

CHURCH HEATING

PERSPECTIVES

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When you start discussing replacing your heating, you will find different people within the church community have different points of view, and so may the experts you consult. This can be confusing.

This short guidance note aims to help you think about your heating decisions from different points of view, early on in your planning process.

We suggest you read [Church Heating: Principles](#) first.

2a **A church user's perspective**

The main thing church users want from your heating system is that they can completely ignore it. They simply want to be comfortable in your building, and not have to think about how this is happening.

There is no set temperature that the building needs to **be at for church users; remember it's about *comfort*** rather than temperature. Comfort may have as much to do with draughts, and whether people are sitting near a stone wall, as with what the thermostat is set to. If there is a pew heater under their seat, it will not matter to the person sitting there if the majority of the air in the church is quite cool. However, if your regular users include young children, running around without coats on, then your needs are different; and you also need to consider the comfort of the person leading the worship.

People who lead events or activities within the church want the controls to be simple and intuitive; ideally, they **don't want to touch them at all, because the settings are pre-programmed**. If they do need to change the heating **settings, they want an obvious button for "one extra hour" in the part of the building they need**.

Action

Very early on in any heating project sit down and think about your church users. What times during the week is the church used, by whom, and doing what? What does that tell you about what you need your heating system to do for you? Consult your regular users to identify any sources of discomfort and – before changing your heating system – see if you can tackle this discomfort through changes to the building fabric or where people sit. Take users into account when you design the controls. Use our Heating Checklist to get started.

2b A church warden's perspective

Your church warden wants the system to work. They will be dealing with any complaints from church users if **they are too hot or too cold, and it's the warden who is** responsible for finding a contractor on Christmas Eve when it breaks down.

The church warden needs a heating system which is reliable, low maintenance, and where the controls are intuitive. They do not want to have to come into the church at 5am to turn the heating on for Sunday service, so you want smart controls they can set in advance, and perhaps update from their smart phone. In an ideal world they would like a heating system that is able to quickly react to being turned on/up or off/down.

They want a system with a long life-expectancy, where replacement parts are easy to source, and where there are maintenance contractors locally with a good understanding of how the system works.

Action

Whatever system you are considering, check the reliability of it. If it is a new technology, ask for reference sites and follow these up. Ask about warranties and local contractors. Find out how the controls will work; are they easily programmable? Make sure your church warden is fully involved in any decisions.

2c A church treasurer's perspective

Your treasurer will want to know about four different types of cost; the installation cost, the maintenance cost, the cost to run in terms of utility bills, and the replacement cost at the end of life.

Some systems may cost more upfront but cut your bills and run smoothly for years. Others might be cheaper up front but be prone to failure sooner. Replacing your oil boiler with a new one might seem simplest and cheapest in terms of installation, but think longer term; are you locking yourself into a technology which will be increasingly rare and hard to maintain? Will it become increasingly expensive to run?

Action

When considering a new heating system, find out as much as you can about all four types of cost; installation, maintenance, running costs, and replacement. Think about the full cost over the lifetime of the system. Ensure your treasurer is fully involved in any decisions.

Below: Group discussion, Diocese of Bristol



2d An environmental perspective

Choosing a new heating system is perhaps the most important environmental decision your church will make in the next twenty years. We know that heating makes up over 80% of the energy used to run a typical church.

There are three things to consider, and all three are very significant.

First, there is heat loss. What energy are you simply wasting because heat is escaping through broken windows, loose roof tiles, or draughty doors? What energy are you wasting by running your heating when it is not needed? Perhaps most importantly, how much energy are you wasting by heating up air which simply rises into that beautiful high ceiling? If you can tackle heat loss and ensure heat is emitted near where people are sitting, then it will be far more efficient.

Second, there is your heat source. If your heating system runs by burning a fossil fuel – oil or gas – then it is contributing incrementally to global heating and the climate crisis. If it runs on electricity and you have not yet switched to renewables, then you are simply burning a proportion of these same fossil fuels in a power station somewhere. However, if you have switched to electric heating and purchase/generate renewable electricity, then you have slashed your net carbon footprint.

Different heating sources have very different greenhouse **gas emissions. Oil is the ‘dirtiest’ fuel (both in terms of impact on global carbon emissions and impact on local air quality);** each kWh of energy created by burning oil releases 50% more greenhouse gasses than the same kWh from gas. So, moving away from oil is our biggest priority.

Lastly, there is the **‘embodied carbon’** in any new system you install. A boiler, pipes, and radiators all take materials and energy to create and install. Investing in a **new system has a high ‘embodied carbon’ and you need to weigh this up against the carbon savings you might make.** In some cases, the action with the least environment impact may simply be to use the *existing* system more efficiently (if this can be done safely) rather than rip it all out to replace it with the latest technology. And when replacing, you may be able to reuse some of the existing elements, such as pipework and radiators. Avoiding mal-adaptation is critical. Putting in a system

which doesn’t work and needs replacing, or which causes damage which needs complex rectification later, increases the embodied carbon needlessly.

