorine free (ECF) (chlorine gas has not been used to bleach the pulp during the pulping process).</p> <p>Totally chlorine free (TCF) (no chlorine compounds have been used during the pulping or papermaking process).</p> <p>Chlorine free is often used to mean either of the above; ask for clarification from the paper supplier.</p>
EU Eco-label		Specifies maximum limits for discharges to water, emissions to air and energy consumption as well as requiring sustainable forestry management for virgin fibre.
Nordic Swan		Awarded to paper mills meeting minimum environmental performance standards.

## Baseline: calculating the use and cost of paper

You can use the formulas in Table 4 to calculate the annual paper use and cost per person in your office. It's a great way to put paper use into perspective, and you may wish to tell staff the average number of sheets of paper they use each day (there are 500 sheets in a ream). A best-practice small office can use as few as seven reams of paper per person per year. This calculation can help you to get colleagues to identify wasteful behaviours, what's habit and what's required. And, remember, the true cost of printing for your business includes the purchase, printing and waste disposal costs. The cost of printing alone can be as much as eight times the cost of the paper.

**Table 4. Calculating a baseline of annual paper use and cost per person**

Total reams of paper purchased per year	÷	Number of staff in your organisation	=	Total paper use (reams/person/year)
Total cost of paper purchased per year (£)	÷	Number of staff in your organisation	=	Cost (£/person/year)

## Tips for applying the waste hierarchy to office paper usage

### Prevention

- Using both sides of paper can reduce use by up to 50%. Ensure that all printers are set to double-sided format as default. Question whether you need to print draft copies at all. If this is unavoidable, print four pages to an A4 sheet and then recycle. Put reminder posters near printers and photocopiers.
- Reduce the number of printers, particularly desk printers. These are expensive to run and encourage people to print items as they are easy to reach.
- Monitor printing levels by giving employees a personal access code to the printer/photocopier. Consider posting a league table next to the printer.
- Avoid overproduction of marketing and publicity material by reviewing distribution lists and regularly updating databases.
- Use electronic communications where possible to reduce printing. Ensure that your staff are comfortable with using new technology and provide training where necessary.
- Encourage staff not to print e-mails unless absolutely necessary.

- Reduce confidential waste disposal costs by ensuring that staff are clear about what goes in the confidential waste bins and what goes in the non-confidential waste bins.
- Use thinner paper – thinner paper means less material for each page, less energy in the manufacturing process and less energy in the printing process to apply ink. 80 grams per square metre (gsm) paper is standard and is suitable for routine printing.
- Collect all paper that has been printed on one side and re-use it for printing in draft or for message pads.

### Prepare for re-use

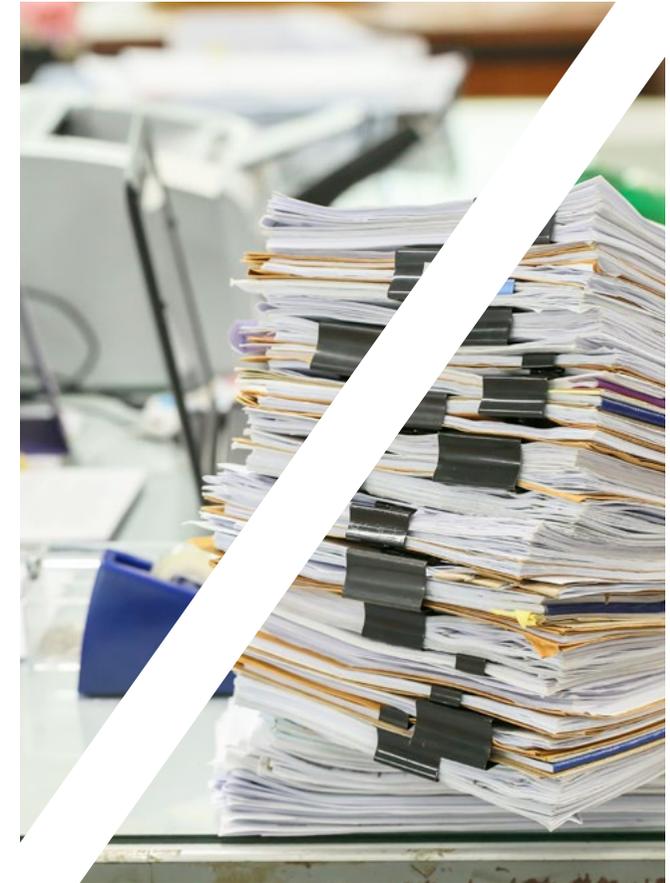
- Re-use envelopes wherever possible, especially for sending information internally.
- Donate waste card or paper to your local school or nursery.
- Segregate and shred paper for re-use as packaging infill.

## Recycle

- Contact your local waste contractors for details of paper recycling organisations in your area. The frequency of collection and cost of recycling will depend on the amount of paper that you generate.
- Place paper recycling bins in all offices and, for practicality, near to the printers themselves.
- Ensure that cleaning staff are in support of the recycling scheme.
- Promote the scheme to staff by displaying posters around the offices and on bins explaining the types of paper that can be recycled.
- Provide staff with ongoing feedback about the scheme, including figures on the amount of paper collected. Suggest making a donation to charity or planting a tree when targets are met.
- Ensure that service and maintenance warranties are not adversely affected by using recycled paper. There is no valid reason why they should be.
- Close the loop by buying recycled products where possible.
- Get together with other local organisations to make the collection of recyclable products more economical. [Download](#) our how-to guide for ideas on how to do this.
- Establish clear senior management commitment for resource efficiency initiatives – problems will occur if recycling is not seen as an integral part of an organisation's greener operations.

## Recover other value

Segregate paper and envelopes that cannot be recycled and send for energy recovery.



## Create your own recycling signage and posters

Our free poster tool enables you to create recycling signage to help your employees know what to recycle and where. You can use the tool to make your own signage customised to the recyclable materials most commonly found in your office.

It also includes a range of ready-made recycling posters.

**Access the poster creator [here](#).**



# Apply the waste hierarchy beyond paper

The management of other resource and waste streams should also follow the waste hierarchy model. Here are some tips on how your office can cut its environmental impact through better waste management.

## Tips for applying the waste hierarchy to your general office waste

### Prevention

- Choose minimally packaged products or ask your suppliers to supply products in less packaging. Alternatively, ask suppliers to take packaging away with them when they deliver.
- Discourage excessive use of stationery by implementing an ordering system. This allows you to monitor departments and target high-use areas for reductions.
- Ensure that vending machines allow the use of re-usable mugs rather than single-use plastic cups.
- Avoid purchasing disposable catering products (e.g. individual milk containers, sugar sachets and paper plates).
- Prevent food waste. Prior to confirming catering arrangements for meetings, accurately establish the numbers attending – most people over order.
- Replace bottled water with water coolers that are attached to the water supply, this will reduce service charges incurred from the use of bottles, transportation and packaging. Removing stored water bottles from the office environment may also help release space and improve the working environment for employees.
- Paper towels or hand dryers? Consider installing hand dryers in toilets rather than paper towels. This may marginally increase energy costs, but will eliminate the cost of purchasing paper and also reduce landfill waste costs. Alternatively, if dryer costs are too expensive, consider using efficient paper-towel dispensers, which allocate one sheet at a time to avoid overuse.

### Prepare for re-use

- Hold an annual 'stationery amnesty'. A surprising amount of material can be recovered by asking staff to hand in all their unused items for re-use.
- Buy remanufactured toner cartridges. High-quality recycled cartridges are available with the same performance as new cartridges, but at a lower price. Send your used toner cartridges to a specialist remanufacturing company or schemes run by charities.
- Re-use envelopes, wallets and packaging wherever possible.
- Make sure marketing materials can be used again. Don't make them event or date specific.
- Ask your computer supplier/manufacturer about refurbishment contracts. Ensure redundant equipment is collected and that you receive revenue for the residual value.

- Refurbish and redistribute office furniture and electrical items or make use of re-use schemes often provided by charities or community groups. It is estimated that for every tonne of furniture re-used, 4 tonnes of carbon dioxide (CO<sub>2</sub>) is saved. Find out about local groups from [Community Resources Network Scotland](#).
- Make a list of redundant items in stock and new items required by different departments, and match these up to re-use items wherever possible.
- Can someone else use your waste? Consider the organisations in your area and whether they may be able to use your waste. For example, wood waste could be chipped and used as a fuel source by another business.



