NET ZERO CARBON – THE FACULTY SYSTEM

How complying with requirements of faculty system ties in with requirements of CofE's Routemap to Net Zero Carbon, looking briefly at the nature of the challenge we've been set, why we need to meet that challenge, how we can meet it, and some of the resources available to us.

NET ZERO CARBON – THE FACULTY SYSTEM

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DAC Secretary

Feb 2020 – General Synod set challenge to reach net zero carbon across our parishes, cathedrals, dioceses and schools by 2030.

The **ROUTEMAP,** approved by General Synod in July 2022, is a plan for how we can reach that target.

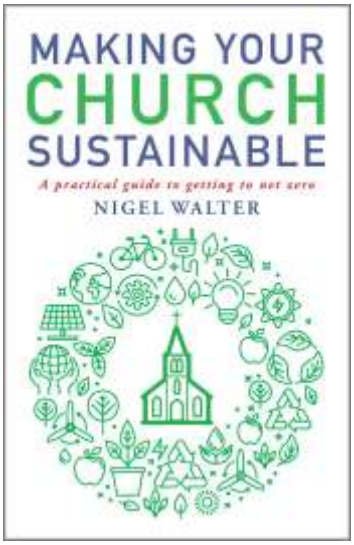
https://www.churchofengland.org/resources/netzero-carbon-routemap

WHAT DOES THE ROUTEMAP REQUIRE?

Milestones relating to

- Eco Church awards
- Energy Footprint Tool completion
- Switch to 100% green electricity/gas tariffs
- Energy-efficient lighting
- No new oil boilers installed after end 2025
- Heating Resilience Plan (consider how to manage heat if existing system fails, to avoid needing quick like-for-like fossil-fuel replacement)

Plan – relates to large churches in use 7 days/week BUT recommend consider similar. Too often parishes wait until aged boiler condemned, usually in run-up to Christmas, then want to put in gas/oil boiler immediately. Can't be done! PLAN AHEAD!



WHY DOES THIS CONCERN US?

SUSTAINABILITY

Meeting needs of present without compromising ability of future generations to meet their own needs
Communion of saints - a community that is worldwide but also spread across time – past, present and future generations
Sustainability is a profoundly Christian concern, linked directly to…

MISSION

5th Mark of Mission – to strive to safeguard integrity of creation and sustain and renew life of the earth

Nigel Walter's book (2024) – very easy to read, directly relevant to all of us, theologically sound but crammed with practical advice.

FOUR GENERAL PRINCIPLES

1. **FABRIC FIRST! Do your maintenance well**
2. **Use electricity instead of fossil fuels (and use it well)**
3. **Pattern of use of building determines what alterations should be considered**
4. **What is good for our homes is not necessarily good for our churches**

Four general principles for working with church buildings…

1. Regular maintenance, gutter clearance, drains flowing, slates fixed etc. Water conducts heat well, so a damp building will use more energy to reach the same temperature that a dry building would use. And a damp building will feel colder than a dry one because damp surfaces absorb heat from us while dry surfaces will reflect heat back. Improve the building's thermal insulation, eliminate causes of damp and reduce draughts before you look at technological improvements.

2. Why use electricity? Because ongoing decarbonisation, burns less fossil fuels than ever before to generate electricity. Make good use of heating controls. Heated pew cushions use electricity well because they warm the person directly. Heat pumps can convert 1kw of electricity consumed into 3kw of heat output. Radiant heating transmits heat across air space without losing any energy until it reaches the solid surfaces its pointing towards (i.e. us!!) unlike conventional radiators which heat a lot of air but only a few people feel the benefit.
3. How you use your building will determine the most appropriate solution. Example – underfloor heating uses a lot of energy to get up to temperature and then release heat over a long period of time so is good for buildings which are in use all week, but would be expensive to run if you only need heat a small rural church for a couple of hours on a Sunday.
4. Question of thermal comfort…need a cultural shift away from heating entire space and towards heating people, especially in less used buildings. We are all used to living in centrally heated homes where we heat entire air space by locating radiators around edges of rooms, and by and large we have transferred that approach to church buildings. But churches differ significantly from homes – spaces are much taller/wider so volume of air which needs heating is greater. Because heat rises most of heating benefit goes over everyone's heads while we continue to feel cold below. Trying to heat churches to a domestic level is impossible and unnecessary. Instead of thinking about heating space we should be thinking about thermal comfort of people. That is one reason why, if you need to replace your heating system, you should seek advice from DAC Heating Advisers rather than just your boiler maintenance contractor who will be quite happy simply to sell you another boiler identical to the one which has just failed.

