Climate Springboard

Simple steps to a smaller carbon footprint: Electricity

Last updated February 2025





DATA

LIGHTING & EQUIPMENT

LARGER CHANGES

Welcome!

This guide contains 15 steps you can take to reduce your business's carbon footprint and bills from electricity use.

The UK government aims to create a "zero-carbon electricity system" by 2030. This is already happening: the National Grid is busy installing wind turbines, solar panels and power lines to supply homes and businesses with clean energy.

As a business, your first job is to reduce consumption and use electricity more efficiently. This helps to ease pressure on the grid as the move to clean power gets underway – and saves you money.

That's where this guide comes in. The steps require little to no investment and are directly within your control. Complete each one in order.

By the end, you will have:



Data showing how much electricity you typically use in a month



Started spending less money on lighting and electrical equipment



Reduced your business's carbon footprint, moving towards net zero



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Upgrade your workplace

Get an energy audit

Get funding





Get your team on board

Some of the steps in this guide can be completed by one person.

But many steps require you to work with colleagues to encourage small changes to their daily routines. Others might need you to spend company money or get permission to test things, like machinery.



You don't need speak to everyone before getting started. But have the following people in mind:

Senior manager:

You may need their approval to introduce certain measures or make purchases

Operations manager:

Someone with an overview of the building, including locations of light switches, meters, fuse boxes etc.

Financial officer/manager:

Someone who can share company finances so you can track how much is spent on electricity

Spokesperson

Someone who will be good at communicating the changes you're making and bringing others along for the journey

Volunteers:

Many hands make light work!

LARGER CHANGES



Motivation

Even if your team is clued up about the climate emergency, they may still have reservations about changes to their daily routine. Old habits die hard.

From our experience supporting businesses, we recommend you...



Have in-person conversations. We respond much better to being spoken to directly than reading emails or posters. Give people space to voice any concerns - you might find they are just looking for reassurance.



Ask for ideas. People are far more likely to take ownership of a task that they suggested. Some of the most successful initiatives we've seen came from senior managers listening to their staff, rather than imposing top-down measures.



Communicate the bigger picture. Explain the connection between energy use, carbon emissions and your company's commitment to meeting Scotland's goal of net zero by 2045. Learn more about drivers here.



Talk about money. Businesses that fail to act toward net zero will pay the cost. And it's not just storm damage - reducing emissions now can help you to avoid regulatory fines and keep important contracts.

STUDY

CASE

LARGER CHANGES

Incentives and competition

Consider rewarding teams or individuals based on their energy-saving achievements.

One Lanarkshire pub group, who completed Climate Springboard, had great success by inviting teams on different sites to compete to reduce gas and electricity use. It paid off: between 2019 and 2023, the firm saw their electricity use fall by 163,000 kWh (enough for a three-bedroom home for 42 years). The money saved easily paid for a £1,000 cash prize to the winning team.

In 2010, the UK Government cut its carbon emissions by 10% in one year by introducing an energy-saving competition between departments.



You don't need to use cash.

The offer of treats, vouchers or simply bragging rights can motivate staff to take part.



Update staff weekly on how they're doing.

Write a short email sharing the figures for electricity use and estimated money savings. (This gives you an extra reason to keep on top of the data)



Data

Objectives: By the end of part one, you will:



Know how to record your electricity consumption



Know how much electricity your business uses in an average week



Have named someone as responsible for logging electricity data on a regular basis





DATA

Identify your meter type

Cost: £0.00

How you will collect electricity data depends on which type of meter you have.

To start, locate the electricity meter. It is often mounted where the power lines enter the building. Ask your operations manager if you need help.

Analogue meter:

The oldest type of meter. It may have a digital or rotary display or a series of dials. You'll need to take manual meter readings.

Don't have a smart meter?

We strongly recommend you request one from your supplier. They are completely free with no upfront installation costs. Start by searching for your supplier on <u>Smart Energy GB</u>.

You can contact your energy provider directly by phone or email – there's no need to go through an energy broker. If smart meters aren't yet available in your area, ask to be added to the waiting list.