## Recycle

**About 70% of office waste is recyclable.** By recycling as much as possible, you may be able to reduce your waste disposal costs significantly, particularly as the cost of disposal is increasing due to the Landfill Tax. Recycling costs less than disposal to landfill, particularly if you segregate your waste. Check what is in your bins.

**Figure 2. About 70% of office waste is recyclable**



- Avoid contamination – monitor and check recycling receptacles regularly. Use clear plastic bags rather than black bin liners to assist with monitoring segregation.
- Nominate a ‘Recycling Champion’ to assist and monitor waste disposal.
- Communicate with staff to encourage the proper use of recycling facilities.
- Remove desk bins and replace them with office recycling bins to encourage recycling – use one recycling bin for every six members of staff. Removing bins at individual desks could also have a knock-on effect of reducing housekeeping costs as less time would be spent emptying all the individual bins.

## Recover other value

- Where plastics cannot be recycled (perhaps due to difficulties in segregating waste), it may be possible to send them for use in energy-recovery operations.
- Food waste can be used in energy-from-waste plants.
- Ensure that your waste electrical and electronic equipment (WEEE) contractor is reputable and removes recyclable components from WEEE before sending the residual combustible waste for energy recovery.

For small quantities of catering waste, consider using a food waste digester, hot composter or wormery. For larger amounts, install a small in-vessel composter. However, if you wish to produce compost yourself from your catering waste, you must meet a number of conditions, including:

- Only produce the compost at the premises where the catering waste is produced.
- Apply the compost only on the grounds of the premises where it is produced.

You must separate catering waste and the resulting compost from all other wastes throughout the composting process. You must not mix catering waste that contains meat with catering waste that does not contain meat. Before composting any catering waste, you will need to gain authorisation from the [Animal & Plant Health Agency \(APHA\)](#). Once your site is authorised, you will need to monitor and review your activities on an ongoing basis.



You must also hold a waste management licence or register an ‘exemption’ with the Scottish Environment Protection Agency (SEPA). Gaining an exemption for a business wishing to compost on a small scale using individual composting units with fewer than 2m<sup>3</sup> capacity is relatively straightforward. Guidelines, along with a link to the form to register exemption, can be found on the [SEPA](#) website.

Waste that is potentially harmful to humans and the environment is known as ‘Special Waste’. In Scotland, WEEE is classed as a special waste and all businesses that use electrical and electronic equipment must comply with the WEEE Regulations. Common types of WEEE in offices include:

- Computers, copiers, scanners and printers.
- Fluorescent light tubes.
- Refrigerators.
- Microwave ovens and kettles.
- Televisions.
- Vending machines.
- Telephones.

You must comply with your duty-of-care responsibilities when dealing with WEEE. All such waste must be collected as a special waste uplift by

an authorised waste contractor. Any consignment notes for special waste uplifts should be held on record for 5 years. Ensure that special waste disposal procedures are in place for items such as tins containing waste paint, oil containers, sanitary waste and fluorescent tubes.

#### **Ensure legal compliance – duty of care**

If your business produces waste, you have a responsibility to ensure that you produce, store, transport and dispose of it without harming the environment. This is called your duty of care. To comply with the Duty of Care Regulations for waste, you must ensure that you store and transport your waste appropriately and securely. Check that your waste is transported and handled by businesses that are authorised to do so. Your business is required to keep waste transfer notes for at least 2 years, this includes those for recycled waste. You must also comply with packaging regulations if your business manufactures, fills, supplies or handles packaging or packaging materials. Visit [Netregs](#) for more information.

## Reduce the cost of disposal – work with your waste contractor

There is a wide range of waste contractors providing a host of recycling opportunities. Discuss options with different contractors to identify the most beneficial waste collection arrangements to suit your needs. When reviewing your current arrangements, consider the following:

- Check that you need all of the bins supplied by your contractor. If some are not fully utilised, ask your contractor to remove them or reduce the frequency of collection. For example, ask for them to be emptied at your request, rather than at a time set by the contractor. Remember to renegotiate your contract to benefit from the cost savings resulting from fewer collections.
- Small quantities of recyclates can often be a problem to arrange collections for. Consider working with other local organisations to increase the quantity of items for collection to a level that provides economies of scale.
- Contact your local authority to find out if a season ticket or pre-paid tickets are available to allow recyclable waste to be taken to local recycling centres. Some allow permits for use of public bring sites.

- Flatten or compact cardboard and other bulky wastes to make the most efficient use of disposal facilities or consider baling materials to potentially increase value and reduce void space in the recycling bin.
- Prevent fly tipping by opting for lockable bins.
- Visit the [Business Recycling and Re-use Directory](#) for a full search on organisations that can provide recycling services in your area.

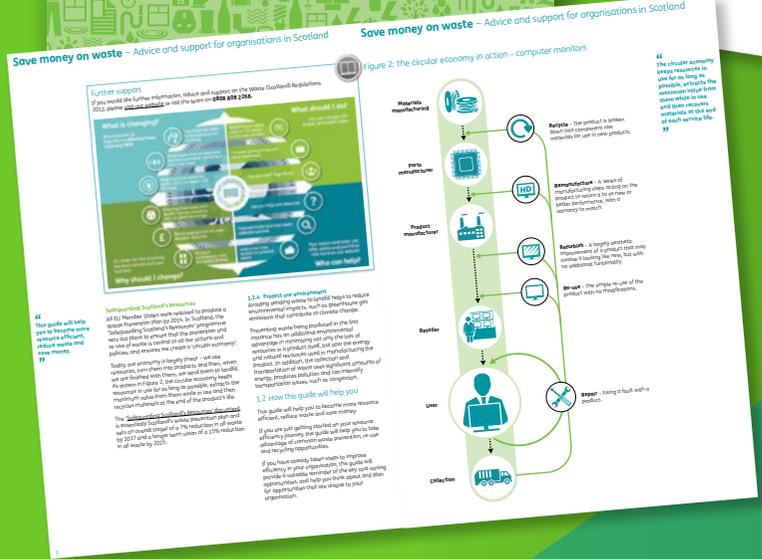
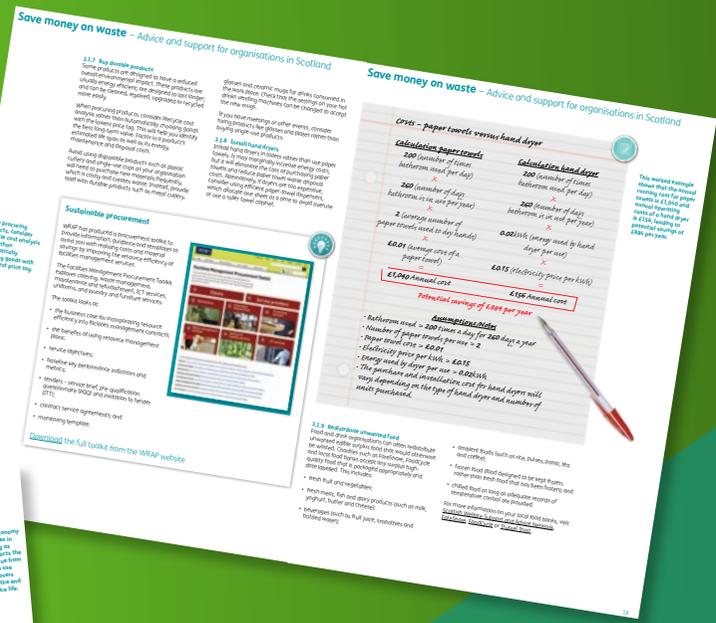
You must only pass your waste to, or have it collected by, an authorised person. Anyone who collects and transports your waste must be a registered carrier of controlled waste or be exempt from registration as a carrier – this includes your local council's waste collection services.

Anyone who recycles, treats, stores, reprocesses or disposes of your waste must have a waste management licence or a pollution prevention and control (PPC) permit. A registered carrier should be able to produce a certificate of registration or a certified copy. If you do not check and keep proof of this, you could be held responsible if your waste is disposed of illegally (e.g. by fly-tipping). You can check [SEPA's register of carriers and brokers](#) to see if a carrier is registered.





Implementation guide: Waste  
**Save money on waste**  
 Advice and support for organisations in Scotland



**Further reading**

This comprehensive guide shows you how to slash your waste bill and boost your business profile at the same time.

**Download** it from the Resource Efficient Scotland website

# Save energy



Energy costs are one of the overheads most easily managed in an office and often have the greatest potential for reduction. No and low cost improvements can reduce energy use by around 20%. As energy costs have increased in recent years, it is important that energy use is reduced wherever possible to mitigate the market trend of increasing costs.