WHAT CAN YOU DO?

- 1. EASY WINS
- 2. ENERGY EFFICIENT LIGHTING
- 3. ENERGY EFFICIENT HEATING

Faculty Permission	What it covers
List A	Minor works which need no consultation/permission - immediate
List B	Works which need written approval from your Archdeacon – 2 to 3 days
Faculty	Works which need a faculty granted by the Chancellor – 2 to 3 months

Look at some easy wins, then EEL, then EEH, but first quick recap of permissions under faculty system.

FJRs provide two Lists A and B …

1. EASY WINS

List A – no permission needed - includes:

- Draught proofing an external door or window
- Works of adaptation (not substantial addition or replacement but including rewiring) to existing… electrical installations. [Could include installation of a smart meter]
- Installation in churchyard of upstand + electrical outlet for recharging electric vehicle (church **not** listed)

List B – Archdeacon's permission - includes:

- Installation of roof insulation in church/church hall (**not** listed)
- Mounting electrical outlet for recharging electric vehicle on external wall ofchurch/church hall (**not** listed)
- Installation in churchyard of upstand + electrical outlet for recharging electric vehicle (church **is** listed)
- Introduction of bicycle stands

2. ENERGY EFFICIENT LIGHTING

List A includes:

- Works of adaptation (not substantial addition or replacement but including rewiring) to existing… lighting installations. [Could include addition of timers, light and motion sensors]

List B includes:

- Replacement of light fittings with fittings suitable for low -energy lamps (LEDs) (NB does not cover entire new lighting schemes)

3. ENERGY EFFICIENT HEATING

List A includes:

- Replacement of boiler, same location and utilising an existing non-fossil fuel supply
- Works of adaptation (not substantial addition or replacement) to existing … heating systems (including replacement of control equipment and insulation of pipes in boiler room and ancillary service areas) [so could include adding timer to heating controls]

List B includes:

- Replacement of boiler in same/substantially same location and utilising (a) non-fossil fuel supply in place of fossil fuel supply, or (b) different non-fossil fuel supply
- Installation of photovoltaic panels on church or church hall which **is not** a listed building or in conservation area
- Introduction of electrical heating appliance not forming part of a heating system
- Installation of electrical heating system for attachment to pews made in or after 1850 and which are not of historic interest

List A – replacement electric boiler; adding timer to heating controls, insulating pipes

List B – replacing oil/gas boiler with electric boiler only needs ADs consent (used to require faculty but they flipped over to make easier to ditch fossil fuels)

- Solar panels on church/hall which is NOT listed or in conservation area
- Stand alone electric heating appliance
- Under pew heaters if pews made after 1850 and no historic interest

SOLAR (PV) PANELS …

Installing Solar Panels

The CBC guidance, issued in August 2021, says that faculty permission is needed in every case; *however*, from 1st July 2022 the installation of photovoltaic panels on a church *which is not a listed building or in a conservation area* has been brought within the scope of List B – item B1(20).

The CBC supports the use of solar panels on churches but note that:

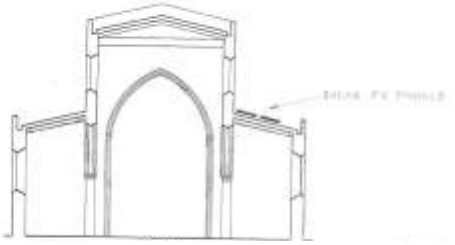
- It will take account of the carbon payback time when it considers proposals for solar PV. This means that the solar PV should save more in carbon during its warranted lifetime that the carbon produced to manufacture and install it.
- it will not normally support ground mounted solar panels as the panels and associated cables are attractive for theft; in some graveyards ground mounted panels could be too visually dominant.

