

Energy Audit

About this project

This guide is for a **3 month Bronze Award project**. It is suitable for both **group and individual** volunteering.



Through this project you'll help the National Energy Foundation to meet our aim of improving the use of energy in buildings while making a difference to the people and places around you.

What does it involve?

An energy audit is an assessment of the energy needs and energy efficiency of a building. This project involves calculating the current use of electricity and carrying out an audit to assess the amount of energy used by lights. You will then be able to look at your results to find ways to save energy and present your findings to the person who is in charge of energy.

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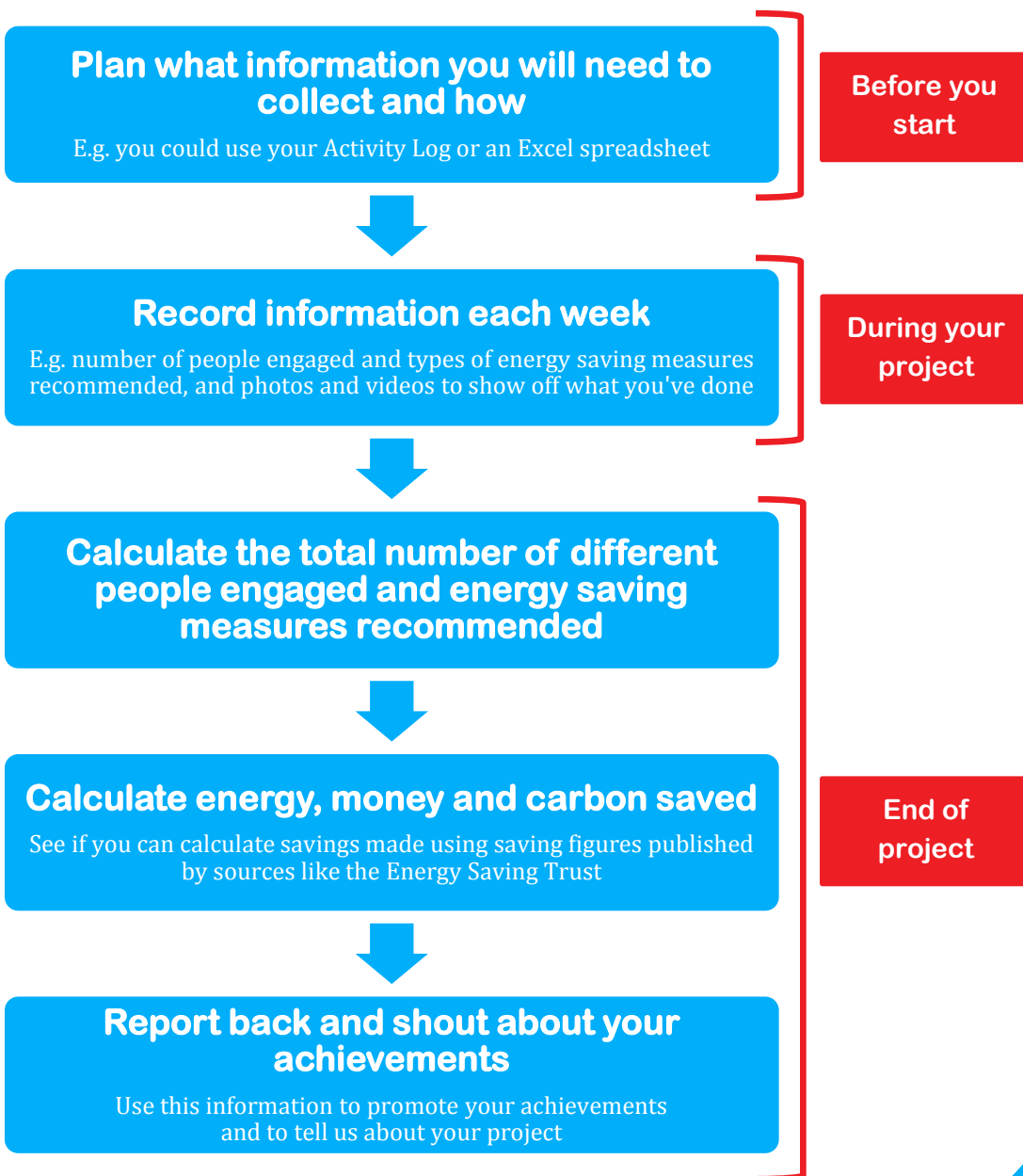