What's more, by adopting the energy saving tips for heating and cooling, lighting and office equipment given in this section, you will not only save money on your energy bills, but also reduce your CO<sub>2</sub> emissions.



Monitoring CO<sub>2</sub> emissions is an important tool for carbon footprinting and assessing the environmental performance of your business.

## Benchmark and set targets

It can be very useful to compare your baseline figures for fossil fuel (i.e. gas and oil) use, electricity consumption, emissions and costs with the good practice and typical practice figures shown in Table 5. This is particularly useful to help you set targets. You should consider fossil fuel and electricity consumptions separately; this will help you to pinpoint which needs more urgent attention.

**Table 5. Energy use - good and typical practice**

	Gas/oil consumption		Electricity consumption		Emissions		Cost	
	Good practice (kWh/m <sup>2</sup> )	Typical practice (kWh/m <sup>2</sup> )	Good practice (kWh/m <sup>2</sup> )	Typical practice (kWh/m <sup>2</sup> )	Good practice (kgCO <sub>2</sub> /m <sup>2</sup> )	Typical practice (kgCO <sub>2</sub> /m <sup>2</sup> )	Good practice (£/m <sup>2</sup> TFA)	Typical practice (£/m <sup>2</sup> TFA)
Naturally ventilated smaller office	79	151	33	54	32.2	56.8	2.65	4.61
Naturally ventilated open-plan office	79	151	54	85	43.1	72.9	3.68	6.13
Air-conditioned standard office	97	178	128	226	85.0	151.3	6.25	11.12
Air-conditioned headquarters	107	201	234	358	143.4	226.1	10.38	16.27

Not sure how to calculate your energy use? Follow the process shown in Figure 3.

**Figure 3. Baseline: calculating your energy emissions and costs**

The information you need to make these calculations can be obtained from your fuel bills. These should cover a full year and be the actual consumption and cost, not an estimate by the utility company. You also need to calculate your treated floor area, as energy use and emissions are best compared as consumption per m<sup>2</sup>.

	Annual kWh	÷	Treated floor area <sup>2</sup> (m <sup>2</sup> )	=	Annual kWh/m <sup>2</sup>	X	CO <sub>2</sub> conversion factors	=	CO <sub>2</sub> emissions (kg/m <sup>2</sup> /year)
Natural gas		÷		=		X	0.18396	=	
Burning oil		÷		=		X	0.24665	=	
Coal		÷		=		X	0.32484	=	
<b>Total fossil fuel (kWh/m<sup>2</sup>)</b>									
Total electricity (kWh/m <sup>2</sup> )		÷		=		X	0.28307	=	
<b>Total CO<sub>2</sub> emissions (kg/m<sup>2</sup>/year)</b>									

Conversion factor data obtained from the UK Government's '[Greenhouse gas reporting: conversion factors 2018](#)'.

Next, calculate how much you currently spend on energy/m<sup>2</sup> for your offices. You may also wish to calculate cost per staff member, by dividing the total annual cost by the average number of staff on site.

	Total annual cost (£)	÷	Treated floor area <sup>2</sup> (m <sup>2</sup> )	=	Annual cost (£/m <sup>2</sup> )
Gas		÷		=	
Oil		÷		=	
Coal		÷		=	
Electricity		÷		=	
<b>Total cost (£/m<sup>2</sup>)</b>					
<b>Cost per person (£/year)</b>					



## Heating and cooling

- Knowing how the heating and cooling systems for your office operate lets you take advantage of any energy efficient functions that are built in.
- When heating, reduce the temperature of a room by 1°C; it is unlikely that anyone will notice and you could cut the heating bill by as much as 10%. Most staff are comfortable at 19°C. Similarly, set air-conditioning to come on only when the temperature exceeds 24°C.
- Turn off heating and cooling in unoccupied rooms, but make sure they are well ventilated to prevent condensation and mould. Only use these systems when people are actually in the rooms/building.
- Use timers and temperature control sensors to control output. For example, an optimiser sensor fitted externally to your office building can set heating controls to warm up the office before staff arrive and shut off heating controls once the building is at the optimum temperature, avoiding overheating or the need to open windows.
- Make sure fans, pumps and central plant such as cooling towers, boilers and chillers do not operate when buildings are unoccupied, except where they are needed for pre-heating or pre-cooling.
- Make sure windows and doors are closed when heating or air-conditioning is on.
- If your office is being refurbished, consider installing double or triple glazed windows, and encourage cleaners to close blinds/curtains to prevent solar gain or heat loss when rooms are unoccupied
- Check that insulation (walls, roof and pipes) and draught-proofing is adequate to prevent heat loss.
- When buying appliances (e.g. fridges, freezers and dishwashers) choose models with the highest energy efficient rating. The ratings are from G to A, with A being the best (A+++ for fridges and freezers).
- Install instant water heaters where possible, otherwise reduce the temperature of stored hot water (to a minimum of 60°C to avoid Legionella bacteria breeding).
- Install heat reflectors to the walls behind radiators to improve their efficiency at relatively low cost.
- Ensure heaters and radiators are kept clear by not placing furniture, boxes, etc in front of them.
- Check set points on wall thermostats and thermostatic radiator valves (TRVs).
- Ensure boilers are maintained in accordance with the manufacturer's instructions – a well-maintained boiler can reduce heating costs by up to 10%.
- If practicable, instead of using energy to cool your server room, install a vent in the external wall to enable heat loss.

## How to save money and energy on space heating

Advice and support for organisations in Scotland



### 4. Heating distribution and control

It is often possible to achieve good savings in space heating energy use by paying attention to the way in which the heating system is controlled and operated.

Heat distribution is the process of getting heat from the boiler or other heat source to the rooms where it is needed. It is important to ensure that the heat is distributed evenly to all the rooms that need it.

Control of air flow heating can be achieved in the form of air flow control devices such as dampers and louvers. These devices can be used to control the flow of air through the ductwork and radiators.

It is important to ensure that the heating system is controlled and operated in a way that is efficient and cost-effective. This can be achieved by using a variety of control devices and techniques.

4.1. Insulate pipework

Heat losses are often very significant in heat lines between generating plants. However, it is not always clear how much heat is lost. It is important to ensure that the heating system is controlled and operated in a way that is efficient and cost-effective.



### Are you using supplementary heaters?

The use of local supplementary heat sources (portable heaters) is often a common sight. However, it is important to ensure that these heaters are used in a way that is efficient and cost-effective.

4.2. Keep space around heaters clear

A hot room gets a lot of heat from the heater. It is important to ensure that the space around the heater is clear of any obstacles that might block the flow of heat.

4.3. Heat recovery

Heat recovery systems can be used to capture the heat from the exhaust air and use it to pre-heat the incoming air. This can help to reduce the energy consumption of the heating system.

## How to save money and energy on space heating

Advice and support for organisations in Scotland

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Heat recovery systems can be used to capture the heat from the exhaust air and use it to pre-heat the incoming air. This can help to reduce the energy consumption of the heating system.

4.4. Make best use of timer controls

Heating systems can be controlled using timer controls. It is important to ensure that these controls are used in a way that is efficient and cost-effective.

4.5. Use supplementary heaters

The use of local supplementary heat sources (portable heaters) is often a common sight. However, it is important to ensure that these heaters are used in a way that is efficient and cost-effective.

4.6. Insulate pipework

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### 1. Why improving space heating is important for Scottish organisations

An organisation in Scotland, where we experience the seasonal temperature variations, is likely to have a significant space heating energy bill. Improving the space heating system can help to reduce this bill and save money.

Improving space heating systems, which will reduce energy consumption and save money, is a key priority for many organisations. It is important to ensure that these systems are controlled and operated in a way that is efficient and cost-effective.

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### 2. How this guide will help you

Whether you are a business owner, a manager or a staff member, this guide will help you to save money and energy on space heating. It provides practical advice and support for organisations in Scotland.

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## Further reading

This guide will help you save energy and reduce the costs associated with heating your office. Written by resource efficiency and space heating experts, the guide will help you understand just how much your space heating is costing you, appraise your current performance and improve your knowledge. This will enable you to make informed decisions about how best to save money – while improving comfort for your office.

