

## Introduction

Since General Synod set a target for the Church of England to be Carbon 'Net Zero' by 2030, there has been increased effort from parishes to reduce their carbon footprints. This brief guide aims to help PCCs to establish whether solar panels are a good choice for their church and what steps should be taken to produce a good faculty application. It will help parishes to identify whether solar panels are appropriate for the church or if other steps to reduce the church's carbon footprint need to be taken first. Much of this guidance will also be helpful when applying for planning permission, though this is not dealt with specifically.

All applications are considered on a case-by-case basis. Well-designed, well-prepared applications are encouraged. This guidance aims to help churches prepare these applications and to design the most effective option for their building. It should be read alongside our brief technical guide to solar panels.

Solar panels being visible does not necessarily mean that they are unacceptable; there is a clear understanding at all levels in the Church of the climate crisis, and of the need for action. Visibility in itself is not intrinsically harmful to significance, however, visibility on a listed building does mean that a stronger case needs to be made for the benefits of the application.

## Suitability

### Have the basics been dealt with?

Solar panels should be part of an integrated package of measures; the 'icing on the cake' when heat loss has been tackled and other systems have been made more efficient. This includes such measures as fixing broken windows, appropriate draught proofing, ensuring roofs are water tight and swapping to LED light bulbs. Solar power will create green electricity, but using more than is needed because of poor maintenance or building management is not environmentally responsible.

Look at the [Practical Path to Net Zero](#) to see what other steps should be taken **before** considering solar panels.

### **Is the roof sound?**

The warranted lifespan of a solar panel tends to be between 20 and 30 years. They will need a well-maintained, secure base to be attached to and any major roof repairs will be more challenging once the panels are in situ. If the roof needs major repairs within the lifespan of the panels, either ensure that repairs are carried out prior to applying for permission to install solar panels, or include the necessary repairs as one package, using the scaffolding for both repairs and installation. If the roof will need replacing during the lifespan of the panels, wait and install the panels at that time.

### **Is the roof suitable?**

A stretch of relatively unshaded roof is needed for solar panels. If there is a lot of shading, the panels will not work well. If there is a small amount of shading from the tower or trees, this can be handled by putting micro inverters on each individual panel, which will make the installation slightly more expensive. Pitched roofs will ideally be facing south, though east or west can also work. A flat roof is well-suited to solar panels.

### **Is the installation affordable?**

Early in the process, get a free desktop estimate from an [MSC certified installer](#), or find one via [Parish Buying](#). In addition to the certified installer's estimated installation cost, add architects' and planning application fees, a structural survey, and scaffolding. Consider recommended extras such as birdproof netting, and the option of a display unit in the cost. Do not forget to factor in any cleaning and maintenance costs throughout the lifetime of the panels.

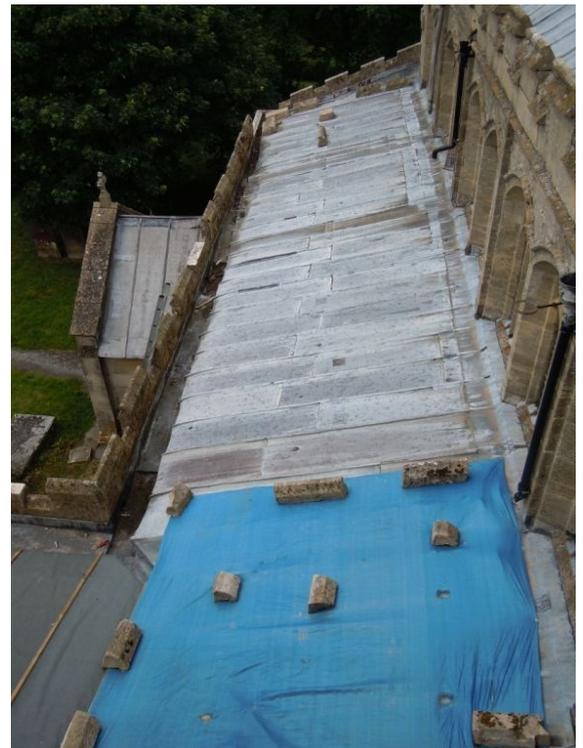
### **Is enough energy being used to make the installation worthwhile?**

The solar panels will create electricity during daylight hours every day, especially in the summer. In order to maximise the financial benefit, it is important to understand the church's energy usage pattern and ensure the electricity generated is well-matched to church use. 'Spare electricity' can be exported to the grid unless it can be used directly by the local community or stored in batteries. Batteries are currently expensive, although solar installations should generally be 'battery ready' since prices are falling and should be more affordable in the future.