Work out which type of meter you have: Analogue or Smart If you're unsure, <u>this free tool</u> from the Citizens Advice Bureau tells you exactly which device you have. You'll need your postcode and the Meter Point Administration Number (MPAN) found on your electricity bill.

Smart meter:

It has a digital display. It automatically sends your meter reading to your supplier, typically every 30 minutes, which you can view online.

Find your data online

If you have an analogue meter, skip this step.

This step explains how to find and download your electricity data if you have a smart meter.

Log into your energy provider's online customer portal

Contact your energy provider by phone or email. If you've changed providers since the smart meter was installed, they may need to connect it to your new account.

3

DATA

Look for a page with a name like 'My Energy Usage'. There, you'll see your monthly, weekly, daily and even hourly electricity use in kilowatt-hours, usually shown on a bar chart.

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30	31	1	2	3	4	5
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13	14	15	16	17	18	19
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27	28	29	30	31		

Many energy providers allow you to download the data for a specific time frame. For most it's that simple, move onto STEP 4

I can't see any data on my account

My energy provider only provides the raw data

A

Try a free energy-tracking app like Bright or Loop. It connects to your smart meter and lets you view your electricity data in a digestible format on your smartphone.

Alternatively, send us an email at climatespringboard@ed.ac.uk. We love hearing from businesses! We'll send you a video tutorial explaining how to create a simple chart from a daunting mass of data!

Start recording data

Time: 50 minutes (spread over a week) £ Cost: £0.00

If you have a smart meter, skip this step.

This step provides a timeline for taking manual meter readings. Once complete, you'll have enough data about your business' electricity usage to start taking action.

Download our Data Collection spreadsheet. Record your data on the 'Start logging' tab, which looks like

	9am <mark>(k</mark> V	Vh)	5pm (kWh)	Day usage (5pm minus 9am)	Night usage (next day 9am minus 5pm)
Day 1	01223		01290	67	38
Day 2	01328		01386	58	14
Day 3	01400		01499	99	23
Day 4	01522		01573	51	14
Day 5	01587		01629	42	

Keep it up

Continue taking meter readings **once a week** (and log them in the spreadsheet!). As you go, you'll learn more about how your business uses electricity.

Decide who is responsible for taking the readings. That might be you! It's easy to forget, so create a recurring event in your work calendar or make it part of your existing routine.

Start with a sprint:

Take five meter readings over three days. Once in the morning (ideally 9am) and once in the evening (ideally 5pm) on Days 1 and 2, then once in the morning of Day 3.

DATA

Slow down to a jog:

Continue to take one reading each day, at the same time, for a week.

That's 10 or 12 readings in total, depending on whether you include weekends.

Enter your meter reading here

Calculate the difference between meter readings to work out how much you use during the day vs the night

Electricity consumption is measured in kilowatt-hours (kWh)

Look for patterns

This is where the magic happens. Once you understand your electricity usage patterns, you'll soon spot where you're wasting power, which will provide you with a list of quick, energy-saving wins.

Open your energy provider's online portal or take the meter data you collected in the previous step and plot it onto a bar chart.

DATA

Look for patterns

CASE STUDY

Jump Ship Brewing

In 2024, this Midlothian brewery started daily energy monitoring in order to understand which stages of the brewing process were most intensive. Thanks to this data, they realised they were wasting electricity by leaving the water heater switched on overnight – and have since automated the process.

Ask yourself:

Does it make sense? Your electricity use should match the daily and weekly rhythm of your business activity. For example, if your staff work from home on Fridays, your consumption should be much lower. If not, investigate why.

Your electricity consumption should be consistently much lower during unoccupied hours. If not, this could mean that lights or machines are being left on.

Are you seeing unexpected peaks? Most of time, this is a piece of equipment (e.g. boiler) that is set to come on automatically at the wrong time - or needs repairing.

What is happening overnight / on weekends?

Are these numbers good or bad?

DATA

Good question! Many businesses see their electricity consumption figures and don't know how to act on them. We recommend the Energy Benchmarking Dashboard, created by The Chartered Institution of Building Services Engineers (CIBSE).

This tool gives you a sense of what is normal energy usage for your premises, based on your size and sector. For example, a high-street shop each year uses 150 kWh per m2, on average.

