FOR CONSULTATION

A national definition of "net zero carbon" for the Church of England, and our approach to measuring it.

Consultees are asked to respond to this consultation by **5pm on Monday August 17th.**
Dioceses & cathedrals: respond via this survey:
https://www.surveymonkey.co.uk/r/CofENetZeroConsultation
(or, if this is too onerous at this time, by email to catherine.ross@churchofengland.org)
Archdeacons, NCIs, TEIs, and committee members: respond to the named contact who sent you the paper and questions.

Along with this paper, you have been sent the list of the questions are covered by the consultation survey. Please use this to help structure your response.

Contents

1. Introduction, and putting this paper in context

February's General Synod set the whole Church a task "*to work to achieve year-on-year reductions in emissions and urgently examine what would be required to reach net zero emissions by 2030 in order that a plan of action can be drawn up to achieve that target*". This requires us to define what we mean by net zero.

The proposals in this note aim to set out some national guidelines, for consultation and agreement. The aim is to have a single, nationally-agreed and manageable definition that we are all working to. A standard definition will help all Church bodies develop common ways to measure their emissions, as a first step towards reducing them.

This guidance note is, by its nature, somewhat technical in nature, however it is also of strategic importance; **everything we define as being "in scope" overleaf is determining what is the Church's responsibility to either *reduce to zero* by 2030 or *pay to offset* the residue.**

This paper is only one part of a set of required guidance and advice. This current note focuses only on questions of definition and measurement, and is aimed primarily at dioceses, cathedrals, schools and Theological Education Institutions, **not** at individual parishes. Other guidance will follow on how we reduce our emissions, make use of new green technologies, and on our approach to offsetting (which should only be done once we have reduced all we reasonable can). We need to update guidance on heating and renewables. We need useful and simple factsheets for parishes. We will build on the theological underpinning of the Synod paper in order to articulate a shared, hope-filled theological rationale as to why we feel this is important. Not everything can be covered in one document. **This note aims simply to make a first step, by agreeing what 'net zero carbon' means for us.**

(NB: The guidance does not apply to the National Investing Bodies, who have a target of 2050 and an approach tailored to their activities. However, they have inputted expertise to developing this guidance.)

2. Our unique context; what we influence and what we control

For most organisations, defining net zero is a simpler process, because the organisational boundaries are clear; it is apparent what most organisations control, both operationally and financially.

Within the Church of England, we are a much looser and more complex 'federation' of many parts; each church, school, cathedral, diocese, and institution has decision-making authority over its own activities. Most are separate legal organisations with their own charitable objects. Together, we are collectively responsible for the Church of England's overall 'carbon footprint'.

Each part may therefore wish to distinguish between those things under its direct control and those things it can influence but not control. For example, in a diocese;

- Under direct control of the Diocesan Board of Finance are church house / your offices, fabric and repairs of clergy housing, use of glebe land, staff travel.
- Under direct control of the Diocesan Board of Education are the fabric and repair of Voluntary Aided & Diocesan Academy Trusts, offices, staff travel.
- Under the *influence* of the diocese, but under the control of others: everything else. The energy use of churches is under the control of each PCC. The travel of the clergy is down to them and their PCC. The energy use of each school is under the control of the governing body. The cathedral chapter is responsible for the cathedral's energy use. All of these bodies need to be engaged in reaching "net zero", encouraged to reduce energy use as much as possible, and then to offset the rest.

3. The consultation process

These guidelines are a well-developed draft, but still requires your feedback, to test and improve them.

Key points for consultation are marked in the paper with the symbol  . These points have a specific question in the consultation response, because they are particularly important.

