

A Church's practical route to Net Zero emissions.

These recommendations aim to help churches reduce their energy use and associated carbon emissions.

NOTE: Many of the suggestions below require Church Meeting and Synod approval; please seek input early on. If the church or part of it is Listed, seek professional advice and contact the Synod Property Officer before making any changes.

A. How to START?

The actions listed below are generic, which all churches can benefit from. They are relatively straight forward and cost effective. They are a good place for you to start, when moving towards 'Net Zero'.

The building itself:

- A1. Maintain the roof, gutters & downpipes. This prevents damp entering the building and warm air escaping.
- A2. Draught-proof windows and repair any broken panes.
- A3. Draught-proof external doors or install door-curtains.
- A4. Consider using rugs/floor-coverings (with breathable backings) and cushions on/around the pews/chairs.
- A5. Also, think about your church grounds. Is there an area where you could let vegetation or a tree grow?

Heating and lighting:

- A6. Get to know your heating programmers and thermostats, matching heating to usage.
- A7. Consider turning off the heating before a service ends. For most churches the heating system will continue to provide residual warmth which will last until the end of the service.
- A8. Install Thermostatic Radiator Valves (TRVs) on radiators in meeting rooms & offices, to allow you to control them individually.
- A9. If you have water filled radiators, consult your servicing engineer about install a magnetic filtration system to extend the life of the system.
- A10. Replace light bulbs with LEDs, where simple replacement is possible.
- A11. Get your energy supplier to install a smart meter, to better measure the energy you use.
- A12. Switch to 100% renewable electricity, and "green" gas by choosing responsible suppliers.
- A13. When replacing white goods remember that the Energy Ratings labels have changed, and a C rating could now be better than the previous A+++ rating (<https://energysavingtrust.org.uk/energy-ratings-everything-you-need-know/>).

People and policies:

- A14. Consider varying service times with the seasons, such as meeting early afternoon when the building is warmer in colder months.
- A15. Consider moving meetings into smaller halls or rooms that can be more efficiently heated during cold months. Elders meetings could be held in a cosy manse.
- A16. Create an "Energy Champion" who monitors bills and encourages people to turn things off when not needed.
- A17. Write an energy efficiency procurement policy; commit to renewable electricity & appliances with Energy Ratings of at least C.
- A18. Complete an Energy Audit each year to measure progress.

B. What NEXT?

These are actions with a reasonably fast pay back for a church with medium energy usage, used a few times a week.

Most may cost more than those above, require more time, and more planning.

Some require some specialist advice and/or installers. They are often good next steps for those churches with the time and resources to move on further towards Net Zero.

The building itself:

- B1. If there is an uninsulated, easy-to-access roof void, consult with your Area Property Advisor about insulation.*
- B2. Insulate around accessible heating pipes to reduce heat loss, and especially in boiler rooms. Plan to do this during the warmer months when the heating is off, and the pipes are cool.

- B3. If draughts from your Church doors cannot be stopped by a door curtain, consider installing glazed doors within your porch, or even a Draught Lobby.*
- B4. Consider fabric wall-hangings or panels, with an air gap behind, as a barrier between people and cold walls.*

Heating and lighting:

- B6. Upgrade your heating controls if you cannot set multiple on/off periods on individual days. Consider installing additional thermostats.
- B7. If you have internet connection, consider a HIVE- or NEST-type heating controller for more flexibility.
- B8. Learn how your building heats/cooling and the link to comfort, by using data loggers.
- B9. Improve your heating zones and controls, so you only warm the areas you are using.
- B10. Consider under-pew electric heaters and/or infra-red radiant panel heaters*, which keep people warm without trying to heat the whole church space. Radiant panels are especially good for specific spaces like chapels and transepts, which you might want warm when you don't need the whole church to be warm.
- B11. If you have water-filler radiators, seek advice from your servicing engineer about adding a Central Heating Inhibited Antifreeze and review your frost setting.
- B12. Consider thermal and/or motion sensors to automatically light the church when visitors come in, for security lights, and for kitchens and WCs.*
- B13. Replace floodlights with LED units.
- B14. Consider providing rechargeable heated cushions to keep individuals warm whilst sitting.
- B15. Install an energy-saving device such as Savawatt to your fridge or other commercial appliances.

Seek advice from the Property Office as these may require Property Committee and Listed Building Advisory Committee approval before installing.

C. Reaching NET ZERO.

These are larger and more complex projects which only churches with exceptionally high energy use are likely to consider. They could reduce energy use significantly but require substantial work (which itself has a carbon cost) and have a longer payback.

These recommendations require professional advice, including approval from the Synod before installing.

The building itself:

- C1. Double-glaze or secondary-glaze suitable windows in well-used areas such offices, vestries and halls.
- C2. Internally insulate walls in well-used areas such offices, vestries and halls.
- C3. If you have an open tower void, insulate or draught-proof the tower ceiling.
- C4. Consider reinstating ceilings and insulate above.

Heating and lighting:

- C5. Install a new LED lighting system, including all harder-to-reach lights, new fittings & controls.
- C6. Install solar PV, if you have an appropriate roof and use sufficient daytime electricity in the summer.

D. Further IDEAS.

These are actions you would only consider during a major works or a renovation, or in very specific circumstances.

These recommendations require professional advice, including approval from the Synod before installing.

The building itself:

- D1. If you are re-roofing, consider meeting current Building Regulations with the addition of insulation.
- D2. If you have an uninsulated wall with a cavity (c. 1940 onwards), consider cavity wall insulation.
- D3. If the building is regularly used & suitable, such as a church hall, consider appropriate external insulation or render, appropriate to the age and nature of the building.

Heating and lighting:

- D4. If there's no alternative that does not run on fossil fuels, then replace an old gas boiler or an oil boiler with a new efficient gas boiler.
- D5. Consider an air or ground source heat pump if your Church is well used throughout the week. Ground source heat pumps are more expensive and invasive to install than air source heat pumps, but run more efficiently once installed, depending on ground conditions.

D6. Consider under-floor heating if your Church is well used throughout the week and the Church is undertaking major works which involve lifting the floor. This can work well in combination with a heat pump (above).

Church grounds:

D7. If you have car parking that is sufficiently used, EV charging points for electric cars can work out cost neutral or earn a small amount of income for the church. Note, they will increase the church's own energy use, but will support the uptake of electric cars. They could be good in combination with solar PV panels.

E. For EXCEPTIONS.

These actions are often mentioned in this context, but are generally not recommended, because of the risk of harm to the fabric, energy used, and/or the cost.

- * Standard secondary glazing on the main, historic windows (this can be inefficient, expensive, & cause damage).
- * Install solar thermal panels to generate hot water (hot water use is generally not high enough to justify it).
- * Background space heating at all times unless needed for stabilisation of historic interiors (high energy use).

Based on the “The Practical Path to Net Zero” with the permission and thanks of the Net Zero Carbon Senior Projects Manager, Church of England Environment Programme.

<https://www.churchofengland.org/resources/churchcare/net-zero-carbon-church/practical-path-net-zero-carbon-churches>