Solar Photovoltaics
and Historic Places of Worship

Diana Evans

Many Congregations are keen to explore the possibility of using their place of worship to generate energy from a renewable source. They are usually driven by an ethical commitment to carbon reduction but a financial assessment of potential revenue from energy fed into the national grid or an approach from a commercial operator can also kick-start their interest.

Places of worship often have large south-facing roof slopes, which can appear to be ideal for generating energy via photovoltaic (PV) cells. Such roofs, however, are often very visible and are an important part of what makes the building and its setting significant. To preserve that significance, the visual impact of any installation should be minimised. This can sometimes be done by placing PV panels behind parapets or on inward-facing roof slopes. Alternative locations, such as a church hall roof or a ground-mounted solar collector might be more suitable.

Photovoltaic panels on the roof of the nave at Wing All Saints, Buckinghamshire (Photo: Martin Findlay)

Small PV units are also available; they are intended to have a similar appearance to natural Welsh slate and fit within the same plane as the roof covering. Nevertheless, these 'solar slates' also have a visual impact. On listed buildings they may be acceptable where the roofing material is not part of the building's historic entity and the whole slope is in need of replacement. However, they have a shorter lifespan than real slates so the cost of more frequent maintenance, repair and replacement must be taken into account.

Even the best designed and managed installations are likely to cause some damage to existing historic fabric. Fixing, maintaining and decommissioning solar panels or slates needs to be planned and agreed before the installation takes place and those granting authority for works must be completely satisfied that the panels will not impede rainwater disposal or obstruct crucial maintenance.

WING ALL SAINTS, BUCKINGHAMSHIRE, GRADE I

In May 2011 English Heritage (EH) published a guidance note setting out an approach to assessing proposals for the installation of solar electric panels and slates on historic places of worship. The information offered was not in itself new because EH had already published

extensively on the subject of microgeneration but this was the first time EH had specifically addressed the issues raised by this particular form of microgeneration on listed places of worship.

Interestingly, there has not been the same demand for guidance on other forms of microgeneration or green technologies such as ground source heat pumps and biomass boilers, although these are increasingly being used in places of worship. This is probably because such installations are not usually sited on prominent exterior elevations and are therefore much less controversial. Also, although such technologies are new, the issues they raise, such as the archaeological impact of excavations, are already familiar territory for the denominational advisory bodies.

The big challenge of solar panels is, of course, that they need to be exposed to sunlight to be effective and are therefore likely to be visible. Indeed congregations often prefer an installation to be seen so they can publicly demonstrate their commitment to addressing the threat of climate change, even where less visible alternatives are available.

(Photo: Martin Findlay)

'On the understanding that the Church and all Christians have a particular responsibility to take action to protect God's creation, the PCC agreed to
install 54 solar PV panels on the roof of the nave and the south aisle. Panels were duly installed and commissioned in November 2010 by 'Freewatt' at a cost of £50,000, raised through grants and donations. The electricity generated will be sold to the National Grid using the new government feed-in tariffs and, where possible, used by the church to reduce costs. The long-term aim is for the church to become carbon neutral and for this project to encourage the local community to take action to reduce the village's carbon footprint.' *Churchwarden Martin Findlay*
For more information see
www.wing-ops.org.uk/allsaints.html

Nevertheless, EH generally advises that it is 'not considered sympathetic to a building's appearance to have a solar panel or other equipment fixed to any of its main elevations, i.e. the face or faces seen from the principal viewpoint, towards which it is mainly viewed' (*Small-scale solar electric (photovoltaics) energy and traditional buildings*, EH, 2008). In practice, many places of worship in both urban and rural locations stand in prominent positions and have no single principal viewpoint, but several viewpoints of equal importance.