Download it from the Resource Efficient Scotland website

## Lighting

- Replace incandescent light bulbs with more energy-efficient light emitting diodes (LED) lamps. These make immediate energy savings of up to 80% and have a life expectancy of up to 50,000 hours.
- When changing fluorescent tubes, use slimline versions or LED 'tubes'.
- Use natural light wherever possible. Keep windows clean and encourage staff to open blinds rather than turn on lights. Daylight blinds are available that redirect light to the ceiling thereby preventing glare. That is particularly useful when staff are situated near windows and in meeting rooms. Some blinds have perforated blades to allow a view of outside.
- Make sure lights can be switched off manually (particularly near windows). Installing zone controls and daylight sensors ensures that lights are switched on only when necessary.
- Install presence detector lighting controls in places not in constant use (e.g. toilets, store rooms and meeting rooms). These sensors provide savings of up to 30% on lighting costs.
- Ensure lighting controls are clearly labelled, especially if they are grouped together.
- For new installations, ensure you have several separate circuits so that lights in darker areas can be turned on independently of those in lighter areas.
- Run a 'Switch Off' campaign. It is **always** cheaper to switch off lights (including fluorescent lights) no matter how short the time period. Place stickers above light switches and use posters and emails to remind people. Free resources are available from our [staff engagement toolkit](#).
- Consider the whole-life cost savings of fitting energy efficient lamps. An LED lamp may cost more to buy than an incandescent lamp or compact fluorescent lamp (CFL), but when the lower running costs and reduced labour costs through less frequent lamp replacement are taken into consideration, the whole-life costs of LEDs are much lower.
- Ensure timers and sensors are in good working order and are set according to occupancy times.



## How to save money and energy on lighting systems

Advice and support for organisations in Scotland

How to save money and energy on lighting systems - Advice and support for organisations in Scotland

### How to measure existing light levels



Light levels are easily measured with a simple and cheap lux meter. Applications are also available for mobile phones and tablets.

The results can then be compared with the minimum levels set out in the table above. Any low lux levels could be reported as part of the lamp replacement process. In some areas, this may create an opportunity to improve efficiency.

Note that you may need to take multiple readings through daylight, through nightfall, but that should be carried out at additional light levels.

Note that you may need to take multiple readings through daylight, through nightfall, but that should be carried out at additional light levels.

Carrying out lamp replacement in offices where offices already have efficient lighting installed, but where the lighting still needs to be replaced, there are further opportunities to improve efficiency:

- use a large proportion of T2 fluorescent tubes in new installations
- use ballast-free lamps when you switch light on and off

If the answer is yes to any of the above, then carrying out a lighting audit is a very good idea. The table on page 19 will help you understand your recommended replacement options.

**Further support**

**Green Office guide**

Our popular Green Office badge helps people working in offices to do all they can to reduce their impact on the environment and the costs by improving the use of office resources.

Download this guide from the Resource Efficient Scotland website

Lighting type	Technical details	Benefits and applications	Things to consider
<b>Compact fluorescent lamp</b>	<ul style="list-style-type: none"> <li>• CFL</li> <li>• 75% energy saving</li> <li>• Long life span (up to 10,000 hours)</li> <li>• Colour rendering</li> </ul>	<ul style="list-style-type: none"> <li>• Best suited to general lighting</li> <li>• Available in a range of wattages and beam spreads</li> <li>• Difficult to recycle</li> </ul>	<ul style="list-style-type: none"> <li>• Best suited to general lighting</li> <li>• Available in a range of wattages and beam spreads</li> <li>• Difficult to recycle</li> </ul>
<b>LED lamp</b>	<ul style="list-style-type: none"> <li>• 80% energy saving</li> <li>• Long life span (up to 25,000 hours)</li> <li>• Colour rendering</li> </ul>	<ul style="list-style-type: none"> <li>• Best suited to general lighting</li> <li>• Available in a range of wattages and beam spreads</li> <li>• Difficult to recycle</li> </ul>	<ul style="list-style-type: none"> <li>• Best suited to general lighting</li> <li>• Available in a range of wattages and beam spreads</li> <li>• Difficult to recycle</li> </ul>
<b>LED lamp</b>	<ul style="list-style-type: none"> <li>• 75% energy saving</li> <li>• Long life span (up to 25,000 hours)</li> <li>• Colour rendering</li> </ul>	<ul style="list-style-type: none"> <li>• Best suited to general lighting</li> <li>• Available in a range of wattages and beam spreads</li> <li>• Difficult to recycle</li> </ul>	<ul style="list-style-type: none"> <li>• Best suited to general lighting</li> <li>• Available in a range of wattages and beam spreads</li> <li>• Difficult to recycle</li> </ul>
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<b>T2 fluorescent tube</b>	<ul style="list-style-type: none"> <li>• 75% energy saving</li> <li>• Long life span (up to 25,000 hours)</li> <li>• Colour rendering</li> </ul>	<ul style="list-style-type: none"> <li>• Best suited to general lighting</li> <li>• Available in a range of wattages and beam spreads</li> <li>• Difficult to recycle</li> </ul>	<ul style="list-style-type: none"> <li>• Best suited to general lighting</li> <li>• Available in a range of wattages and beam spreads</li> <li>• Difficult to recycle</li> </ul>

## 1. Why improving lighting is important for Scottish organisations

Lighting is a significant component of energy costs for most organisations. Improving lighting systems can reduce the cost of the total energy bill, as well as the process of procuring and installing lighting systems.

For example, if you get a better lighting system, you can expect the energy bill to be lower. This is because the lighting system will be more efficient and will use less energy than the old system.

**Cost study Edinburgh Finhouse**

The study found that the average energy consumption of a typical office is 100 kWh per square metre per year. This is equivalent to a cost of £100 per square metre per year. The study also found that the average energy consumption of a typical office is 100 kWh per square metre per year. This is equivalent to a cost of £100 per square metre per year.



## 2. How this guide will help you

This guide will help you to understand the benefits of improving lighting systems and how to do it. It will provide you with the information you need to make a decision about whether to improve your lighting system and how to do it.

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**Further support**

Our publications website provides help and advice on a range of topics related to energy efficiency and sustainability. You can find out more about our publications and how to access them.

Download this guide from the Resource Efficient Scotland website

## Further reading

There are likely to be many actions you can take to improve lighting and achieve energy savings in your office. Some actions will be no cost, some low cost, and some will require a considerable financial investment. This guide will help you understand the actions you should take.

**Download** it from the Resource Efficient Scotland website



## Office equipment

- Purchase equipment with the EU ENERGY STAR® standard or similar. If your computer has the ‘power save’ feature, make sure it is activated.
- Screen savers do not save energy. Enable ‘power-down’ settings and insist that staff switch off their computer monitors when not in use, including when they are away from their desks for meetings or breaks.
- During the refurbishment or replacement of equipment, request data on the average power consumed under typical operating conditions, and the standby and low energy consumption rates.
- Some energy saving settings can save as little as 10% of the energy used when in use, so switch off all equipment where possible or fit a simple plug-in timer. Alternatively, fit an energy saving plug to PCs that automatically switch off peripherals when the PC is switched off.
- Make sure vending machines are running at the optimum temperature and are serviced regularly. Consider installing 7-day timers on vending machines to reduce their energy consumption when offices are not occupied.

Many organisations with large energy bills use real-time monitoring, such as ‘smart meters’, to manage and control energy more effectively. Some equipment is fully wireless and portable, so you can move it around your property to identify immediately what is using the energy and actively adjust the usage accordingly. Alarms can be set to monitor unusual consumption or changes to base patterns. These can be linked to email or mobile phone contacts so that managers can have access to real-time information and respond quickly to any problems or anomalies.

If possible, ensure energy is purchased centrally, and get renewal quotes from existing and alternative suppliers annually. Investigate taking all, or a percentage, of your energy from renewable sources or ‘green tariffs’.

A close-up photograph of a hand holding a clear glass under a water dispenser. The dispenser has a digital display showing 'WATER PURIFIER' and 'CO'. The background is a teal gradient.

# Conserve water

The demand for water in Scotland has reached unprecedented levels. There is also a trend towards lower average rainfall in some areas, which could lead to water shortages. In the future, organisations are likely to see tighter restrictions on their use of water and further increases in charges for metered water, but most businesses are still not aware of how much they are using.

Over two-thirds of water use in the average office takes place in the toilets, where substantial savings can often be made. As with waste, the true cost of water is higher than the supply and sewerage charges alone. The true cost should include the energy taken to heat and deliver the water in your building. Therefore, associated energy costs should be used as an important reason for reducing water use.

