

CHURCH HEATING HEATING CHECKLIST

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This guidance is issued by the Cathedrals Fabric Commission for England pursuant to its powers under section 3(3)(a) of the Care of Cathedrals Measure 2011, and/or by the Church Buildings Council pursuant to its powers under section 55(1)(d) of the Dioceses, Mission and Pastoral Measure 2007. As it is statutory guidance, it must be considered with great care. The standards of good practice set out in the guidance should not be departed from unless the departure is justified by reasons that are spelled out clearly, logically and convincingly.

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HEATING CHECKLIST: WHAT YOU HAVE, AND WHAT YOU NEED

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|----|-----------------------|--|--------------|
| 5a | Introduction | 5a | Introduction |
| 5b | People | Before you go any further, you should carefully review your current situation. | |
| 5c | System | What problems are you trying to solve? What do you need the heating system to <i>do</i> for you? What are your constraints? | |
| 5d | Building and fabric | Use our heating checklist – over the next few pages – to record your information, and then discuss the results with your PCC. | |
| 5e | Performance | Only answer those questions which are relevant to you. | |
| 5f | Listing and interiors | If you don't know the answer to something, keep going and complete the parts you can. Revisit the trickier parts later. | |
| 5g | Energy use | When you ask for advice, from your DAC or a paid heating advisor, show them this checklist. It will help them understand your situation, and give you better advice, faster. | |
| 5h | Money | | |
| 5i | Constraints | | |
| 5j | Advice | | |
| 5k | Consultations | | |
| 5l | Objectives | | |
| 5m | Conclusions | | |

Every church is different. Work out what you have and what you need.

Right: Harrogate, St Wilfred



5b People

What do users need, now & in the future? What causes discomfort?	
Currently, when is the church regularly used during the week for <i>church</i> purposes? What is the pattern of services? What areas do they use?	
Currently, when is the church regularly used during the week for <i>community</i> purposes? What is the pattern of activities? What areas do they use?	
Do these regular users have particular needs; for example are there small children, or elderly people who need to be a little warmer?	
Are church users in the main seated, or are they moving around the building?	
Currently, what are the occasional uses of the church, for example for weddings and concerts?	
Do visitors drop in? For how long? Are they generally dressed for a relatively cool church, or in lightweight clothes?	
Are church users comfortable in our building currently? If not, what causes them discomfort?	
Who complains, and why?	
In the future, what changes do we expect to see to the patterns, above?	
In the future, when we have a heating system that better meets our users' needs , what do we want to be different?	

5c System

What do we have now, and what needs changing? How long will it last?	
What heating equipment is already installed? Boilers, radiators, portable heaters, etc.	
Do we have a plan of the heating? (If yes, make it available to any advisors you consult.)	
What condition is our current heating system in?	
What is its likely lifetime? Is there a plan for when the boiler breaks down?	
Overall, does it do what is needed? If not, what do we want it to do, that it can't do now?	
Do we think it could be adapted to achieve greater efficiency and a lower carbon footprint?	
Do we think there is a better solution, with which we could replace it?	

5d Building and fabric

Where is there heat loss and can we reduce it?	
Are there cold, draughty spots? What causes them? (Poorly fitting doors? Broken or poorly closing windows? Air being drawn up to the tower or belfry?)	
Where does heat 'leak' from the building; consider the tower, windows, walls, and doors.	
What ability do we have to reduce heat loss, for example through draught-proofing, insulation, or soft furnishings?	
Do we have an asbestos plan of the building? (If yes, make this available for any advisors you consult. If not, you need one.) Does it affect our options?	
Is the building generally well maintained? Are there any defects highlighted in the most recent QI report which should be addressed before introducing a new heating system?	
Are there areas where water condenses on surfaces, when the building cools down?	

5e. Performance

How well do the people, systems, and building interact?	
What temperature(s) do we currently set our thermostats to, and why?	
What times of the week does the heating system currently run, and why?	
When we turn on the heating, how long does the building take to come up to temperature?	
When we turn on the heating, and warm air starts to rise, does it displace cold air and cause discomfort elsewhere?	
When we turn off the heating, how long does the building take to cool back down?	
Considering the above, are the heating timings optimised for the uses of the building? How do we know?	
Who has control over the programming of the heating system? Does the current system work well for them?	
When we have an unexpected meeting or event, is the system responsive enough?	
Are the controls user friendly? Are they well understood?	
How does the temperature and humidity vary during the week and year? (You can measure this with inexpensive data loggers.)	
<p>Note: Levels of relative humidity should be kept at 40-70% RH and ideally 45-55%. Below 40%, loss of moisture causes damage to pores in wood. Above 70% allows moulds to develop and insect infestations to proliferate.)</p>	