This note has been sent to the following consultees;

- **Each diocese.** A single combined diocesan response is hoped for from each Diocesan Secretary, if that is possible. The diocesan response should ideally be put together following some work to incorporate a range of views within the diocese, for example you may wish to gather views from your Bishop, Director of Education, DAC Chair and Secretary, Diocesan Environment Officer, and diocesan surveyor. But we do recognise the many demands on your time, and on the time of your colleagues; and of course some of these staff may have been put on furlough. You will know what is possible currently in your diocese; we only ask you to do your best to consult widely on this important issue, whilst accepting that it is a difficult time to achieve this.
- **Each cathedral.** A single combined response is hoped for from each Cathedral Dean, after full consultation with their Chapter and Administrator.
- **Archdeacons** (a single combined response compiled by Cameron Watt)
- **Theological Educational Institutions** (a single combined response compiled by Keith Beech-Gruneberg)
- **The governing bodies and Chief Officers of the National Church Institutions**
- **Church Buildings Council** (a single combined response compiled by David Knight)
- **Cathedrals Fabric Commission of England** (a single combined response compiled by Tom Ashley)
- **Bishoprics and Cathedrals Committee** (a single combined response compiled by Michael Minta)
- **Major Churches Network** (a single combined response will be compiled by Rosie Smith)

Please respond to this consultation by **5pm on Monday August 17th.**
Dioceses & cathedrals: respond via this survey:
https://www.surveymonkey.co.uk/r/CofENetZeroConsultation
(or, if this is too onerous at this time, by email to catherine.ross@churchofengland.org)
Archdeacons, NCIs, TEIs, committee members: respond to the contact who sent you the paper.

Along with this paper, you have been sent the list of the questions which are covered by the formal consultation. Please use this to help structure your response.

All the responses will be carefully considered, and then an updated version will go for agreement at the national Environmental Working Group in September, and then for endorsement at the Church Buildings Council, the Cathedrals Fabric Commission of England, the Bishoprics and Cathedrals Committee, and the NCIs governing bodies. Finally, it will go to General Synod in November for ratification, before (if it is accepted) becoming national policy.

4. Summary of proposals: What should be in scope for the Church of England's definition of 'net zero'

The table below is the key part of this document; summarising whether all our main activities are in scope of the 'net zero carbon by 2030' target or not.

In scope?	Buildings / activities

✓ **2030 NET ZERO**
 	
These are in scope of our "net zero by 2030" target.
 	
We will aim to measure these as soon as possible.
	1. The energy use of our buildings;
	• Gas, oil, or other fuel use
	• Electricity purchased (no matter the source it is purchased from – renewable electricity purchased is accounted for later – see Page 8)
	• For the following buildings;
	  • Churches, including church halls and ancillary buildings. (This includes non-parochial churches, BMOs and others if they have their own utility supplies. Tenants should be excluded if possible, e.g. if on their own sub meters)
	  • Cathedrals
	  • Schools (**only** Voluntary Aided & Diocesan Academy Trusts)
	  • Clergy housing and bishop's housing wholly owned by the Church (based on EPC grades and <u>average</u> reasonable use, not actual usage, see later)
	  • Church bodies' offices including Church House Westminster, diocesan offices, and bishops' offices
	  • Peculiars, only if they come under faculty jurisdiction
	  • Other diocesan property, including common parts of tenanted properties
	  • Theological Education Institutions which are part of the Church of England
	• A choice can be made about including or excluding the "well to tank" and "transmission and distribution" factors involved in getting energy to the building. Here, it is proposed to **include** them.
	2. The petrol / diesel we use for work-related travel (eg by archdeacons on visitations, CBC / DAC members on visits to discuss projects, reimbursable clergy and ordinand travel, reimbursable staff and volunteer travel, staff and clergy making reimbursable flights for work or ministry).
	In standard Greenhouse Gas reporting definitions, see overleaf, these are our "Scope 1" and "Scope 2" emissions, and some small elements of Scope 3 which are operational simpler to include.