Since 1 April 2008, Scottish organisations have had the opportunity to choose their water and wastewater supplier following the introduction of The Water Services etc. (Scotland) Act 2005. Each service supplier has a unique offering and it is recommended that your organisation chooses the supplier that suits your needs. Visit the [Scotland on Tap](#) website for more information.

## Water charges

There are three basic charging elements that apply to most sites and that contribute to your bill – water, wastewater (if connected to sewer) and drainage. If your property has a water meter, your water and wastewater charges are based on usage recorded by the meter. If you don't have a water meter, your charges are based on the rateable value (RV) of the property. Drainage charges for all customers are based on the RV of the property. All properties with these services are charged a fixed rate and a volumetric rate for each element of their usage, in addition to property (if connected to sewer) and roads drainage. Fixed and RV-based charges apply for the full financial year. Where the period of liability is less than the full year, charges will be apportioned on a daily basis.

There are six bill elements in total:

- A fixed water charge for water.
- A volumetric charge for water.
- A fixed water charge for wastewater.
- A volumetric charge for wastewater.
- Property drainage.
- Roads drainage.

The products you buy can have an effect on how much water you use so, before making a purchase, ask the following questions:

- Is it water efficient?
- Will it increase or decrease water use in the office?

### Baseline: calculating your water use

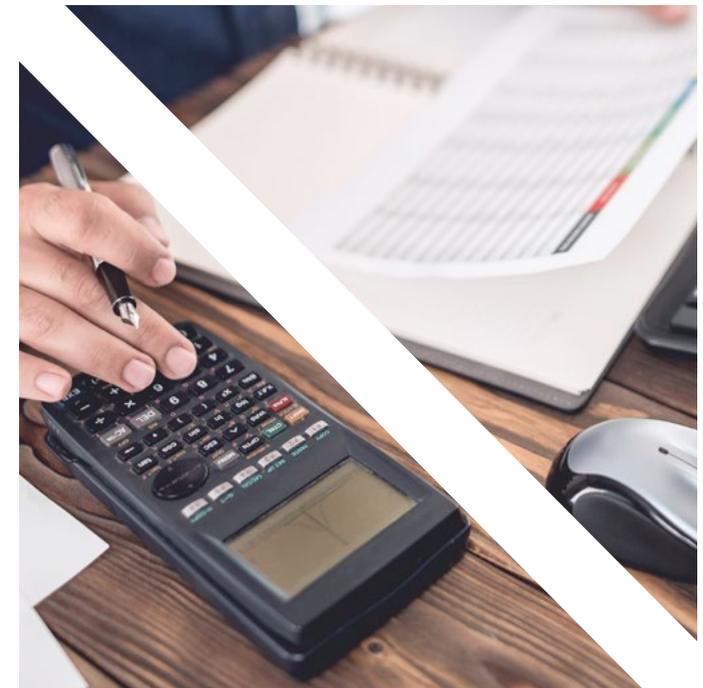
Your water bill will tell you the amount of water that you use and how much you spend annually. However, be careful to check if these are estimated or actual readings. Use the equations in Table 6 to calculate a baseline of annual water use and cost per member of staff.

**Table 6. Calculating a baseline of annual water use and cost per person**

Annual water use (m <sup>3</sup> )	÷	Number of staff in your organisation	=	Water use (m <sup>3</sup> /person/year)
Annual water cost (£)	÷	Number of staff in your organisation	=	Cost (£/person/year)

<sup>NB</sup> 1m<sup>3</sup> is equivalent to 1,000 litres

The average domestic water use for office buildings is 25 litres per person per day (no canteen) or 40 litres per person per day (with canteen).



## Practical actions

### Taps and showers

- Turn off taps fully – a 5mm stream of water wastes 528,000 litres (528 m<sup>3</sup>) of water per year, costing £900 for cold water or a staggering £6,000 for hot water.
- Fix dripping taps – a dripping tap will waste at least 5,500 litres of water per year.
- Is your water pressure too high? If you can fill a pint glass with water in less than 6 seconds, you may want to consider fitting tap aerators. Tap aerators and flow restrictors are low-cost solutions and can reduce water use by up to 70%. A flow rate of between 5 and 6 litres per minute is usually adequate for hand washing.
- Consider fitting electronic taps with infrared hand sensors or self-closing taps. These will reduce the amount of water used while improving hygiene. Ensure maintenance is carried out regularly – soap deposits and scale can cause tap mechanisms to jam, resulting in taps dripping and subsequent water loss.

- As with taps, ensure shower control units are regularly maintained as soap deposits and scale can cause blockages and reduce performance. When refurbishing shower rooms consider water efficient products and make sure they are correctly installed. Consider devices such as push-button showers or isolating ball valves to reduce water use.
- Typically, a conventional shower uses 35 litres (for a 5-minute shower). However, power showers use substantially more water (up to 12 litres per minute), which can use as much water as that used for a bath (70 litres). Fitting a £5 aerator to the showerhead of a shower that is used twice a day for 5 minutes, could save around £30 per year in water and sewerage costs.
- If your office has a large canteen, fit trigger taps to reduce the volume of water used during food preparation and cleaning.

### Toilets and urinals

- Fit 9-litre toilet cisterns with volume adjusters such as a ‘hippo’ bag or simply put a 1-litre plastic bottle filled with water in the cistern to reduce the amount of water used per flush.
- Consider retrofitting flush devices in existing toilets. For example, a variable flush or siphon mechanism can save up to 4 litres per flush and cost as little as £20 to install.
- Check how much water is released into the urinal when it flushes and consider whether it needs to flush after working hours. Installing passive infrared sensors (PIR) can save up to 50% in water use and costs. Also, consider installing waterless urinals. These can potentially reduce urinal water use by up to 90% and provide significant cost savings.

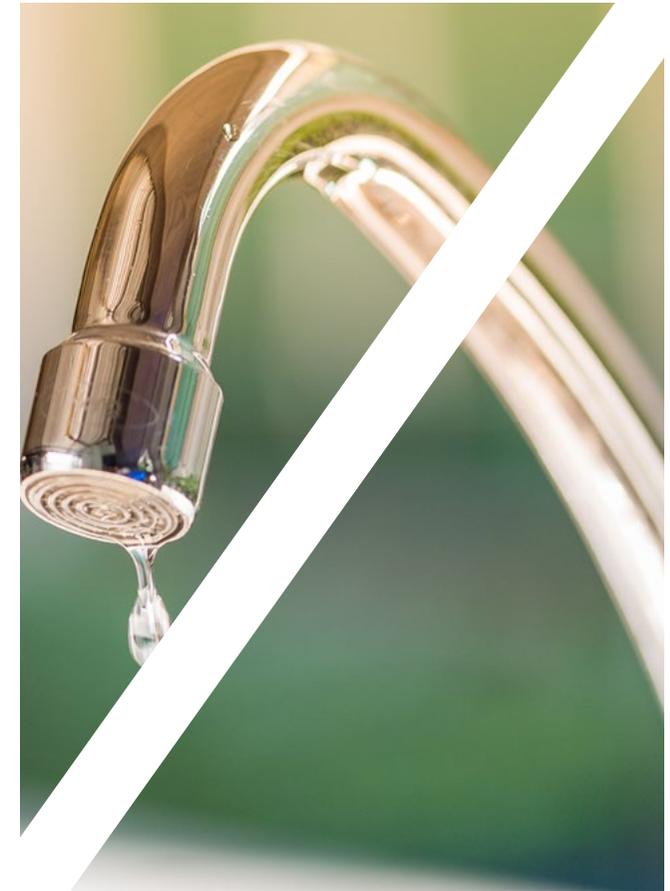
### Water using equipment

- When purchasing new equipment, consider the whole-life cost and look to buy products that are water and energy efficient or 'A' rated. For example, modern dishwashers can use as little as 9 litres per wash cycle.
- Try to ensure that dishwashers are full to capacity before starting a wash cycle.
- Only fill kettles with the amount of water that you need each time.

### Fix leaks

- Check your pipes for leaks – leaks can be expensive and can also cause damage to the building. Check your meter readings regularly and carefully to monitor consumption – if you are paying for water that you cannot account for, you may have a leak.

- Comparing actual meter readings with the readings on the bill, which may be estimates, can highlight any discrepancies and overcharges (estimated readings are indicated by an 'E' after the meter reading on the bill and actual readings have an 'A').
- If you have a water meter, take a reading last thing at night and again first thing in the morning. This will show you how much water is being used outside of normal office hours and can highlight leaks, faulty overflows or other water losses.
- Contact your water supplier to assist with locating leaks.