### **Does the environmental impact make it worthwhile?**

The environmental impact ('embodied carbon') of the installation itself should be considered and weighed against the clean electricity produced ('operational carbon') to estimate – at least roughly – when the panels will pay back from an environmental perspective. The installer will be able to help calculate this information.

*Below: Lead roofing at Algarkirk, St Peter & St Paul, which needs replacing*



## Considerations for historic and listed churches

It is strongly advised that the help of a conservation accredited architect or surveyor is sought to help prepare an application which sensitively considers the historic building, for example through the [AABC](#) and [RIBA](#) lists.

### **Will the solar panels be visible from the ground on a listed building or within a Conservation Area?**

If not, it is likely that a solar installation will be acceptable, if the application follows the guidelines set out in this guidance note.

If the panels will be visible, it is still possible that the solar installation will be acceptable, if the application follows the guidelines set out in this guidance note and can clearly demonstrate that the benefit of installing the solar panels would outweigh the harm, as shown in the section [Making your case: harm vs benefit](#), later in this document.

The remaining considerations in this section need to be given very careful thought.

### **Have alternative locations been considered and clearly presented?**

It is important to show that alternative options have been carefully considered before deciding that the church roof is the best and most viable location. Other possible options could include an associated school or church hall.

### **Have all possible roof locations been considered?**

Explain in the application why the location selected is the most suitable. If a partially or fully visible roof slope has been chosen, it is important to clearly show why this is the most viable option. Show that other roof locations have been considered, including tower roofs, valley roofs, and roofs behind parapets.

### **Does the appearance or significance of the roof and its covering contribute directly to the significance of the church?**

All roofs contribute to the significance of the church to some degree, but where they are covered with an unusual material, or are visually striking, their significance will be greater.

Each case will be considered on its merits, but the reality is that it is unlikely permission will be given to install solar panels on those roofs which are particularly notable for their appearance, or if the proposals damage historic roofs.

*Below: Solar panels at New Sleaford, St Denys*



*Below: Solar panels on Freemantle School, Southampton*



## Preparing an application

### Application guidelines

Every faculty application is determined on a case by case basis. A strong case will consider the following factors:

- The nature of the fixings to the roof should be carefully considered, as should the location of the cable runs, where the inverters and other equipment will be mounted inside the building, and how the panels will be accessed for cleaning or maintenance. All of these can have an impact on the significance of the church.
- The solar panels should be installed carefully in order to maximise their reversibility at the end of their lifespan.
- The longevity of the panels, within their expected lifespan, is vital to their environmental sustainability. This includes allowing for regular maintenance. For example, preventative measures such as bird-proof netting can reduce future maintenance. The application should show that such measures have been considered and if they are not included, this choice should be clearly justified. Self-cleaning solar PV panels are available but still require some maintenance, and this should be ascertained from the installer. The solar installation should be incorporated within the maintenance plans of the building. Appropriate health and safety measures should be in place for the maintenance of the panels.
- Solar panels can cause a complication when tackling a fire, which should be carefully considered. This comes from the need to isolate the live panels if they are near water when tackling any fire, the additional weight of the panels on the roof if the roof itself is on fire, and the live cabling running down from the roof. The application should show that this has been thought through, with input from the local fire service, if necessary. It may be necessary to install an isolating switch on the ground floor, and clear signage.
- If a solar panel installation is to be visible, it is particularly important that it has been well designed, in terms of materials and finishes, and any lasting impact when it is removed at the end of its working life. The colour of the panels and their trim should be matched to the roof colour, if practical.
- There is a balance to be achieved between installing a sufficient number of panels and their appearance on the roof. One panel in a different orientation or off-set from the rest is much more eye-catching than a symmetrical installation.

### Application documents

The application itself should be well-considered and presented including having detailed [statements of significance and needs](#). The list below may look daunting at first, but will help in preparing a successful application.

In addition to setting out the significance of the church as a whole, the statement of significance should consider the significance of the roof, any areas where cabling will be introduced, and the fixings to the roof. It should assess the impact of the proposals on the significance of the church as a whole and in particular on the significance of the roof.