~ **NET ZERO <u>AFTER</u> 2030** These will be in our next phase of work. Some dioceses may opt to include these in their 2030 targets.	3. All the emissions from major building projects (new builds and extensions, major re-orderings, solar panel installations, major new heating or lighting systems) 4. All the emissions (including upstream process & transport) from the procurement of any items we buy (e.g. pews for churches, paper & printing for offices, new cars for bishops, catering for events) 5. Upstream and downstream emissions from water and drainage 6. Downstream emissions from waste disposal 7. Emissions from building contractors, plumbers, electricians and the like 8. Carbon generated from use of emails and the internet in work-based contexts 9. Diocesan investments, if they are a material amount 10. Air-conditioning gasses *In standard Greenhouse Gas definitions, see overleaf, these are those parts of our "Scope 3" emissions which are within our influence to a significant degree.*

× **NOT INCLUDED IN TARGET** Out of scope of our target (but still within our mission to influence)	11. Travel of staff, clergy and volunteers to and from their usual place of work or ministry 12. The travel of the public to and from church, school, and church events. 13. Clergy family's & residents' GHG emissions (consumer goods, travel, holidays). The energy used to heat and light the housing, if over the average reasonable use above. 14. Personal GHG emissions from the lives of worshippers attending church, other church users (such as people attending a choir or playgroup), and overseas visitors 15. Voluntary Controlled Schools (which are fully controlled by Local Authorities) *In standard Greenhouse Gas definitions, see below, these are either out of our scope or are scope 3 but largely outside our influence.*

5. Defining terms

"Carbon" and "greenhouse gas emissions"

What does measuring "carbon" mean in the first place?

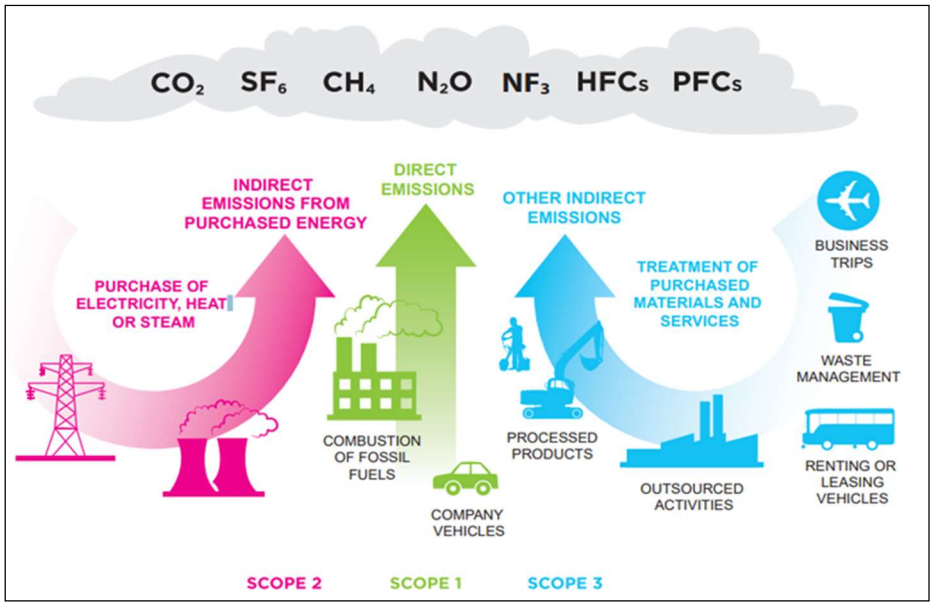
- "Carbon" is used as useful short-hand for the emissions of carbon dioxide and a bundle of other greenhouse gases, generated by the activities of an organisation.
- Each activity (turning on a light, warming a radiator, driving a mile, buying a ream of paper) has a certain amount of greenhouse gas emissions (GHG) associated with it. The sum of all of these over a time period are an organisation's greenhouse gas emissions for that period. They are generally measured in tonnes of carbon dioxide equivalent, or tCO_2e. (The "equivalent" is because some greenhouse gases have more warming impact than others, so they are bundled together using agreed factors that reflect this.)
- When we talk about "net zero carbon" we mean that;
    - the greenhouse gas emissions of that organisation have been radically reduced to a low level, by cutting waste and reducing energy use, AND
    - the remaining "residual" emissions have been reduced (by purchasing energy from renewable sources, from the 'spare' electricity we generate and export from solar panels and other renewables, and through offsetting such as tree planting or other forms of carbon capture), SO THAT
    - the organisation's net greenhouse gas emissions are therefore now "net zero".