Here's what a typical UK business uses electricity for:

Read your bill

OK, so this step isn't strictly about cutting emissions.

But it proves an important point: understanding how much electricity you use gives you more control over how much you pay each month.

SAM ANDERSON (APPLE PIE LAND) LTD UNIT 24 MIDLOTHIAN BUSINESS PARK ORCHARD ROAD MIDLOTHIAN EH54 XYZ

Enquiries:

if you have any queries regarding this invoice or you account in general, please call our Customer Service Help Line on 0800 123 1234 or write to us at Efficient Energies Power.

Statement Section

Total balance from previous invoice

Payment recieved on 27 September 2024

Balance Carried Forward

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Electricity Invoice

There are three main ways that businesses typically pay more than necessary:

You're paying for estimated, not actual usage

- Make sure you are paying for the electricity you use.
- If your bill says 'estimate' or 'E' next to the number showing your electricity use (kWh), start submitting actual meter readings each month.

Your capacity charge is too high

- This is a fee charged to larger electricity users, based on your maximum energy demand.
- If your capacity allowence is much higher than your peak electricity consumption (refer to your data from Step 4), call your supplier.

You're on the wrong tariff

- If you let your tariff 'roll over' after the initial contract ended, you'll likely be paying the highest rates for electricity.
- You should now have data on how much electricity you use and when. Use this to shop around for a better tariff more suited to your business's needs.
- For example, if your business mostly uses energy at nights and weekends (this is common for restaurants, pubs, etc.) moving to an evening and weekend tariff could save you money.

Lighting and equipment

Objective:

By the end of part two, you will:

Have a bird's eye view of what is using electricity in your workplace

No longer be wasting energy on lights and high-power appliances

Be paying less for electricity

Have a comfortable and productive workplace full of natural light

DATA

Audit your premises

Collect information about your workplace to spot where energy is being wasted.

CASE STUDY

Edinburgh International Festival

Wanting to waste less energy on lighting, EIF worked with their security contractors, who had been turning on all the lights when opening the building, to do a review of the building to point out non-essential lighting that should stay switched off in future. This common-sense approach yielded quick results. Walk around your workplace with a printed floorplan (the fire safety plan will include one).

Lights left on

Take note of which lights are on in unoccupied or unused areas, as well as at the end of the workday after everyone else has left. Highlight or circle these areas on the floorplan.

Ask your co-workers for pointers about rooms or areas of your premises where they have noticed lights being left on. (Involving others from the beginning will help get buy-in for later, when you need them to change their habits!)

LEDs

Check each light fitting. Write down the total number of non-LED (e.g. halogen) bulbs and their locations (e.g. kitchen).

Before starting, speak to your operations or building manager. They may already have this information on record.

Equipment

Take a note of large appliances or pieces of machinery that are likely to be using lots of power, such as servers, air conditioners and water heaters.

*A quick way to check:

Halogen bulbs give off warmth.

OFFICE FLOOR PLAN:

○ LIGHTS OFTEN LEFT ON
 ✓ LED BULBS
 X HALOGEN BULBS
 ○ HIGH POWER EQUIPMENT

NON LED BULBS TO BE REPLACED

- 2 x Kitchen, Edison bulbs
- 2 × Bathroom, Edison bulbs
- 2 x Printer room, Tube bulbs (900 mm)

HIGH POWER EQUIPMENT

2x LaserJet printer, Printer room Air Conditioning Unit, Hot desking space Server, Storage room

Switch off unnecessary lights

Time: 2-14 days

££ Cost: £0 - £50

In this step, we propose two approaches to cutting your energy use from lighting. Choose whichever best suits your business.

CASE STUDY

Lisini Pubs

This Lanarkshire pub group started a 'green team' in each of their five venues – then got them to compete to reduce gas and electricity use. They saved £75,000 in just one year, which paid for a £1,000 cash prize to the winning team.

Smart lighting

Install smart bulbs, <u>timer switches</u> or <u>passive infrared</u> (PIR) sensors. These can be set to match your operation hours (e.g. coming on at 9am and off at 5pm) or automatically dim when it's bright and switch off when no-one is in the room.

Smart bulbs typically cost around £10 each, while timer switches (which require installation) start at around £40.