5f Listing and interiors

What fragile or precious objects/materials do we have, and what needs special care?	
What listing is our church? What features of the church contribute to this listing?	
What does our building contain in terms of historic fabric, timber elements (such as screens, pews or altarpieces), pipe organs, wall or other paintings, or other items which will require special consideration?	
At what rate does our building heat up and cool down? (More than 2°C temperature rise per hour is considered damaging to fabric.)	
Are wall-mounted panel heaters a realistic option, or do historic fabric or finishes prevent this?	
Are pew heaters a realistic option; i.e. you have pews, and the pews are not historic (pre 18C)?	
Is digging in the grounds to install a ground source heat pump a realistic option? They are much harder to install if burials surround the church, although not impossible. (There are two options for the pipework; snaking pipework near ground level or deep vertical boreholes.)	
Is under floor heating a realistic option? Historic floors should generally not be lifted.	
Are there monuments or brasses which would be affected by having heaters or heating pipes close to them?	

5g Energy use

What is our current energy use, utility cost, and carbon footprint?	
What is the annual usage of oil / gas / electricity? (litres or kWh per year)	
What is the annual spend on oil / gas / electricity?	
Who reads the meters, and how often?	
How is information about energy use shared with the church community?	
What is our gross carbon footprint? (This can be calculated quickly using the Church of England Energy Footprint Tool online.)	
What is our net carbon footprint? (Use the Energy Footprint Tool online.)	
What are our two energy efficiency ratings, from A+ to G? (Use the Energy Footprint Tool online.)	

5h Money

What budget do we have for up-front capital, for maintenance over time, for running costs every year, and for future replacement?	
What budget has the PCC set for replacing the heating system?	
What amount can the church realistically afford to spend on maintenance, over (say) the next ten years?	
What amount can the church realistically afford each year for utility bills?	
What amount can the church realistically afford to invest in a ‘sinking fund’ for the systems’ eventual replacement?	
If we need expert advice, what budget has the PCC authorised for advisors?	

5i Constraints

What connection do we have to utilities? What space constraints are there?	
Are we connected to gas? If not, is it possible?	
Are we connected to electricity? Single phase or three phase? What load can the system take, and what could it be expanded to?	
Has our QI report recommended improvements?	
What space is there within our boiler room for change in the size of equipment? Are there any other suitable locations?	
Is biomass a realistic option? It generally requires room for a storage hopper for the wood pellets. It may not be allowed in some areas due to the Clean Air Act. It will require weekly attention and regular maintenance.	

5j Advice

Who can we ask, or commission, for advice?	
What advice do we need, to help us choose the right heating system (including conserving any historic fabric / interiors)? What questions don't we know the answers to?	
Have we had an energy audit? If yes, what did it recommend? If not, could we commission one? (Parish Buying offers them as do some dioceses.)	
Does the DAC have a heating or sustainability advisor, who can offer up-to-date guidance to us on low and zero carbon technologies?	
Is there anyone on our PCC who is expert and up-to-date in this area?	
Can our QI recommend an advisor?	
<i>If you need advice and it is not available from the sources above, try the CIBSE directory: https://www.cibse.org/building-services/find-a-specialist. There is more on this in the next section, on Options Appraisals.</i>	

5k Consultations

Who do we need to involve, and when?				
Which church users should we speak to about our heating system (for example regular hirers or tenants)?				
Which church volunteers and staff should we speak to (for example the treasurer, church wardens, youth leaders, and PCC members)?				
Who in the deanery and diocese should we speak to (for example the DAC Secretary, Diocesan Environment Office, and Archdeacon)?				
Which external organisations should we speak to (for example the amenity societies)?				
Do we need to consult the local planning authority?				

5l Objectives

Overall, how important are the following to us?	Top three	High	Medium	Low
Environmental factors (For example, cutting our carbon footprint by reducing our energy use and/or switching to a cleaner fuel)				
Conservation of our historic interiors				
Making church users comfortable in the building				
Increasing lettings income				
Capital cost				
Maintenance cost				
Running cost				
Replacement cost				
Ease of use				
Reliability				

5m Conclusions

What are the main things we learned from this review?	
What are our next steps?	

Having completed your checklist, we suggest discussing the results at an upcoming PCC meeting.

The next section of guidance builds on this checklist, to help you carry out an Options Appraisal. You can then identify the feasible options for your church, and start to assess them.