Historic England have updated their guidance very recently (25th March 2024) and have a section on their website – **Installing Solar Panels**. HE's guidance is important as local authority planning departments often refer to it.

CBC Guidance note on CofE website – support use of solar panels on churches BUT will take account of carbon payback time – i.e. solar PV should save more in carbon during its lifetime than the carbon needed to manufacture and install it.

HE updated their guidance in 2024 - significant because Planning Authorities often refer to it when making decision. Finding that DAC will often recommend solar panels for church but proposal is blocked by planning authority. This is why comprehensive Statements of Significance and Need are so important to support your faculty petition because HE will read those too.

South Aisle, clerestory and Tower



CAN have them on listed buildings, even Grade I, depending on circumstances. York Minster. Example – Roos All Saints on south aisle roof, out of sight behind parapet, not visible from ground.

It is also possible to store off-peak electricity in a battery storage system without having solar panels. At least one of our churches is investigating that as a possibility. Might be worth looking into if the church is used day and night throughout the week then battery storage would be a good investment as they would be able to run 'off-grid' for longer. Look at Duracell website.

PEW HEATERS

Various styles. Look on website for BN Thermic (useful measuring guide) or Fenix (panels).

HALO HEATERS

HUGGATE ST MARY

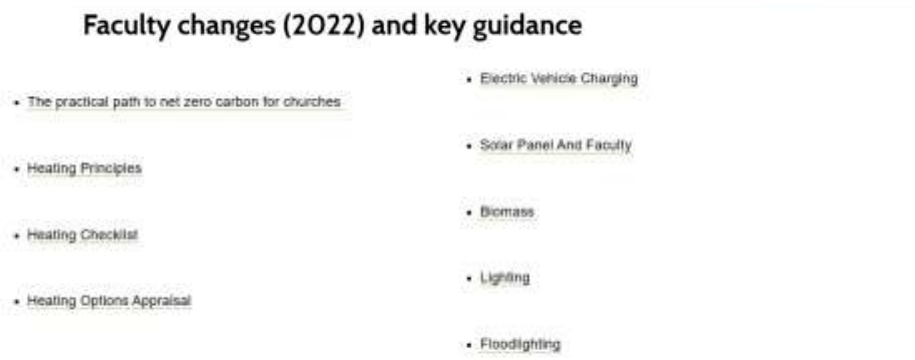
Successful trial at Bristol St Matthew. Herschel – market leader, but there is another cheaper company. Provide lighting and heating combined.

Huggate St Mary have recently installed.

DAC Heating Adviser can visit and advise.

FOSSIL FUEL BOILERS

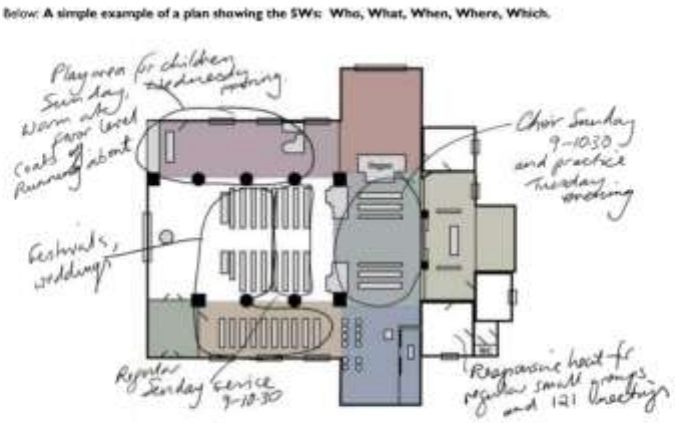
- Any fossil fuel boiler now requires a Faculty
- Faculty Jurisdiction Rules amended in 2022: churches **must** have due regard to CBC's advice on Net Zero Carbon
  NB: churches not prevented from having fossil fuel boilers, but must justify installation in light of net zero guidance



PLAN AHEAD! Interim Faculty can be sought in emergency (1-2 days) but still need to consider Net zero guidance.

HEATING NEEDS

The 5Ws:
WHO are you heating?
WHAT type of event ?
WHEN are you heating them?
WHERE are you heating them?
WHICH parts of the building fabric, interiors, or objects need special care?