Scopes 1, 2, and 3

These are established by the international Greenhouse Gas Protocol, with a set of standard definitions used by all sectors for carbon emission reporting;

- **Scope 1: Direct GHG emissions**. Scope 1 covers all direct GHG emissions by an organisation. It includes fuel combustion, company vehicles and fugitive emissions (leaks). *In our context, this mainly means the gas and oil being burned in our buildings for heating (churches, offices, housing and schools), and the petrol / diesel used for reimbursable work travel.*
- **Scope 2: Electricity indirect GHG emissions.** Scope 2 covers indirect GHG emissions from consumption of purchased electricity, heat or steam. *In our context, this mainly means the grid electricity we use in our buildings (churches, offices, housing, and schools).*

- **Scope 3: Other indirect GHG emissions.** Scope 3 covers other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g. transmission and distribution (T&D) losses) not covered in Scope 2, outsourced activities, waste disposal, etc. *In our context, this means 'everything else' … all the things we purchase, water use, waste disposal, how the public get to and from church / school.*



There are some very important things to understand about scopes 1 to 3;

1. Scopes 1 and 2 are the things most directly under our control, and easiest to measure. They are generally the place to start, when reducing emissions.
2. However, most of our emissions may be scope 3; typically 90% of an organisations' emissions are scope 3 (although the CoE is far from 'typical'!).
3. We are linked in a web. Our scope 3 emissions are *someone else's* scope 1 emissions. For example, the miles a parishioner drives to church are their scope 1 but our scope 3. The emissions associated with a ream of paper in our office printer is our scope 3, but the paper factory's scope 1&2.

6. A key difference: energy and carbon

It's worth bearing in mind a key difference; between our *use of energy* (which is under our control) and *the carbon this equates to* (which is found by multiplying energy use by standard factors, and these factors are out of our control).

As the national grid decarbonises, with fewer oil-fired power stations in the mix and more renewables, the grid is "decarbonising". Electricity is becoming cleaner. This is a good thing! However, it means that each unit of electricity we use equates to slightly less carbon over time, even without us doing anything.

To a lesser extent, the same thing is happening with gas, as a proportion of "green gas" or "bio gas" is starting to be available.

It is important therefore to keep track of both *real* reductions in energy consumption, and the subsequent larger reductions in carbon that this equates to.

7. What factors should we use to calculate greenhouse gas emissions?

Each kWh of energy and each mile of travel need to be converted into a measure of greenhouse gas emissions (or, in short hand, "carbon") in a standard way, using conversion factors.

It is proposed that the factors we use are the standard ones issued by the UK government each year. Every year we would update to the most recent year's factors.

The most recent year's factors currently available are "Greenhouse gas reporting: conversion factors 2019".

Here are some useful examples of these factors;

- One kWh of **electricity** (incl. well to tank, transmission & distribution) = **0.316 kg** of CO2e
- One kWh of **natural gas** (non-renewable sources, including well to tank) = **0.208 kg** of CO2e
- One kWh of **fuel oil** (including well to tank) = **0.339 kg** of CO2e
- One kWh of **LPG** (including well to tank) = **0.259 kg** of CO2e
- One kWh of **wood chips** = **0.024 kg** of CO2e
- One kWh of **pellets** **= 0.053 kg** of CO2e
- One km of **car travel** in a medium sized petrol car = **0.192 kg** of CO2e
- One km of **air travel** in economy, long haul = **0.150 kg** of CO2e

There are also standard conversion factors to allow you to convert from, for example, a number of litres of oil or a number of kg of wood chips to the equivalent kWh.

Note: The factors above only apply for 2019. It is proposed that a standard list of useful factors will be issued by Church House Westminster each further year, after they are published by the government.

8. Gross vs net carbon: proposals for the treatment of renewables and offsetting

Getting from gross to net, step 1: Renewables:

All electricity used is initially **included**, no matter the source, when calculating the "gross" energy and carbon generated by our activities.