It is hard to determine the number of installations already achieved. A straw poll of the denominations operating the Ecclesiastical Exemption in England (Church of England, Roman Catholic Church, Baptist Union, Methodist Church and United Reformed Church) in May 2011 revealed only a few congregations had installed PV:

Installations on listed buildings		Notes
C of E	30 approx	Many more schemes are under consideration.
Methodist	2	At least four listed church buildings are under consideration and five unlisted buildings have ongoing or completed schemes.
RC	0	Each of these denominations has a small number of proposals under consideration
Baptist	0	
URC	0	

Even this sketchy information shows that although only a small number of installations have been completed, many projects are being developed. It is important that both secular and ecclesiastical decision-makers, as well as those who advise them, are consistent in the way future applications are handled.

As is so often the case with places of worship, those caring for them are challenged by the tensions between their own mission and ministry objectives and the legislation and processes protecting listed buildings. In addition, while the government clearly supports measures that tackle climate change, congregations can be surprised to learn that this stance does not in practice override planning and ecclesiastical jurisdiction.

The installation of either PV panels or slates on a building may have a material effect on its external appearance and therefore is highly likely to require planning permission as well as listed building consent or equivalent denominational consent. In England, congregations wishing to reduce the carbon footprint of their place of

BETHESDA METHODIST CHURCH, GLOUCESTERSHIRE, GRADE II

worship must address the requirements of *Planning Policy Statement 22: Renewable Energy* and *Planning Policy Statement 5: Planning for the Historic Environment*. From these two statements it is clear that where climate change measures impact upon heritage assets, the benefits to society in terms of climate change remediation must be weighed against the harm caused to the heritage asset.

Anyone proposing works to a listed building is required to follow the policies set out in PPS5. Guidance issued by the Department for Culture Media and Sport in July 2010 (*The operation of the Ecclesiastical Exemption and related planning matters for places of worship in England*) makes it clear that there is a specific duty for the exempt denominations to protect the special historic and architectural interest of listed buildings and strongly encourages them to follow the guidance set out in PPS5.

Under the requirements of PPS5, 'a description of the significance of the heritage assets affected and the contribution of their setting to that significance' (PPS5, HE6.1) must be provided, to put the proposed changes into the context of the whole building and its local environment. There is a presumption in favour of the conservation of designated heritage assets, to the point that substantial harm, even to a Grade II building, should be 'exceptional' (PPS5, HE9.1). Those assessing applications need to take account of the 'desirability of sustaining and enhancing the significance of heritage assets, and of utilising their positive role in place-shaping' (PPS5, HE7.4). They are also reminded that 'the consideration of design should include scale, height, massing, alignment, materials and use' (PPS5, HE7.5).

(Photo: Elaine Bailey)

There are 32 PV panels on the south-facing roof; they are not visible from the main road at the front of the building. The installation cost £39,000, raised over two years by the congregation and grants from the Low Carbon Building Fund, the borough council and the Summerfield Trust. It is estimated that the panels will generate 7,000kW annually. Bethesda is a Fair Trade Church; it has given out more than 1,000 low energy light bulbs, operates an extensive recycling scheme and runs a carbon offset programme, which has just paid for the installation of a solar hot water system in an AIDS orphanage in South Africa. It is part of the national Eco-congregation network and has won three awards.
For more information see
www.bethesda-church.org.uk

A balance has to be found, such that: 'where conflict between climate change objectives and the conservation of heritage assets is unavoidable, the public benefit of mitigating the effects of climate change should be weighed against any harm to the significance of heritage assets in accordance with the development management principles in [PPS5] and national planning policy on climate change' (PPS5, HE1.3). Overall, the greater the harm to the significance of the heritage asset, the greater the justification required for the works (PPS5, HE9.4).

PPS22: Renewable Energy picks up this theme in saying that where proposals apply to nationally recognised heritage assets: 'planning permission for renewable energy projects should only be granted where it can be demonstrated that the objectives of designation of the area will not be compromised by the development, and any significant adverse effects on the qualities for which the area has been designated are clearly outweighed by the environmental, social and economic benefits' (PPS22, para 11).

Given all this guidance, congregations may feel overwhelmed. A preliminary consultation with the local authority and denominational advisory body regarding statutory requirements, well in advance of making an application for permission to install PV and before making any financial or contractual commitments, will help to avoid frustration and ensure the best possible outcome.