## Does your organisation have a water fountain?

In an ongoing bid to reduce single-use plastics, we suggest that it is plumbed into the mains water supply to avoid the need for refill containers, and that you replace plastic cups with re-usable or compostable cups.

# Save money on your water bill

## Advice and support for organisations in Scotland



**4.1.3 Dual flush system**  
A dual flush system gives the user the option to select either a 3 litre or 6 litre flush. A number of different types of dual flush system are available. Further options to save water include: timing the flush to match the volume of waste being flushed. The water saving benefits of dual flush systems are estimated to be around £5 to £10 per year per toilet.

the key advantage of dual flush systems is that it gives the user the option to select the flush volume of their toilet and the volume of water used. It is often not worth the investment for the cost of £5 to £10 per year per toilet.

know how they operate. Therefore, consultation with a professional plumber is advised. The plumber will advise on the most appropriate system for your organisation and ensure that the system is installed correctly.

**4.1.4 Wash water in toilet flush**  
The plumber will advise on the most appropriate system for your organisation and ensure that the system is installed correctly.

Figure 4: Improving the efficiency of your cisterns

What size cistern do you have?			
<b>Retraining</b>	<b>6 litres</b>	<b>7.5 litres</b>	<b>11 litres</b>
<p>• No change required.</p> <p>• You should look to install a restrictor if you have a cistern with dual flush capability.</p>	<p>• No change required.</p> <p>• Install a restrictor if you have a cistern with dual flush capability.</p>	<p>• Install a restrictor if you have a cistern with dual flush capability.</p> <p>• Install a restrictor if you have a cistern with dual flush capability.</p>	<p>• Install a restrictor if you have a cistern with dual flush capability.</p> <p>• Install a restrictor if you have a cistern with dual flush capability.</p>
<p>Cost: £0</p> <p>Payback: N/A</p>	<p>Cost: £0</p> <p>Payback: N/A</p>	<p>Cost: £0</p> <p>Payback: N/A</p>	<p>Cost: £0</p> <p>Payback: N/A</p>
<b>6 litres</b>	<b>7.5 litres</b>	<b>11 litres</b>	<b>11 litres</b>

**4.1.3 Developing the business case**  
Once you have determined which technology solution is most appropriate for your organisation, you may find that you need to develop a business case to highlight the benefits to your organisation. The following steps by step exercise will help you to develop a business case for your organisation.

Current scenario	Proposed scenario
<p>The total cistern 15 litres per flush with 100 staff use the facilities once per day.</p> <p>Water consumption = 15 litres x 100 staff x 2 times per day = 3,000 litres per day</p> <p>Water consumption = 3,000 litres x 100 days per year = 300,000 litres per year</p> <p>Water cost = 300,000 litres x 0.005 = £1,500 per year</p>	<p>Reduce flush volume from 15 litres to 4.5 litres by installing dual flush cisterns in each of the cisterns.</p> <p>Water consumption = 4.5 litres x 100 staff x 2 times per day = 900 litres per day</p> <p>Water consumption = 900 litres x 100 days per year = 90,000 litres per year</p> <p>Water cost = 90,000 litres x 0.005 = £450 per year</p>

Capital costs	Installation costs	Operational/maintenance costs	Annual savings
£5	£0	£0	£1,050

**4.1.3 payback period**  
The payback period is the time it takes for the investment to pay for itself. In this case, the investment will pay for itself in 1 month.

### 1. Why should I reduce water use in my organisation?

Water is a precious resource. Despite the fact that we live in a country with abundant water, it is still a finite resource. Reducing water use in your organisation can help to reduce costs and improve your environmental credentials. It can also help to reduce your carbon footprint and improve your reputation with customers and the public.



Figure 1: Energy used to provide water

### Save money on your water bill - Advice and support for organisations in Scotland

These organisations understand how this energy use will vary and have taken steps to reduce their energy use. They have also taken steps to reduce their water use and have been successful in doing so. This guide provides advice and support for organisations in Scotland to help them to do the same.



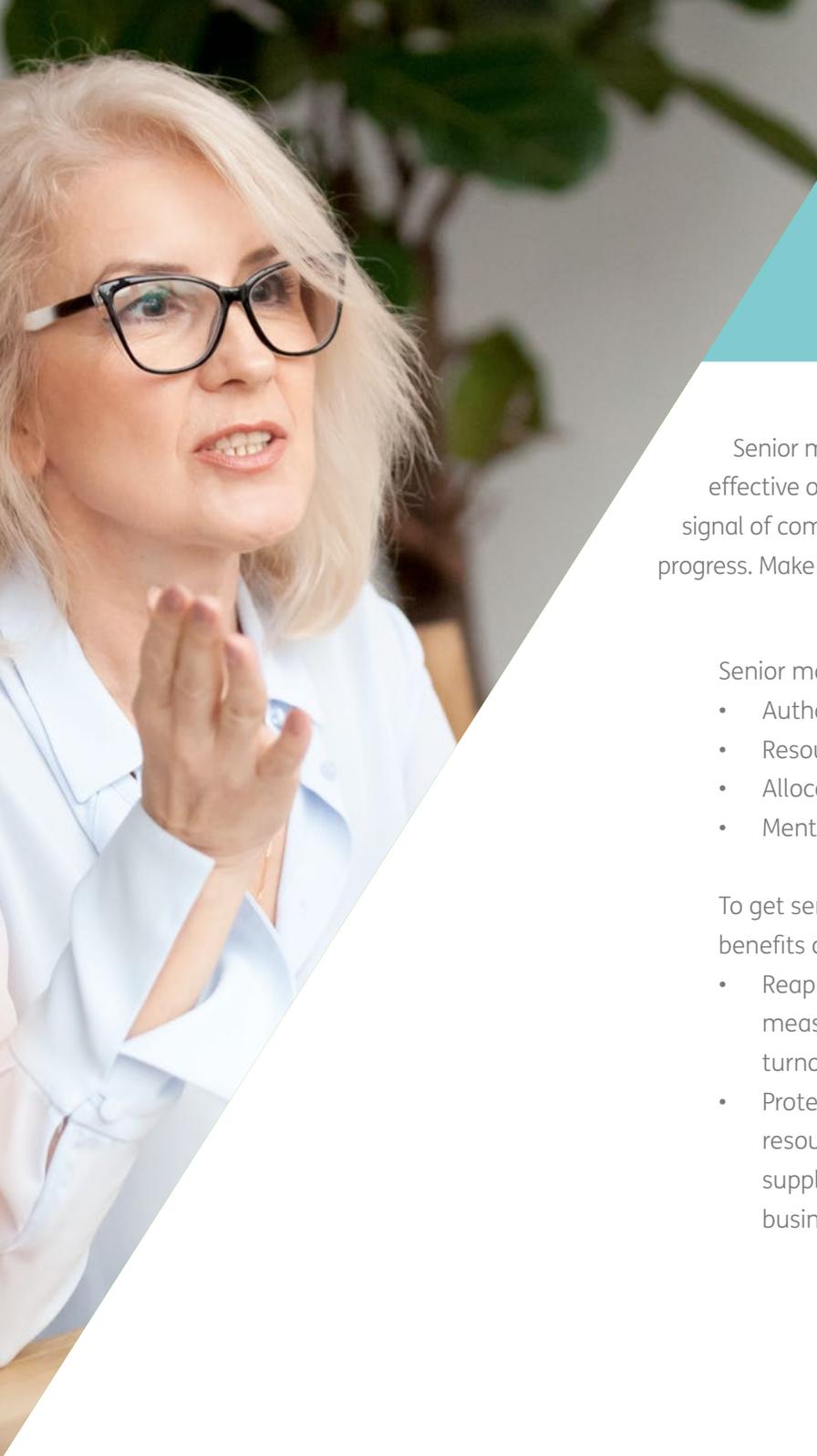
**Case study: Henderson's Restaurant**  
Henderson's Restaurant was opened in 1985 in Edinburgh by James Henderson. Today it is a well-known restaurant. Henderson's Restaurant is a well-known restaurant. Henderson's Restaurant is a well-known restaurant. Henderson's Restaurant is a well-known restaurant.

Download the full case study from the Resource Efficient Scotland website

## Further reading

This guide will help you to implement tried-and-tested water minimisation projects in your office.