Electricity purchased from 100% renewable sources can then be **removed** from this gross figure, to find a lower figure, net of renewables. ("Green gas" could be treated in a similar way in the future, but this is less common at this stage and it is currently less clear how to treat it.)

For churches, 100% renewable electricity can be purchased through Parish Buying's green energy basket (in which case we already have central information about usage) or directly by individual churches (in which case they can input usage into the Energy Footprint Tool). We do not have similar information for schools, clergy housing, or other buildings.

Getting from gross to net, step 2: Offsetting:

Valid offsets can then be removed, to reduce the figure further and achieve "net zero". It bears repeating that offsetting is not a short-cut; it should only be used after real reductions in energy have been made. We want to *do good*, not just *look good*.

A Church of England offsetting policy needs to be developed. A key question will be whether we are offsetting every year from 2020 onwards, starting in 2030 once we have made substantial reductions, or whether dioceses can choose between these options. The Church may wish to create its own offsetting scheme, where the offsetting monies are fed back into energy reduction projects.

Meantime, it is proposed that the following would count as eligible offsets;

1. The "spare" electricity generated on-site and exported to the grid, from solar panels or other renewables. If there is a smart export meter, this amount will have been recorded. Otherwise, for simplicity, use the standard government assumption that 50% of all the electricity generated is exported.
2. Tree planting through a reputable scheme, examples of which include Climate Stewards or the Woodland Trust. They will provide a CO_2e figure which can be included in your calculations.
3. Other reputable offsetting schemes, examples of which include Climate Stewards (https://www.climatestewards.org/), Gold Standard (https://www.goldstandard.org/take-action/offset-your-emissions) and planvivo.org. Again, you should be provided with a certified amount of CO_2e offset by your donation to the scheme. As an example, offsetting via Climate Stewards currently costs £20 per tonne (as of Jan 2020).

We also need to think about our land, and whether carbon can be "sequestered", for example by changing the way we farm to improve the quality of soils, or through the 'rewilding' of appropriate areas of church land. It is not yet clear how this could be measured and quantified, but the Church Commissioners are beginning some early work on this, for their land holdings. Dioceses with substantial land holdings may want to consider what can be done here.

9. A key issue for consultation: major buildings projects

One key point to draw attention to, which will be specifically covered in the consultation, is the treatment of the emissions from our major projects (new builds and extensions, major re-orderings, solar panel installations, major new heating or lighting systems).

In the summary of proposals on page 4, it is proposed that building projects are *out* of scope for our net zero 2030 target, but this is perhaps the knottiest issue in this document.

- Under the proposed definition, if a school built a new science block, then the energy used to heat and light it *after* it was constructed would be *included* but all the energy and materials used to build it would be *excluded*, as would the waste generated and the petrol from the construction vehicles.

- Under the proposed definition, if a church put solar panels on the roof or installed a new lighting system, then the benefit in terms of lowered electricity bills would be *included*, but the 'embedded' carbon in the panels and the light fittings themselves would be excluded.

So, a strong argument can be made to include them in the green 'in-scope' row.

However, if we include them, we need to be able to see a practical way to measure them, and this does not yet seem possible. It requires two things;

- An agreed UK methodology for calculating the energy and carbon generated by building projects (e.g. knowing for each tonne of concrete, steel beam, or light fitting what this means in terms of carbon and energy). The Green Building Council is doing some excellent work on this, but we have not yet found an 'off the peg' way to do this, and it is not the Church's role to invent one.

- A workable system for each diocese to collate the information each year about building projects that have completed in our churches, schools, cathedrals, and clergy housing. For churches and cathedrals this could potentially be triggered by the faculty/permissions system, but this would require gathering significant additional information. For schools, there is no equivalent system.