SLEAFORD ST DENYS, LINCOLNSHIRE, GRADE I

Before proposing major capital investments and interventions in the fabric of historic buildings with the aim of reducing their carbon footprint, congregations are strongly advised by denominational bodies and EH to develop a wider energy strategy for their buildings and associated land. Congregations are advised to:

1. audit existing energy use, consider the embodied energy and carbon of existing and new equipment and assess the place of worship's current carbon footprint (see further information section)

2. identify and implement measures to reduce the existing level of energy use, for example changes in heating and lighting patterns, improvement of equipment such as boilers and light bulbs, better insulation and the elimination of drafts (without impeding proper ventilation)

3. consider switching to a 'green energy' supplier

4. assess the potential of microgeneration equipment, taking into account:

(Photo: David Prescott)

'The panels have certainly proved a valuable addition to the parish church. First, they speak of our mission as stewards of God's creation, caring for one another and the planet we have been given out of His providence; secondly, they have proved a successful mix of medieval building and 21st century technology. They cannot be seen from ground level and the specially-designed attaching clamps (right) could be removed within a matter of hours, so you would not know they had been there; thirdly, they provide a useful income stream which more than pays for our own electricity needs.' *The Revd Canon John Patrick* For more information see lincoln.ourchurchweb.org.uk/sleafordstdenys/docstore/ 18.pdf

- the impact on the appearance and significance of the place of worship
- the method of fixing and its potential impact on both the fabric of the building and regular maintenance (for example, panels may impede access for inspection or clearance of rainwater goods or result in water penetration)
- the cost of installation, maintenance, decommissioning and removal relative to the benefits and savings
- the projected life and efficiency of the equipment relative to its impact and cost.

The Diocese of London has undertaken major research on the significant reductions in carbon footprint and the cost of running a building that can be achieved by responding to the first three issues (see useful websites section). Some parishes, having addressed these issues, will want to consider microgeneration in one form or another.

The fact that there are already PV installations on listed places of worship demonstrates that it is possible for congregations to realise their ambitions in this regard. EH's published guidance (Microgeneration in the Historic Environment, 2008) states that proposals for equipment attached to listed buildings or unlisted buildings in conservation areas will generally be acceptable if all the following criteria are met:

1. the change will not result in loss of special interest

2. the visual impact of the equipment is minor or can be accommodated without loss of special interest

3. in fixing the equipment to the building there is no damage to significant historic fabric and installation is reversible without significant long-term impact on historic fabric

4. the cabling, pipework, fuse boxes or other related equipment can be accommodated without loss of, or damage to, significant historic fabric

5. the applicant can demonstrate that other energy-saving measures or other locations with less impact on the historic fabric and the special interest have been considered and are not viable

6. the applicant can demonstrate that the proposal has a net environmental benefit

7. the consenting authority imposes a condition requiring the removal of the equipment, including cabling and boxes, and making good of the historic fabric as soon as it falls out of use.

If the above criteria cannot be satisfied then congregations might like to consider freestanding equipment. If this is within a scheduled area, close to a listed building, or on a site included in the Register of Historic Parks and Gardens or the Register of Historic Battlefields, proposals will generally be acceptable if the following criteria are met:

1. the appearance or setting of the site or building is not compromised

2. the ground disturbance caused by installation is minimal and does not compromise the historic significance of the site.

The sustainability of our listed places of worship is very important. We must work together to ensure that what we do today to try to secure the future doesn't in fact make places of worship more, rather than less, vulnerable.