Download it from the Resource Efficient Scotland website



# Gain support

Senior management involvement is vital to ensure support from the top of the organisation, and gain the most effective outputs and the most thorough behavioural change. A senior level sponsor provides leadership and a clear signal of commitment. They will also be able to escalate environmental messages to the board and accelerate your progress. Make sure you define the support you need from senior management and be prepared to communicate this.

Senior management can provide:

- Authority for action.
- Resources (staff, finance, time).
- Allocation of responsibilities.
- Mentoring and advice.

To get senior management support, sell the key benefits of resource efficiency.

- Reap financial rewards – simple waste reduction measures can generally save 1% of your annual turnover.
- Protect yourself against increasing costs – future resource scarcity, leading to rising costs and supply insecurity, poses a serious risk to Scottish businesses.

Once you have gained senior management commitment, you should look to gain buy-in from internal and external stakeholders – involving others is essential in identifying what needs to be done. Where possible, it is best to consult a team that includes:

- **Internal** stakeholders – health and safety manager, operational manager, purchasing manager, manufacturing manager, etc. Make sure operational staff are also involved.
- **External** stakeholders – facilities managers, cleaners, waste contractors, suppliers, local community, customers and shareholders, etc.



To ensure resource efficiency is embedded in the culture of the organisation, you will have to ensure staff are fully engaged and supportive. Staff need to feel involved, so make sure you identify suitable roles and responsibilities.

- What do you want them to do?
- Why do you want them to do this?
- When must actions be achieved?
- How will actions be achieved?

Employee involvement and empowerment is key to getting their buy-in.

## Setting up a Green Team

Establishing a Green Team to drive initiatives forward will provide you with vital support. Green Champions or Green Teams will be invaluable in spearheading a resource efficiency campaign and ensuring that procedures are being followed in relation to aspects such as waste segregation. When setting up a Green Team, aim to involve a cross section of employees in the organisation who work at various levels and in various departments to act as Green Champions.

### Identify a team of 'Green Champions'.

Interested people are more likely to be motivated. ✓

Choose employees from a varied and diverse working background. ✓

Create a positive climate to help your Green Team identify opportunities and help you communicate with your stakeholders.

The Green Team should be responsible for:

- Taking ownership of ideas suggested by management or employees.
- Facilitating action and providing access to different skills and ideas.
- Engaging with employees to reduce resistance to change.
- Improving awareness and ensuring staff understanding the need for change.



## Green Team Member Appointment Letter

Choosing the right member for your Green Team is vital in helping your organisation realise the benefits of reducing resource use and realising financial and environmental savings.

To help you appoint and mobilise your Green Team as quickly as possible we have prepared an example appointment letter for your Green Team members. You can copy and paste in to an email or letter and edit where appropriate before sending to your new Green Team members.

### (Persons name)

We are pleased to notify you of your official appointment within our Green Team. Your role and responsibilities will be invaluable in helping us to become more resource efficient - reducing our environmental impact, waste and our carbon footprint.

As a member of the green team your role may include the following key tasks:

- Liaise with colleagues, managers and other stakeholders to coordinate resource efficiency initiatives within your department/team/region
- Monitor your department's performance in energy waste and water against targets and report progress at Green Team meetings
- Work with other Green Team members and colleagues to identify and highlight opportunities for resource efficiency improvements
- Deliver a continuous programme of initiatives to communicate resource efficiency messages to colleagues, managers and other stakeholders to engage, enable and encourage them to participate
- Set an example to other staff of the attitudes and behaviours required to achieve our resource efficiency targets

The first task in your role as a Green Team member is to take part in Resource Efficient Scotland's Green Champions online training.

The Green Team Coordinator will be in touch to arrange the Green Team kick-off meeting where you can start to share the initiatives which will be delivered over the coming year and will help establish a set of targets that we will work towards to deliver resource efficiency benefits.

## Green Team member Job description and specification

We recognise that becoming more resource efficient - using less energy, water and raw materials, and reducing the amount of waste we produce - is essential to give us competitive advantage, maintain our reputation and reduce unnecessary costs. This will ensure that we continue to grow and prosper for years to come and reduce our environmental impact.

These benefits cannot be realised without the support of staff across our organisation. So, we need **passionate, proactive and target driven** people to join the Green Team. The Team will help us to **progress resource efficiency initiatives, generate ideas and motivate other staff** to play an active role in reducing our resource use.

In return for their commitment, Green Team members - who are not expected to have prior resource efficiency knowledge or experience - will receive **training and time** to progress resource efficiency projects and **support** from the Green Team Coordinator. This role is also a **career development opportunity** because it will provide team members with the chance to develop **new knowledge and skills, to enhancing their CV**. We encourage applications from staff across all business areas and seniority levels.

### Green Team members may be expected to:

- be the principal contact for staff and visitors on resource efficiency issues in their department/team/region
- liaise with the relevant department/employment manager to act as a focus for coordinating resource efficiency initiatives in their department/team/region
- liaise with the Human Resource department to ensure all new starters are trained and aware of resource efficiency policies and procedures
- regularly monitor their department's performance against targets
- attend Green Team meetings to report progress towards resource efficiency targets
- identify and highlight opportunities for resource efficiency improvements in their department and the wider organisation
- work with other Green Team members across the organisation to promote good practice
- deliver Green Team updates as part of their department/team/region's staff meeting
- manage and regularly update the Green Team noticeboards in their department/area/region/teams
- assist with other resource efficiency projects as required
- deliver a continuous programme of staff engagement and communications initiatives as planned with other Green Team members and
- set an example to other staff of the attitudes and behaviours required to achieve resource efficiency targets.

Green Teams can make a huge difference in accelerating environmental improvement by providing structure and staff resource to deliver enduring behaviour change and cost savings through resource efficiency.

Malissa Lippatt  
Resource Efficient Scotland

## Green Team kick-off meeting

Date		Time	
Location			
In attendance			
<b>AGENDA</b>			
<b>1. Introductions</b>			
<ul style="list-style-type: none"> <li>• Introduce your fellow Green Team Coordinators</li> <li>• Ask each table member to introduce themselves</li> <li>• Outline Resource Efficient Scotland and the support it provides</li> </ul>			
<b>2. Why are we doing this?</b>			
<ul style="list-style-type: none"> <li>• Overview of the reasons for change - the business risks of resource scarcity and climate change</li> <li>• The impact of staff behaviours on resource use and waste generation</li> <li>• How the Green Team can help to change staff behaviour</li> </ul>			
<b>3. Where we are now</b>			
<ul style="list-style-type: none"> <li>• Outline current performance and costs for energy, waste management, raw materials and water</li> <li>• Outline the organisation's resource efficiency aims and objectives (i.e. where your measurement is for)</li> </ul>			
<b>4. The role of the Green Team in achieving the organisation's objectives</b>			
<ul style="list-style-type: none"> <li>• Outline the support and resources that will be provided</li> <li>• Outline the importance of Green Team members being seen in a positive light and how Green Team activities should be communicated throughout the organisation</li> <li>• Discuss the importance of the Green Team reading by example and influencing colleagues</li> </ul>			
<b>5. Focus on the development of a Green Team action plan</b>			
<ul style="list-style-type: none"> <li>• Introduce the importance of having an action plan to help deliver the organisation's overall objectives and how performance will be measured</li> <li>• Agree the first actions and initiatives that will start you on your journey towards improved resource efficiency</li> </ul>			
<b>6. Develop a campaign plan</b>			
<ul style="list-style-type: none"> <li>• Where upcoming events or campaign ideas that could influence the Green Team action plan and ways to take advantage of any opportunities to reduce resource use and waste generation. For example, Recycle Week or running its energy audit-off campaign</li> </ul>			
<b>7. Training</b>			
<ul style="list-style-type: none"> <li>• Introduce the Resource Efficient Scotland Green Champions Tool that Green Team members should use initially to address knowledge and skills gaps</li> <li>• Discuss and address other knowledge and skills gaps</li> <li>• Introduce the Resource Efficiency at Work training which will give a simple overview of resource efficiency and discuss how it could be rolled out to all staff in your organisation</li> </ul>			
<b>8. Overcoming barriers</b>			
<ul style="list-style-type: none"> <li>• Discuss the barriers that the Green Team may face in talking about change and identify solutions to overcome these</li> </ul>			
<b>9. Any other business</b>			
<ul style="list-style-type: none"> <li>• Open the floor for questions from Green Team members</li> </ul>			
<b>10. Details of next meeting</b>			

## Our organisation needs

# YOU

We need passionate, proactive and target-driven people to help progress resource efficiency initiatives, generate ideas and motivate other staff to reduce resource use and waste.