General Synod has called on all parts of the Church to cut their greenhouse gas emissions year-on-year and plan **for ‘net zero’ carbon by 2030. Any church that installs a new oil or gas boiler now may be locking itself into fossil fuels for the life-time of that boiler (often around 25 years); long past the target year of 2030.** This can be mitigated by carefully considering other options, by **installing a ‘hydrogen-ready’ boiler, and/or by setting up a sinking fund to replace it.**

Action

Tackle heat loss first, to reduce the load on your heating system. Then, when considering a new heating system, think broadly about the choices open to you. Do not simply assume you should replace oil-with-oil or gas-with-gas, even though this might be easiest; do a proper options appraisal. Begin the process early, whilst there is still time to think through your choices. Read our guidance notes and case studies. Find a heating advisor who can assess wider options for you; pew heaters, far infra-red panel heaters, and heat pumps for example. **If it is a big project, ask your architect about a ‘whole life carbon’ assessment. There is no ‘one size fits all’ solution, but make sure your church takes a decision after gathering full information. Whatever else you do, switch to a ‘green tariff’ for your electricity.**

2e A conservator's perspective

The choice and performance of a heating system has consequences for any fragile historic objects or finishes in a church. Your heating system will affect not only the temperature in the building, but also the relative humidity. The higher the relative humidity, the more likely it is that moisture will condense on cool surfaces when the heating is turned off and the building cools down. Cycles of warming and cooling, with their associated episodes of condensation, can cause damage in sensitive materials by encouraging mould (from moisture), cracking (from rapid drying), or salt activity (from cycles of both).

There can also be risks to historic building fabric from incorrect choices of heating. Underside Lead Corrosion, probably the most significant envelope damage to churches in the last 50 years is caused partly by heating. Cycles of evaporation and condensation can damage historic masonry and glass. Understanding impact of heating on the building envelope is critical.

Conservators therefore approach any change to a heating system with caution. This does not mean change *cannot* be made, but that the impact on objects and interiors should be carefully considered first. If harm is caused, it will be difficult and expensive for the church to rectify, so it is much better for everyone if this can be avoided in the first place.

Changing the heating system can also significantly change the appearance of a church – for better or worse – or cause damage whilst moving cables, pipes, flues and radiators.

Action

If your church has a fragile historic interior or fabric, then early on in your heating project you should try to find out as much as you can about how the building is performing, and seek specialist advice from a qualified conservator.

2f A heating engineer's perspective

A heating engineer will want to know how your building performs, so they can optimise the heating system. They will want to understand how heat moves around the building. They are the person who can calculate the required capacity for your boiler, and the required capacity for radiators/panels, based on the temperature you want to reach, and the speed you want to reach it. They can help you decide where radiators/panels, pipes/cables, and any flue will go. They can help design the control systems.

A heating engineer will be effective *after you've decided* what you need the heating to *do* for you. So before commissioning one, be clear about your needs: what parts of the church need to be warm, at what times, for what activities? Be clear what problems you need solving. **Once you know 'what', they can help with 'how'.**

If you have a gas boiler, ensure that any installation is Gas Safe registered and, if you have an oil boiler, they need an OFTEC certification.

Action

Once you are clear what you need your heating system to do for you, a heating engineer can help you design the right system. Be clear about your current problems, future needs, and what you need advice on. Have utility bills available for them to see, plus a heating plan of the current system if you have one, and an asbestos record if applicable. Our Heating Checklist (Section 5) will help with this.

2g A DAC Secretary's perspective

The DAC is there to advise the Diocesan Chancellor (who has the authority to grant Faculties) on the suitability of schemes, including heating systems if the application falls under faculty.

The DAC is also happy to advise PCCs on the maintenance and care of the buildings, how to petition for faculty, and where to seek funding. It is also available to advise churches on the commissioning of new work in churches, which includes heating systems.

DAC Secretaries (and their advisors) would always rather be involved early on; it is better for everyone if they can help guide you to a solution that will get faculty, rather than be involved later on and find they need to say no.

The DAC secretary (or Church Buildings Support Officer) can put PCCs in touch with other PCCs, contractors and other specialist organisations to help at the feasibility stage of any development. The DAC will usually maintain a list of exemplar sites for PCCs to visit, to review works including heating systems.

Some heating works do not require faculty (see section 8 on “**Permission and regulations**”). However, many dioceses are trying to move gradually away from fossil fuels, as part of their response to the climate crisis. Therefore, the DAC Secretary would still want to be informed early on, and support the church to make the best choice about their heating.

Action

Always talk to your Diocesan Advisory Committee (DAC) as early as possible because they can tell you **what is likely to be approved and what isn't**. Ask if they have a heating advisor or a sustainably advisor who may be able to provide you with specific and free advice and support. Ask what permissions you need and whether you have to consult other organisations.

2h Finally, a theological perspective

The Fifth Mark of Mission asks us “*To strive to safeguard the integrity of creation, and sustain and renew the life of the earth*”. **The Fifth Mark is not an add on extra, but a fundamental discipleship requirement**, showing how we express our care for what God has made and the ecosystems on which we rely.

How we care for our environment and the people and species we rely on is an important witness to those outside the church and this should be reflected in the decisions we make about our buildings. Spending money to obtain an outcome which offers the best combination of comfort and environmental care is a form of mission, and showing that we care about climate change by our actions creates a bridge over which to engage with society and to be Good News practically as well as spiritually.

In the struggle for climate justice, everyone must play their part, through prayer and personal action, but also through the practical choices we make about how to heat our buildings. The decisions made about buildings are just as worthy of prayer as more directly missional issues; they will not only address the comfort of those who visit our buildings but affect those elsewhere whose future will be impacted by how rapidly decarbonisation occurs.