Additionally, the following documents will be needed:

- Existing plans of the church and the roof layout.
- Proposed plans with the solar panel array and proposed cabling routes.
- Proposed location for any batteries. These are currently expensive and need not be part of the application, but the proposed installation should be battery-ready including having a suitable location for future batteries.
- Photographs of the church (these can be included in the statements), in particular, views including the roof where the panels are to be installed, both from close to the church and from further away.
- The photographs should ideally be marked up to show where the panels will go. This can be simply done, for example in Powerpoint.
- A Structural Engineer's report on the condition and suitability of the roof.
- An options appraisal explaining which alternative locations have been considered and discounted.

- Evidence of other steps taken to reduce the church's carbon footprint (this can be included as a section in the statement of needs). For example, an assessment using the self-guided checklist version of the [Practical Path to Net Zero](#).
- Calculations showing the payback of the panels as well as their carbon cost and the energy usage patterns of the church to show that solar panels are a suitable choice. This guidance from EASA on [Project Sustainability](#) may be helpful for the appointed architect to use.
- A maintenance plan for the solar panels; ask the installer what will be needed during the lifetime of the panels.
- A brochure or information about the specific solar panels proposed for installation, including photographs.
- Although not required for a faculty application, Building Regulations Approval will be needed from your Local Authority (or equivalent) and agreement from the local Distribution Network Operator (DNO) that they are able to purchase any excess energy generated, if this is necessary. The installer or architect should guide the PCC through this process.
- Similarly, it is not required for the faculty application, but it is vital to inform the church insurers of the PCC's intention to instal solar panels.

It is a good idea to inform the DAC early on of the PCC's intention to apply for permission for solar panels, so that they can help to guide them through the process.

Early consultation with the relevant statutory bodies and amenity societies will also be useful in helping the PCC to shape the proposals from an early stage, and improve the chances of a successful application.

## Making your case – harm vs benefit

Every application is considered on a case-by-case basis because every church is unique.

In any application to make changes to a church it is important to understand the harm that the proposals will cause. All applications are likely to cause at least some harm, which needs to be outweighed by the benefits. In the case of solar panels, the harm is most likely to be the visual impact, possible damage to the roof covering and loss of fabric where cables have to be inserted. Think through all of the impacts that the installation will have and consider how these might harm the church. By understanding that there will be harm and what that harm is, it will be easier to mitigate or outweigh the harm through the perceived benefits of the proposals.

The more harm there is likely to be, the greater the benefits of the scheme will need to be for it to get approval. The acceptability of any scheme proposed for faculty will be determined by answering the [Duffield Questions](#) (in the section titled 'How will your Chancellor make their decision?').

It might be helpful to think of the harm and the benefit as two sides of a scale. An application for solar panels will at least need to balance the scale, but the more the benefits outweigh the harm, the more likely it is that the scheme will be granted permission.

### Explain the benefits

It should be clear in any application what the benefits of the panels to the parish will be. It is important to distinguish between different types of benefits. Some examples are listed below.

#### Benefits from the solar electricity

- Reduction in dependence on fossil fuels
- Financial benefits

## Benefits to the wider community

- Excess energy being exported to the grid
- Community involvement in the panel installation
- Education around the climate emergency

## Benefits for mission

- Leading by example

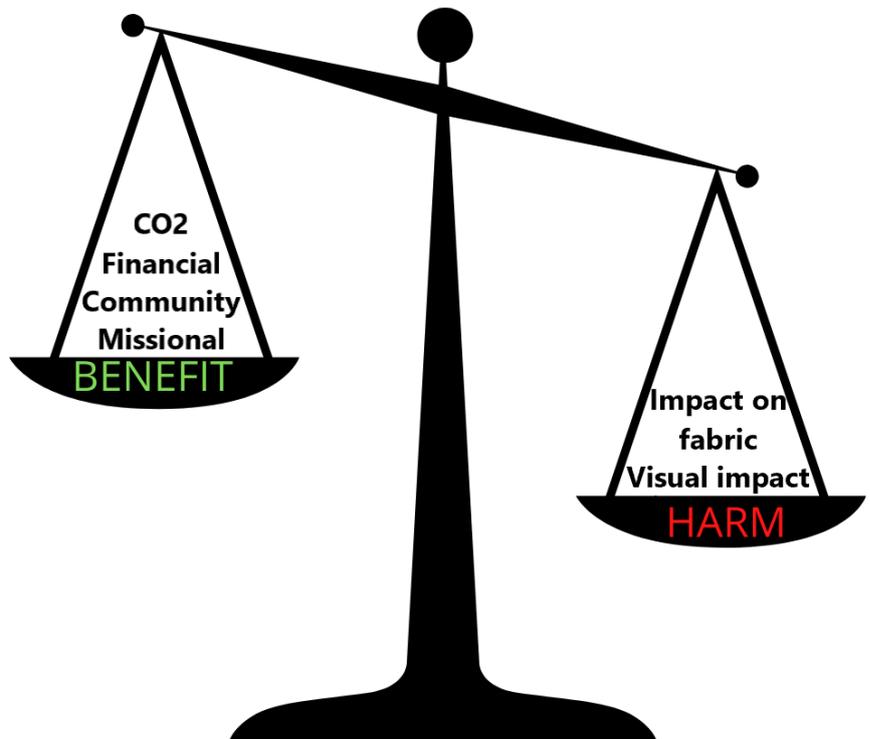
If missional benefits are being stated, explain how environmental action is part of the life of the church, for example by registering as an Eco Church, changing lightbulbs to LED or switching to a low carbon energy provider. The PCC should use the [Practical Path to Net Zero](#) to inform their proposals.