### What's in it for you?

If you feel you are suitable for the role, register your interest with your manager and with the Green Team Coordinator using the contact details below.

### How to apply

If you feel you are suitable for the role, register your interest with your manager and with the Green Team Coordinator using the contact details below.

### Contact details:

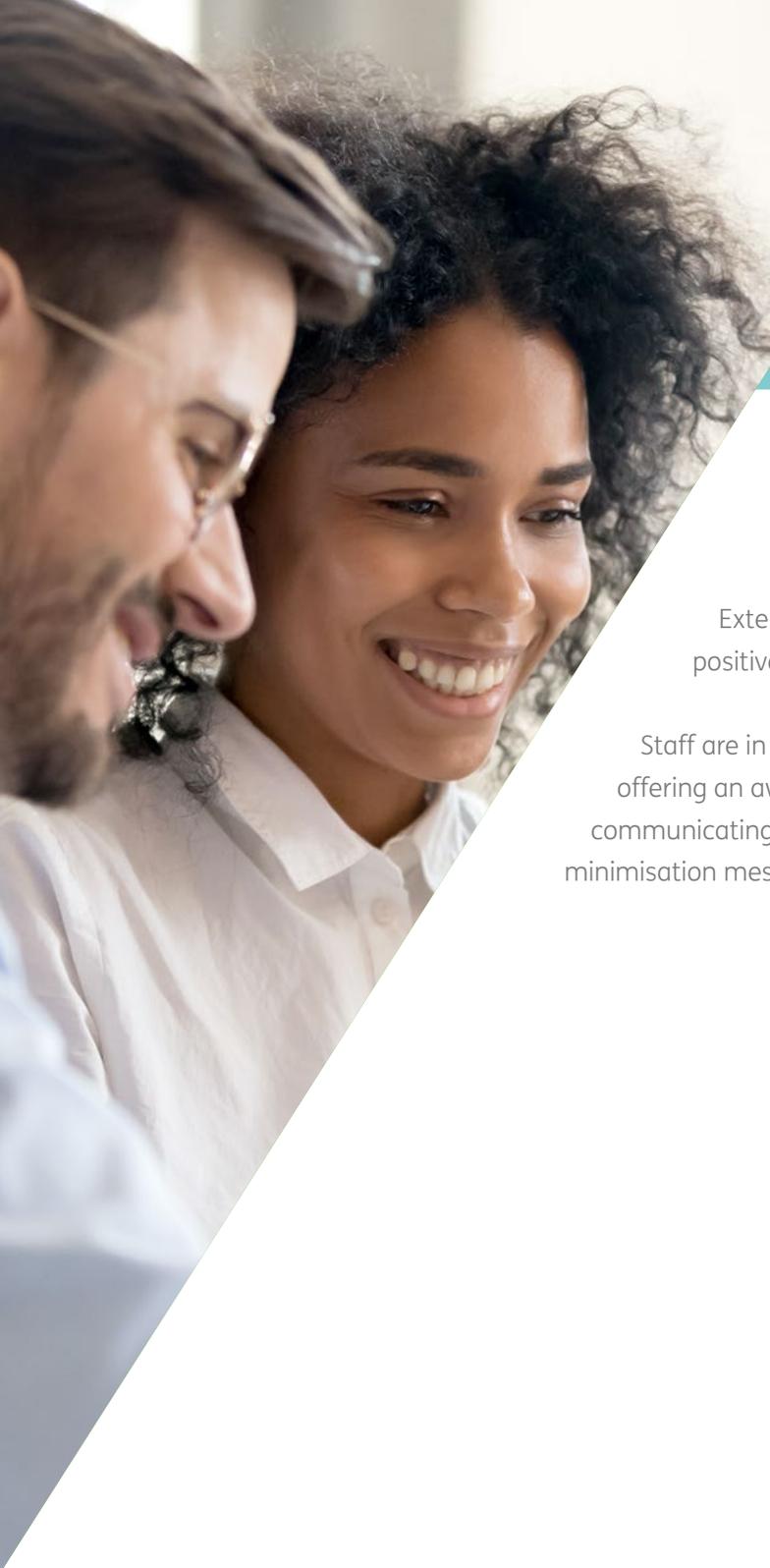
By taking measures more efficiently, Scottish organisations could save £2.5bn every year. Resource Efficient Scotland's limited by profits Government and European Regional Development Funds. It provides free technical advice, access to funding and expertise, and a green credit support to help organisations cut their energy, water and raw material costs. [www.resourceefficientscotland.com](http://www.resourceefficientscotland.com) (0800 800 2266) @ResourceEfficientScotland  
Contact: Peter Morley House, Forthside Way, Glasgow, G66 1DZ



## Free resources to help you set up a Green Team

If your office's environmental drive needs a turbo boost, then use our free Green Team resources to set up a dedicated task force of individuals from across your organisation who can work to channel all the ideas and energy you need to deliver real, practical change.

Access the Green Team resources on the Resource Efficient Scotland website



# Motivate colleagues and communicate success

Communication is the key to improving efficiency and environmental performance as most initiatives require everyone's involvement. Make sure that everyone understands what you want to do and why. Provide regular feedback on your targets and achievements to staff.

External communication, through reports and press coverage, can also be important as it gives your organisation a positive image and adds momentum to your programme.

Staff are in the best position to identify wasteful behaviour and implement ideas, so ask them for their input. Consider offering an award for any suggestions taken forward. Internal newsletters, presentations, stickers and posters are ways of communicating new initiatives and the progress of projects to staff. Leading by example will also help communicate the waste minimisation message to employees.

## Communication routes

- Newsletters and email updates.
- Presentations.
- Signage.
- Posters.
- Displays.
- Feedback.
- Awareness days.
- Word of mouth.
- Intranet and website.



## Awareness

Ensure everyone in the organisation is aware of the changes being made.

- Check employees understand how waste should be segregated and where it should go. Make sure out-of-hours workers, such as cleaning staff, are also aware.
- Ensure bins are clearly labelled – create your own branded signage.
- Encourage GreenTeam members or waste champions to assist with recycling efforts and raise awareness among staff.
- Get information from your contractors on how much waste you're recycling and communicate this information to staff.
- Set targets to increase recycling rates and when these are met, consider providing an appropriate award to staff.
- Highlight consumption levels against benchmark figures to staff via colourful graphs or posters.
- Ensure people know where they can go to find more information and how they can contribute (e.g. a suggestions box).

## Maintain awareness

- Run theme weeks.
- Update posters – remember to change methods of communication and deliver short, but new, messages to keep the message fresh and awareness high.
- Run competitions.
- Keep the campaign fresh.
- Update work procedures.
- Induction training for new employees.

## Review

How do you know if the initiatives are working? Analyse your measurement and monitoring data to see if figures are improving. Conduct an office walk round and:

- Check if equipment is still being left on.
- Check if waste is being segregated properly.
- Challenge wasteful behaviours – ask questions.
- Ask for improvement ideas.

You expect me to work hard all day but still be turned on at night



Switch off - Save energy

For more ways to become resource efficient, please visit:  
[www.resourceefficientscotland.com](http://www.resourceefficientscotland.com)  
0808 808 2268 | @ResourceScot  
A programme from

Leaving all the lights on overnight in a typical office wastes enough energy to make over 6,000 mugs of coffee



Switch off - Save energy

For more ways to become resource efficient, please visit:  
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0808 808 2268 | @ResourceScot  
A programme from

Everyone deserves a break



Switch off - Save energy

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0808 808 2268 | @ResourceScot  
A programme from

## Free resources to help you motivate colleagues

Our free staff engagement planner gives you step-by-step actions for motivating staff in your office. It contains links to all the free resources in our staff engagement toolkit, including posters, stickers, staff training presentations and quizzes.

**Access** the staff engagement toolkit on the Resource Efficient Scotland website



# Next steps

We understand that it can take time and experience to implement the types of ideas outlined in this guide. That is why we provide free, ongoing, one-to-one support to every small and medium-sized enterprise in Scotland.

Our team of experienced advisors has helped hundreds of organisations across Scotland to go green. We can provide you with specialist advice; access to funding and suppliers; and in-person, on-site support to help you save money on energy, water and raw materials.

## **We're here to help.**

Call us on 0808 808 2268

Email [enquiries@resourceefficientscotland.com](mailto:enquiries@resourceefficientscotland.com)

Visit [www.resourceefficientscotland.com](http://www.resourceefficientscotland.com)



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