The consultation response will specifically ask for consultees' opinions on this matter. If the wider view is that we should include buildings projects, then staff will do further research into finding a way to do so. At this point it is unlikely to be practical to include it in the agreed definition in 2020, as it would render it unmeasurable. What we can work towards instead is establishing parameters for measurement and planning to bring these into the definition at a later point in this decade, after due consultation

10. Potential to create a national on-line tool

The footprint of churches is soon to be gathered through our new national Energy Footprint Tool. There is the potential that a similar approach could be taken for other types of building and emissions, which might make the process simpler for dioceses and avoid having to duplicate work.

National conversations are ongoing about developing a central toolbox that would provide tools to make information collection easier for dioceses, but these decisions have not yet been taken. **The view of dioceses on the benefits of this approach will be sought through the consultation process.** 

11. So, what would a diocese actually need to do, to measure its "carbon"?

Start with the items in the green row in the table on page 1; calculate the direct emissions from gas and electricity in your buildings, and staff travel.

For churches:

- The Energy Footprint Tool will be rolled out in spring 2020. **Encourage all your churches to use this simple tool.** The results will tell you, for those churches who have completed it, the energy and carbon emissions from their electricity and gas usage.
- To do this, churches will need their 2019 utility bills to hand.
- The central Research and Stats department will then use this information to generate a national report and (resource allowing) one for your diocese. The more churches use the system, the more complete this will be.
- There is also the possibility to encourage up-take of the wider 360Carbon tool developed by A Rocha and Climate Stewards, based on work done originally by Leeds Diocese. This is an optional tool which allows those churches who are keen to go further to calculate a wider measure of their footprint, including for example food, travel, and purchases. Using this will give a church a more complete measure of their carbon footprint than the Energy Footprint Tool alone, but takes longer to complete. Gathering information from the sample of churches keen to use the 360Carbon tool could generate an additional 'top-up factor' which could then be applied to all churches in a diocese, to estimate the extra on top of energy bills which a typical church generates.
- Please note that cathedrals and major churches may need bespoke energy measurement solutions due to the complexity of their buildings The CFCE and CBC are currently working on this and will discuss with the relevant networks soon.

For schools:

- Where it is available, gathering actual readings from smart meters is the ideal approach. Schools should be encouraged to install smart meters and use the readings regularly. (This can also be incorporated in the curriculum, engaging pupils.)
- However, where smart meters are not available, or schools do not want to share the data, the energy use of each of our schools is available online, from their Display Energy Certificate. You need to check the data individually for each school, which takes a couple of minutes per school.

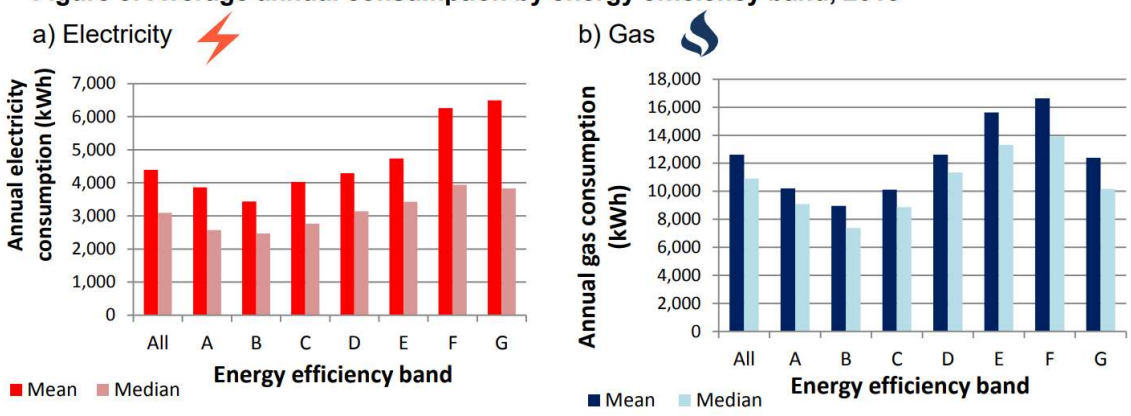
- Start by creating a spreadsheet with every school that is in-scope, including their postcode.
- Go here: https://www.ndepcregister.com/
- On the left click on "Retrieve Report Using Property Address". Then enter the postcode of a school. (For example AL3 4SJ.) Click on the school, then "show reports", and then pick "DEC".
- You will see the school's DEC report. In the bottom left hand corner you will find energy use per m2 and the number of m2. In your spreadsheet, multiply one by the other, and you have the energy use. Multiply them by the standard factors above to get its the greenhouse gas emissions.