So if you need to replace your heating system look at the CofE guidance notes on their website. Their Heating Checklist is a great place to start.

Consider the 5 Ws... Draw a plan to help you picture and clarify your heating needs, both how to keep people comfortable and the building fabric protected. It is not about "heating the building" - it's about comfort levels and fabric conservation and each might need a different approach, and often a combination of approaches such as low level background heating on all the time to protect the building fabric coupled with pew

heaters which you switch on only when people come in. All buildings and congregations are different which is why the 5 Ws are a good place to start your planning.

HAVING DUE REGARD….

Energy source → / Emitter ↓	Oil boiler	Gas boiler	Electricity (Grid and/or solar PV)	Heat pumps	Biomass boiler
'Wet' radiators – water filled	✓	✓	✓ can be converted or run from electric boiler	✓ but at a lower temp > larger radiators	✓
Oil filled electric radiators			✓		
Electric radiators / convectors			✓		
Trench heaters	✓	✓	✓	✓	✓
Pew heater	✓ 'wet'	✓ 'wet'	✓ electric	✓ 'wet'	✓ 'wet'
Panel heaters	✓ 'wet'	✓ 'wet'	✓ electric	✓ 'wet'	✓ 'wet'
Portable heaters			✓ (but take care with cables etc)		
Suspended heaters			✓		
Underfloor heating	✓ 'wet'	✓ 'wet'	✓ electric	✓ 'wet'	✓ 'wet'
Air blowers (including curtain heaters)	✓	✓	✓	✓ 'air to air'	✓

Above: **A summary of the main heating options**

Then look at Heating Options Appraisals note… helpful chart showing types of energy source and types of heating emitters for each source. When you are applying for a faculty for a fossil fuel heating system you have to show that you have had due regard to the CBC's net zero guidance. A simple way to do that is to take that heating options chart and start by eliminating all those which are irrelevant to your church …

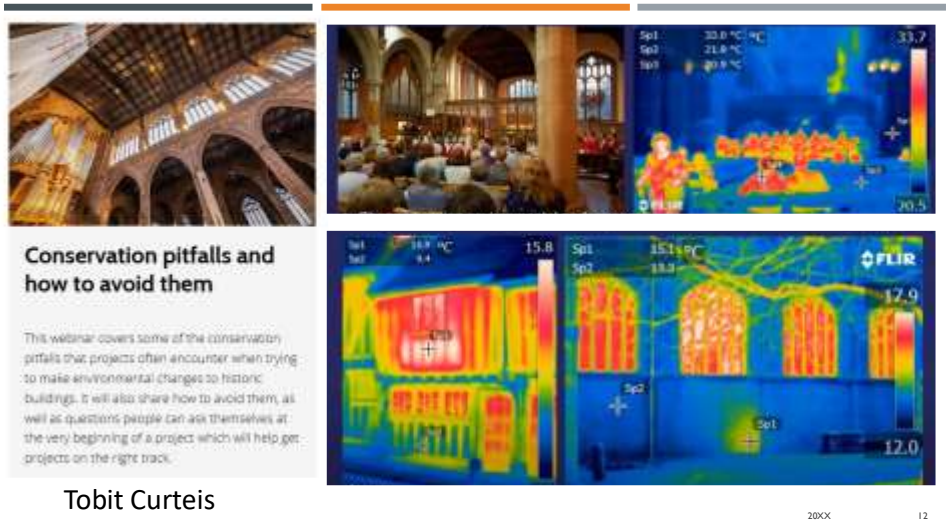
E.g. we don't have fixed pews so can't have pew heaters, we are not on the gas grid so we can't switch from oil to gas, we don't have 3-phase electricity so we can't have electric heating, we don't have sufficient burial free ground around church for ground source heat pump, we have looked at solar panels but our architect says church roof not strong enough to bear weight, the planning authority say they would refuse any planning application for air source heat pumps because church is so close to residential buildings, we can't have a Biomass boiler because we're in an Air Quality Management Area etc etc

Then put all that into an explanatory note to support your faculty petition for a new gas or oil boiler.

Cost is one aspect which the Chancellor will take into account. But it's not good enough to send me an email saying "We need a new oil boiler because it's all we can afford, our heating contractor has already given us a quote and he can start next week".