How to use this guide

- Follow this step-by-step guide to plan, run and evaluate your very own energy saving project. You might take more or less time than is set out in the guide to complete a step – don't worry, this is your project so you can decide how you use the time available. If you have other ideas that aren't included in the guide, feel free to use them and adapt the guide to meet your own needs.
- Refer back to the [Energy Tutorial](#) to get ideas for energy saving tips you might need during your project.
- Make sure you keep safe. When your project involves activities outside of your home, you should carry out a risk assessment and ensure you have appropriate adult supervision if you're under 18. [Click here](#) to download tips and a template risk assessment form.
- At the end of each week, update your Activity Log to keep a record of what you've done and save any photos, videos or other materials you've produced. Download an Activity Log to fill in by [clicking here](#).
- When you finish your project, complete the [End of Project Survey](#) and send information about what you've done, along with your photos, videos and materials produced, to energyenvoys@nef.org.uk to claim your Energy Envoy Certificate from the National Energy Foundation.
- Remember you must spend a minimum of **one hour per week** volunteering for the time required at your level for it to count towards your Bronze, Silver or Gold Award.

Tracking your progress

At the end of your project you'll need to report the number of people you've engaged. This will include people given advice about energy, reached by social media, attending events and presentations, and engaged about energy in any other way! You may also be able to calculate the amount of energy, money and carbon saved through your project. Here's what you should do:



Week 1-3



If you haven't already, make sure you've completed the three week [Energy Tutorial](#) first to get lots of ideas and tips that will help you with your energy saving project.

Week 4



Start your project by thinking about which building you are going to audit. Discuss your ideas as a group or brainstorm on your own. The building could be your DofE centre, your school or college, or a local business (e.g. a local shop or café), but it can't be your own home (otherwise it won't count as volunteering to help your community!). You will need access to the electricity bills for the last year for your project, so consider who you would have to contact to find out whether they will give you permission.

Compare your ideas by considering the pros and cons of each. Factors to think about might include:

- Location – how will you get there?
- Point of contact – who will you need to talk to?
- Access to energy bills – can you get this information?
- Access to the building – can you visit the building to conduct the audit?
- Help during the audit – can someone from the building (e.g. a caretaker) help you to identify different lights during the audit?
- Anything else?

By the end of the session you should have decided which building you are going to audit. Talk to the person in charge of the building about your project and make sure they are happy for you to complete the project there before the next step. Why not take a copy of this guide with you to explain the project to them? Remember to mention that the purpose of the project is to help them to identify ways they could save energy!

Don't forget to keep a record of what you've done, the number of people you've engaged and the different energy saving measures you recommend, and save any photos, videos or other materials you've produced.

Week 5



Plan the tasks that need to be completed to deliver the project. The project will include the tasks below, but there might be other things you need to do to collect the energy bill data and to complete the audit.

- Collect energy bill data for the last year (or three years if possible)
- Analyse energy bill data to determine current electricity consumption
- Design an audit form which focuses on lighting in the building (this will be a simple table to fill in, as explained in Week 7)
- Visit the building to fill in the audit form
- Assess the results of the audit and identify ways to save energy
- Write up the results and present your findings to the person who is in charge of energy (either in person or by sending them a written summary)
- Share the message about your project with your community (e.g. using social media or by contacting your local newspaper)
- Anything else?

By the end of the session you should have agreed who is going to do what (if you are volunteering as part of a group), as well as planned and agreed a date and time for the audit and how you're going to present the findings to the person who is in charge of energy.

If you're auditing a school, the best time to complete the audit is likely to be during a break time or lunch time when rooms are less busy. If you can, arrange for someone from the building (e.g. a caretaker) to complete the audit with you or to tell you which types of light bulbs are used in different rooms.

Week 6



It's time to find out the actual electricity consumption of the building. Collect copies of the electricity bills for the building for the last year (or three years if possible). If your chosen building is a school, the school bursar should have this information.