- This is one of the areas where a central tool could be created by Research and Stats, to make this process simpler for diocese.

For clergy housing:

- This is a tricky area because some elements are under a Diocese' control (the building fabric such as windows and insulation) and some are under the control of the clergy and their family (the number of hours the lights are left on, and the temperature the thermostat is set to).
- Our proposal is therefore to use standard average energy use, based on the EPC rating for the house.
- Gather a list of each clergy house, its size, and the EPC rating (where known). Where not known, the diocese may want to commission these reports.
- We are currently sourcing up-to-date average energy use per EPC banding. The figures below are from government statistics from 2015.

Figure 3: Average annual consumption by energy efficiency band, 2015



- For each clergy house, you can use the appropriate band above. We propose that an additional factor is agreed and used to take account of the above average size of many clergy houses.
- A diocese could choose to supplement these averages by recruiting some keen volunteers from amongst your clergy (potentially by approaching your local 'Eco Churches') and then using this sample to improve the average data.

For offices:

- Take your utility bills and multiply them by the factors on Page 7.

For travel:

- Your expenses system should record the reimbursable mileage of staff and volunteers. Multiply this by the factors on p7 above.
- Your expenses system should record air travel. Multiply it by the right factors for the type of travel.
- Clergy travel is more difficult. Reimbursable travel is currently recorded by the treasurer of each PCC, so this could be used, but it would need to be gathered. The size and type of car would also ideally need to be known (petrol, diesel, electric, hybrid), or simple averages could be used.

End result:

The final report would look something like this, for each year:

	Gross						Offsets / reductions				Net
	Oil	Gas	Electricity	Car travel	Air travel	TOTAL	100% renewable electricity	Solar export	Other	TOTAL	
Energy (kWh) • Churches • Schools • … TOTAL											
Carbon (tCO_2e) • Churches • Schools • … TOTAL											

Note: If a national "toolbox" is created to help dioceses with this, then this report could be centrally created and sent to diocese, rather than being created in each dioceses individually.

Note: Factors to consider when interpreting the results

Some churches are hosting mobile telecoms installations in their towers, which use significant electricity. If sub-metered, subtract from the Church's consumption; if on their own separate supply, you will not know the amount and can ignore.

Some years are warmer and wetter than others, and this affects the results. The figures from Research and Stats will take account of this, they are "degree day adjusted" but other figures will not be.

12.Where should you start?

FOR A DIOCESE:

<u>If you have time to do one thing:</u>

Focus on encouraging as many churches as possible in your diocese to gather their 2019 utility bills and complete the "Energy Footprint Tool" as part of their annual parish return.

<u>If you have time to do more:</u>

We hope we will be able to develop a national measurement toolkit to help you. Please speak to key colleagues about preparing the ground, by understanding what information you have access to in your diocese.

- Talk to your Board for Education about gathering the utility data from smart meters or DEC reports for those schools which are within scope.
- Talk to your Finance Manager about gathering information from your expenses system, to calculate your staff transport emissions.
- Talk to your Office Manger about getting electricity and gas usage for your offices. Use the factors above to work out the energy and carbon for your diocesan offices. This will help you understand the approach.
- Talk to your diocesan surveyor about clergy housing, and whether they already hold EPC reports for them.

FOR OTHER CONSULTEES:

Think about the main energy uses that you control or influence through your activities; electricity, gas/oil, and fuel for reimbursable work-related travel. Taking the ideas in this paper as a start-point, discuss with colleagues how you can you best gather information on these, to allow the energy and carbon from your activities to be calculated.

Catherine Ross, June 2020