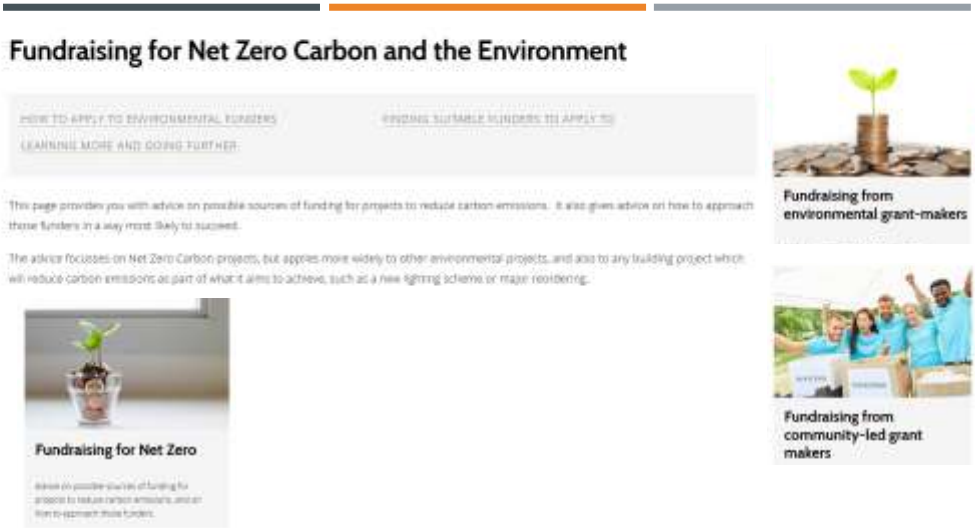
When the DAC considers your faculty petition for a new gas/oil boiler and gives its recommendation (or otherwise) to the Chancellor, we have to indicate whether or not, in our opinion, your consideration of the net zero guidance is adequate. So there's no getting around it. You have to demonstrate why a fossil fuel boiler is your only realistic option.

Resources – loads of webinars on CofE website which you can watch. These are just 4 examples.

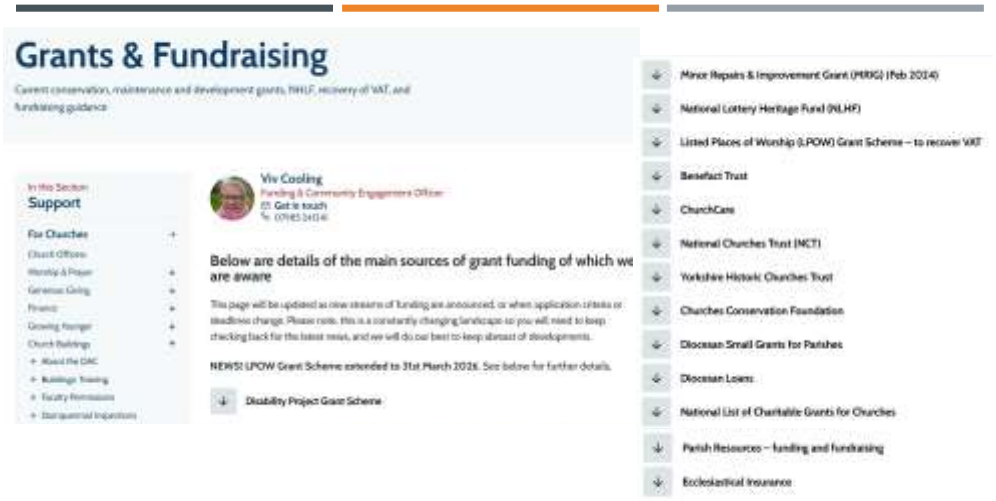


Tobit Curteis

Strongly recommend this one by Tobit Curteis where he demonstrates with thermal imaging where heat is lost, outwards and upwards, and the difference to people's body temperatures depending on the types of heating used.



Fundraising guidance and webinars on CofE website.



All info we have about grants is on this page of the diocesan website.

Finally, if you need help with a new heating or lighting system then I can arrange for one of the DACV's Advisers to visit – request through me.