DATA

Behaviour change

Explain to your team – ideally in person – that you're trying to reduce energy consumption (and therefore emissions), and you need everyone's help switching off lights.

Ask your team to start switching off lights when they exit empty rooms/areas and when they leave the premises at night.

Here's how to deal with some common behaviour change blockers:

Someone else will turn off the light."

Set a rule that the last person out of a room/area/building should turn off the light.

"I thought that light should be left on."

Place red stickers on light switches that should be left on.

"I don't want to turn off lights in someone else's area."

Label light switches with the room/area the light is in.

Forgetting

Continue to remind people in person, put up posters and (loudly) celebrate those who do remember.

Use natural light

The more sunlight there is in your workplace, the less need for artificial lighting. Combined, these six small changes can add up to substantial energy savings over time.

Adjust blinds to make the most of sunlight. Pull up blinds during the day to let sunlight in. Close them again when it's dark to keep warmth in. On too-bright days, tilt the blinds towards the ceiling to reduce glare while letting light in.

Clean your windows and light fittings.

This sounds like it has nothing to do with energy saving, right? Dirty windows block light: without regular maintenance, in 3 years light levels can fall 30%.

Review your office layout. Remove any objects that are blocking sunlight from entering through windows. Locate desks away from dark corners and next to windows (your coworkers will thank you!).

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DATA

Switch to LEDs

- Time: 1-2 hours + installation
- \pounds Cost: £18+ per light

CASE STUDY

Edinburgh International Conference Centre

As of 2023, the team at the capital's largest conference venue have switched nearly two-thirds of their lights to LED. In combination with careful management of their heating and cooling system, this cut their electricity use by 41%.

Research the cost of replacing all your halogen bulbs. Refer to the information gathered during your lighting audit in Step 6.

Keep the following in mind:

Lamp type: If you have fluorescent tube lights, fully switching to LEDs will mean rewiring and changing the fixture. For a lower up-front cost, you can buy 'hybrid' LED bulbs, which don't need rewiring and but are slightly less efficient.

Costs: If you need to make a case for spending the money, use Business Energy Scotland's (BES) Lighting Improvement Calculator to calculate how much you will save. BES also offer dedicated loans to SMEs.

Support: BES can conduct a free audit (see Step 14) of your premises to assess your suitability for a range of carbon-saving interventions, including LEDs.

How much difference will it make?

LED (light-emitting diode) bulbs use around a quarter of the energy of halogen bulbs, and last up to **10 times longer**.

Lighting an average-sized office of 30 people with halogen bulbs means you are wasting £400 per year on electricity, by comparison. And LEDs are already 95% efficient – about as good as it gets – so don't worry about needing to pay for upgrades.

Identify high-power devices

Time: 1 day - 1 week

Cost: £0 - £150 ff

Make a list of the appliances that consume the most electricity in your workplace. Here are three ways to do this.

CASE STUDY

Edinburgh International Conference Centre

EICC have cut emissions by 60% in the 10 years since they installed a building management system, which controls the venue's heating, ventilation, cooling, water and electricity. It was a big investment but allows the team to remotely and dynamically adjust how, when and where energy is used.

£0

Manually investigate

Split your workplace into zones, such as rooms or floors.

Switch off everything in zone 1 at the end of the day. The next morning, take a meter reading or check your smart meter and note down the overnight energy consumption. Repeat this for each zone. As you go, you should be able to zero in on the location of energy-draining appliances.

DATA

Buy a plug-in power meter

The Energenie power meter goes between a plug and the mains socket like a travel adaptor. A small display shows how much electricity the plugged-in device is using.

Testing each piece of equipment in this way will mean lots of unplugging! Consider doing this outside normal working hours to avoid disrupting staff.

Buy an energy monitoring system

Think of this as a smart meter upgrade. Once installed on your building's electrical panel, an energy monitor detects what kind of appliances are being used, identifies how much electricity each one uses, and sends the data to an online portal or smartphone app.

Providers include Voltware, Emporia and Censis. For more complex needs (e.g. manufacturing and hospitality), try Energy Saving Bear.

Make small changes

Time: 1 day

Cost: £0 - £5

Look at the list you created in Step 10. Starting with the devices that use the most electricity, take the following measures to reduce wasteful electricity use.