Energy bills are measured in the amount of kWh (kilowatt hours) used. Energy used is measured in kilowatts (kW), so kWh is the amount of energy used over time. You need to find out the total kWh used per bill (mainly in quarterly bills) and costs for electricity. Write down these figures or record them in an Excel spreadsheet. How do the electricity

costs compare between different quarters and years? Can you think of any reasons why this might be?

If you have time, convert the kWh to CO₂ emissions by multiplying kWh by 0.462 (this is the carbon 'conversion factor' for electricity) and record this in your notes or spreadsheet. This provides a CO₂ kg equivalent (1 kg of CO₂ is the equivalent of the amount of air needed to fill 100 party balloons).

You now have the baseline energy figures for the building!

Week 7



This week you are going to design a lighting audit form which you will take with you to fill in when completing the audit next week. Your audit form needs to record the date and time of the audit, as well as the following for each room in the building that you're auditing:

- Room number
- What the room is used for
- Is the room empty?
- Total number of light bulbs
- Number of light bulbs switched on
- Number of light bulbs switched off
- Types of light bulb (these vary greatly in size and wattage – the caretaker could help you to identify them)
- Wattage (all bulbs are rated by wattage (W), which is the amount of energy they use – the caretaker could help you to identify this)
- Light level of the room (if you can access a light meter)

Once finished, print off the forms ready to fill in during the audit next week. Think about what you will need during the audit and take these things with you – otherwise it could be a long walk! This might include pens, paper, information about different light bulbs, a plan of the layout of the building or a Google Earth bird's eye view.

Week 8



Complete the audit by visiting each room in turn and filling in the audit form that you prepared last week. If you're volunteering as part of a group, you could do this in pairs or small groups.

Keep your eyes peeled and double check your audit form to make sure you don't forget anything.

Week 9



Well done for completing your energy audit! You will now be able to look at your results to find ways to save energy.

To do this, have a look at your observations and think about how energy could be saved in each room. Here are some questions to consider:

- Were any lights switched on in empty rooms?
- Which room used the most energy (the highest number of Watts) to power its light bulbs?
- Was the number of lights suitable for what the room is used for? If you had access to a light meter, was the level of light recorded suitable for what the room is used for?
- How many energy saving light bulbs (e.g. LEDs) were there in the building? Where could energy saving light bulbs be used instead of other light bulbs?
- How could the people who use the building be encouraged to change their behaviour to reduce the amount of energy used to power the light bulbs?

Write a list of energy saving tips for each room.

Week 10



Now you're ready to share your findings with the person who is in charge of energy for the building to help them to save energy. You might have already planned everything for this in Week 5, but if not, decide whether you will present your findings in person or by sending the relevant person a written summary of your observations and energy saving tips. This might involve arranging a meeting with the relevant person or arranging to give a presentation.

Think about how you are going to communicate your findings. Use the rest of your time this week to prepare materials that you'll use to communicate your findings, such as a PowerPoint presentation or a written report. How will you explain the reason for the tips you have chosen? How will you persuade the person who is in charge of energy to follow your recommendations?

Facts and figures are a good way to persuade people to save energy. Can you calculate the amount of energy, money and CO2 emissions they could save through carrying out your energy saving tips using figures published by sources such as the Energy Saving Trust?

Make sure you have made a note of your key points and print off anything you need to take with you.

Week 11



Prepare some material to share with the wider community to spread the message about your project. Start by deciding how you will share the message and with who. You could give a talk for your classmates, use social media, contact the local newspaper or write an article for a newsletter. Remember to explain why your project is important in terms of helping people to improve how they use energy, describe what you've done and the impact of your project in terms of the energy savings you identified. Make sure you get permission from the building owner to share the data collected from the energy bills and audit forms if you want to include this information.

Week 12



This week you will share your findings with the person who is in charge of energy for the building and with the wider community. You could be giving a presentation, having a meeting or sending a written summary with an explanation of your recommended energy saving tips, as well as taking steps to share your achievements as widely as possible.

And finally, don't forget to thank all the people from the building who have helped you with your project.

Week 13



Congratulations on completing your energy saving project! It's time to evaluate your project and reflect on your achievements by filling in the End of Project Survey. To claim your Energy Envoys Certificate from the National Energy Foundation, please fill in the survey by [clicking here](#) and send your photos, videos and other materials produced to energyenvoys@nef.org.uk.

Thank you for volunteering with us!