Above left: Lead roll clamp securing PV panels at Sleaford St Denys, Lincolnshire (Photo: David Prescott) and, above right: panels being installed at Bethesda Methodist Church, Gloucestershire (Photo: Mark Boulton)

~~~

CONSULTATION CHECKLIST

Further

Congregations seeking to install PV equipment should try to answer the following questions in their proposals as this will address many of the issues that consultees, such as EH, local authorities and denominational advisory bodies are likely to raise:

- Does the Statement of Significance supporting the proposals provide sufficient information to enable the works to be understood in context?
- Does the proposal address the needs of the building and congregation as set out in the Statement of Need?
- Is there a compelling justification for the work?
- What is the visual impact on the building and its setting?
- Will the fixing of the equipment (including cabling, pipework, etc) damage significant historic fabric?
- Are the works reversible?
- Has a professional adviser such as an architect been engaged to inform the design and the routing of cables, and to advise on the technical issues in relation to routing, fixing, etc?
- Have other energy saving measures or locations with less impact been considered, implemented or shown not to be suitable?
- Do the proposed panels/slates form part of a wider energy strategy for the place of worship and associated land and structures, which addresses reducing energy consumption and wastage?
- Is the proposal of net environmental benefit?
- If necessary, have proposals been presented for an appropriate level of recording of historic fabric made accessible through the proposed works, such as essential roof structure, significant local roofing techniques, assembly marks and graffiti, and the condition of wall-heads?
- What conditions relating to the removal of equipment if it falls out of use, reinstatement of any removed fabric and the making good of historic fabric affected by the installation are required?

Information

The following English Heritage publications are available at www.climatechangeandyourhome.org.uk:

- Energy Conservation in Traditional Buildings, 2008
- Microgeneration in the Historic Environment, 2008
- Small-scale Solar Electric (photovoltaics) Energy and Traditional Buildings, 2010

The EH publication New Work in Historic Places of Worship is available from www.english-heritage.org.uk or through EH customer services tel 0870 333 1181 email customers@english-heritage.org.uk

For more information about PV installations and places of worship see also Climate Change and Places of Worship on the EH website.

Planning Policy Statement 22: Renewable Energy
~~~

Planning Policy Statement 5: Planning for the Historic Environment

Useful Websites

www.carbontrust.co.uk

www.energysavingtrust.org.uk

www.creationchallenge.org.uk

www.ecocongregation.org

www.english-heritage.org.uk

www.london.anglican.org/Shrinking-the-Footprint

www.shrinkingthefootprint.cofe.anglican.org

Acknowledgements

Thanks are due to English Heritage staff, especially Nick Chapple, Sarah Lewis, Chris Brookes, Richard Peats and Dale Dishon. For the case studies, I am grateful for the help of the Revd Canon John Patrick, Anne Smillie-Pearson, Martin Findlay, the Revd Hilary Ewing, Peter Boait, Elaine Bailey, David Prescott and Mark Boulton.

Historic Churches, **2011**

Update, September 2012
Recently there have been several significant changes in UK government planning guidance and policy.

In England Planning Policy Guidance Note 15: *Conservation of the Historic Environment* (PPG15, 1994) and Planning Policy Guidance Note 16: *Archaeology and Planning* (PPG16, 1990) have been cancelled by the Government. Initially replaced by Planning Policy Statement 5 (PPS5) in March 2010, current policy guidance for England is now given in the National Planning Policy Framework (NPPF) issued in March 2012. Further guidance is proposed, but in the meantime the guide which originally accompanied PPS5 remains in force - see PPS5 *Historic Environment Planning Practice Guide*.

In Scotland the principal statutory guidance on policy is now Scottish historic environment policy (SHEP), which was published in December 2011, with subsidiary guidance given in Historic Scotland's Managing Change leaflets. These documents together replace the *Memorandum of Guidance on Listed Buildings and Conservation Areas* published in 1998.

Author

DIANA EVANS is Head of Places of Worship Advice, Government Advice Team, English Heritage and a member of the Society for the Protection of Ancient Buildings' Faith in Maintenance steering group. She is a former member of the Council for the Care of Churches and was DAC Secretary for the Diocese of Peterborough (Anglican).

Further information

RELATED ARTICLES

Churches (general)

Sustainability

RELATED PRODUCTS AND SERVICES

Advisory bodies and associations

Heating engineers

Site Map

© Cathedral Communications Limited 2019