Keep reviewing these measures (and your energy data) to see what has worked and what hasn't. Ask your coworkers for feedback and ideas on how to improve.

This will rely on changing people's behaviour, so revisit the Get your team on board section of this guide for ideas.

First, establish a routine for switching off appliances overnight, as this is not likely to affect other staff. Then, decide whether some devices could be turned off during the day when not in use – hot water urns, TV screens, and printers, for example.

4

Set timers

3

If it's not practical for staff to turn off high-power devices by hand, you can buy simple plug timers for around £5 each. They plug into the mains like a travel adaptor and allow you to set which hours to supply electricity – much like setting the hours your central heating comes on.

Turn off when not in use

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Consolidate

DATA

Work through your list of devices and consider whether any are redundant. For example, do you need three printers, or would one do the job? Could you store the same amount of food in three fridges instead of five half-empty ones?

Make equipment-specific tweaks

Does your business have equipment specialised to your sector, such as refrigerators, motors or cranes? Browse Carbon Trust's energy efficiency guides for excellent tailored emissions-cutting tips.

Use eco-mode

Finally, make sure any devices that are switched on are set to energy-saving or eco mode. This can make a big difference: washing machines typically use 59% less energy when set to this mode.

Larger changes

Objective:

By the end of part three, you will:

Understand the pros and cons of 'green tariffs'

Have a completed a free energy audit of your premises

Know where to go for funding to pay for more costly upgrades

Invest in a clean grid

misleading.

'Switch to a green tariff' is common advice given to businesses looking to reduce their carbon footprint. However, this is

Changing to a clean energy provider can still have a positive impact! But it's important to understand the limits, too. Due to a loophole in UK regulations, energy suppliers can buy certificates that allow them to sell electricity to consumers as 100% renewable - even when it is generated entirely from fossil fuels. Read our blog where we explain this in depth.

So, should I bother switching?

If you can afford it, yes. But we recommend moving your business to an energy contract with Good Energy, Ecotricity or 100Green.

The UK's energy regulator Ofgem concluded in 2023 that these are the only suppliers whose business model helps to add more renewable energy to our national grid.

Will it reduce my Scope 2 carbon emissions?

Not directly. You shouldn't record your Scope 2 emissions as zero just because you have changed supplier.

However, the three suppliers mentioned above either own or have direct purchase agreements with wind and solar farms. By switching to them, you are investing in helping to raise the share of clean energy in the national mix lowering everyone's emissions.

How do I switch?

Check the terms of your business energy contract. You can only switch once the contract ends, or you are on a 'deemed contract' (e.g. you have recently taken over new premises and have inherited the previous tariff).

Upgrade your workplace

Time: 1 week - 3 months

££ Cost: Variable

Here are three technologies that you can invest in to shrink your electricity emissions.

CASE STUDY

Ore Valley Housing Association

OVHA built a community benefit wind turbine in Cardenden in 2017. It has since generated enough clean electricity to power 3,800 homes for a year equivalent to saving 2,620 tonnes of CO2 emissions! Selling the energy to the grid raises £350,000 annually, which is reinvested into improving the housing association's properties.

Efficient equipment

Replace power-hungry appliances (such as ovens or servers) over 15 years old with newer, more efficient models.

Running costs make up most of the lifetime cost of a product – far more than the initial purchase. If a seller can't tell you the expected running costs of their equipment, try someone else.

Volt optimisation

The UK National Grid supplies power at 242 volts on average, but most appliances are most efficient at 220V. Volt optimisation (VO) systems lower the voltage of grid electricity supplied to your premises, typically reducing your consumption by around 20%.

You can request a free site survey from Emissis.

Solar panels

The most common way to generate your own clean electricity while reducing your energy bills. But make sure to complete your energy efficiency steps first! The less electricity you consume, the fewer solar panels you'll need to buy.

To start, request a free solar survey from Absolar to find out the solarpower potential of your building.

Get an energy audit

Make sure that you have completed your 'housekeeping' steps that are listed in this guide to make the most of your audit.