Some benefits will be inter-linked. For example, saving money on electricity might enable the church to better serve the community in other ways.

## Explain how the harm will be minimised

- Show the different options considered and how the chosen option has the least impact.
- Show that the chosen arrangement and materials will reduce the impact.
- Show that the panels will be fitted carefully, reducing the impact on the building fabric and allowing the panels to be removed at the end of their lifespan with minimal harm.
- Show that the panels will make a real difference to the church's energy usage rather than being a token gesture.

Sometimes, the best design may be a bold one. If done well, visibility can act to communicate the church's mission of caring for creation very clearly to the wider community.



*Above: A scale showing that in this case, the visual impact and the harm to the fabric outweigh the benefits. This application would be unlikely to be granted a faculty.*

## A note on planning permission

As solar panels represent an external change to the building, it is likely that planning permission will be required in addition to a faculty. Each Local Planning Authority will have their own specific policy regarding solar panels and their acceptability, within the parameters set out in the [National Planning Policy Framework](#). The information about preparing a strong faculty application will also help a parish prepare a strong planning application.

### Find out more

Use the [Planning Portal](#) to find the right Local Planning Authority or start an application.

To find any local policies which are relevant to the application, visit your Local Planning Authority's website and navigate to their Planning page. Alternatively, using a search engine, search for your Local Planning Authority (for example, Lewisham) and 'planning' which should take you to the correct page.

## Conclusion

Solar panels can be a valuable part of a comprehensive package of carefully considered works to make a church building more environmentally sustainable.

Every application will be considered on a case-by-case basis. Solar panels will not be appropriate in some circumstances for a variety of reasons. However, an increased understanding of the urgency of the climate crisis combined with the reversibility of solar installations means that solar panels could be appropriate in many situations.

In some cases it is acceptable for solar panel installations to be visible on listed church buildings because visibility in itself is not intrinsically harmful to significance, but where the roof itself contributes greatly to the significance of the building, there is a presumption against solar installations.

Every case will need to carefully assess the harm caused by the panels against the benefits provided by them.

There is no reason that a well-presented application which follows the guidance set out in this note should not be granted a faculty for solar panels.

## Further information and guidance

- Have a look at the [Practical Path to Net Zero](#) for help and ideas on reducing the church's carbon footprint
- Watch the Church of England's webinar on [Solar Panels](#) and read the accompanying guidance on [Solar PV](#)
- Watch the Church of England's other webinars on [Reaching Carbon Net Zero](#)
- Read Historic England's Guidance on [Solar Electric](#)
- Show your architect this guidance from EASA on [Project Sustainability](#)
- Find your Diocesan Advisory Committee ([DAC](#)) and your Diocesan Environmental Officer ([DEO](#))
- Find an MCS certified installer [here](#) or through [Parish Buying](#)
- Use the [Planning Portal](#) to find the right Local Authority or start an application.
- Find other churches nearby which have taken steps to introduce [Renewables](#)
- Read the Cathedral and Church Buildings Division's [Statement on Sustainability and the Environment](#)
- See the Local Councils' [Climate Emergency Declarations](#)

*This guidance is issued 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. Issued by the Cathedral and Church Buildings Division, August 2021. © Archbishops' Council.*