CASE STUDY

CJM Accountancy

CJM requested an energy audit in 2021. The report recommended adding insulation, installing LEDs and replacing the boiler. They paid for the changes – worth about £7,000 – with a 0% interest loan and grant from Business Energy Scotland. The building's EPC score jumped from 91 to 69!

You can request a free energy audit from Business Energy Scotland (BES), a governmentfunded body.

To start, complete this simple online form

Next, you'll be assigned a Business Energy Adviser. They will visit your premises and show you how to use less energy to heat, light and power your business – and check to see if you could install solar panels or wind turbines. After, your adviser will send you a detailed report, with:

- Tailored recommendations for how to save energy, e.g. insulate your roof
- Estimated costs for each item
- How long it will take to pay back, e.g. five years
- How much less CO₂ you would emit

This report will come in handy if you apply for a government loan or grant to fund your changes (see <u>Step 15</u>).

Businesses and charities can apply. You are eligible if you have:

- Fewer than 250 full time employees
- A turnover less than £42 million
- A balance sheet total less than £36 million.

Get funding

The next step on your net-zero journey likely involves investing in technology or upgrades, such as solar panels or insulation.

Here are places you can go to get loans or grants to support:

Scotland-wide

Business Energy Scotland SME Loan Scheme -Interest-free loans up to £100k, grants up to £30k

Highlands and North

- Highlands & Islands Green Grant Up to £250k
- Perth & Kinross Council Green Capital Development Grant - Up to £25k

East and South

- Fife Council SME Development Grant Up to £2,850
- Invest in West Lothian Low Carbon & Energy Efficiency Grant - Up to £8k
- East Ayrshire Council Net Zero Support Grant Up to £3k

Glasgow and West

- Glasgow City Council Green Business Grant Up to £10k
- East Renfrewshire SBA Get To Zero grant Up to £10k
- Renfrewshire Council Net Zero Grant Up to £10k
- West Dunbartonshire Council Towards Net Zero Grant -Up to £10k
- Inverclyde Council Towards Net Zero Grant Up to £10k
- West College Scotland Net Zero Workforce Development
 Fund Funded training

Check out Find Business Support for a regularly updated list of net-zero funding options.

Congratulations!

If you completed all 15 steps, you have substantially reduced your overall electricity use and associated greenhouse gas emissions. Well done!

It's a huge achievement, so take some time to celebrate the hard work of your team.

What's next?

Reward your coworkers

Changing behaviour is hard work. To keep up the momentum, it's crucial to show appreciation for those who have put in the hours.

Make some noise!

Publish a blog, social media post or press release (or all of them!) about what you've done. Be proud of your progress and honest about the challenges.

Create a climate strategy

Drop us an email at <u>climatespringboard@ed.ac.uk</u> and we'll send you a template and advise you on how to get started – totally free.

Keep learning

Sign up to <u>Climate Springboard</u>, a free net zero support programme for Scottish SMEs.

Join our community

Subscribe to our LinkedIn bulletin, where we share blogs, case studies, green policy updates and funding opportunities.

You're in (a) good company

Welcome to a community of 200+ Scottish businesses – of all shapes and sizes – who are committed to reducing their planet-warming emissions.

Case Studies

If you're looking for inspiration and ideas for how to make other aspects of your business more sustainable, read some case studies about the fantastic (and award-winning) SMEs that make up this community.

- industry'
- bakery
- gas use by 25%
- about climate
- winning and losing a contract'
- time
- one year
- switching your staff to electric cars

• LS Productions: 'We hope to have a ripple effect across the

• Lazy Day Foods: Sweet emissions savings for central belt

• Pilton Community Health Project: Edinburgh charity cuts

• CJM Accounting: How an Ayrshire accountancy got serious

• McLays Foods: 'Sustainability is the difference between

• CSG Clean: Cleaning firm takes climate action, one step at a

• Lisini Pub Group: Green teams save £75,000 on energy in

• East Lothian Housing Association: The nuts and bolts of

• Dornie Croft: Mastering heat pumps in the Highlands

Tell us your story

We'd love to hear about the successes (and hiccups!) you've had on your netzero journey since completing Climate Springboard or this guide. Please send us an email if you're open to taking part in a case study. It's a great way to raise your profile.

climatespringboard@ed.ac.uk

