

SOLAR PHOTOVOLTAIC PANELS (PVs)

BUILDINGS

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Solar PVs

WHY?

God has given us an amazing resource in the sun. Not only does it cheer us up from time to time in the UK, but it is also potentially a renewable free source of energy. The tricky bit is to capture it in a way which is carbon-efficient and cost-effective.

Solar panels are easy to install, require little maintenance, can save money on energy bills, are noise-free, non-toxic and emit no carbon. Happily, they can run on daylight, not sunlight, so even a British grey day is OK.

Challenges are a high initial set-up cost, the structural and aesthetic suitability of roofs and buildings, and the production and recycling of solar panels not yet being toxin or carbon emission free.

HOW?

There are two types of solar panels: 'solar thermals' which just heat water, and 'solar photovoltaics or PVs' which generate electricity. Few churches have a need for large amounts of hot water in the daytime, but if you do, see:

<https://energysavingtrust.org.uk/advice/solar-water-heating/>

<https://www.cse.org.uk/advice/renewable-energy/solar-hot-water>

Photovoltaics contain silicon which captures the energy from the sun and produces electricity from it. This travels to an inverter, creating a 'normal' electrical current of the sort we use on the grid. From here, it can either be used by the church or, if there is surplus, it can be exported to the National Grid: <https://www.cse.org.uk/advice/renewable-energy/solar-pv>



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Any new heating system integrating solar panels does, of course, need specialist advice. Some tips to help on that journey are:

THE ROOF

1. Which direction does it face? South-facing with a 30° or 40° angle is best, but east or west can work too. Almost all CofE and Catholic churches are built east/west for ecclesiastical reasons, so they have large south-facing roofs.
2. Is there any shade? Roofs which are shaded by trees, a tower or another roof will produce significantly less electricity.
3. Is the roof strong enough? Panels are heavy: old or large roofs may not be suitable. Planners and dioceses will not want structural damage to the existing fabric.

WHAT ABOUT THE EXCESS ELECTRICITY WE GENERATE?

Churches will often create more electricity than is needed in the daytime. Normally, this is exported back to the grid, although some people are experimenting with battery storage. The government has an obligation to buy this electricity under the Smart Export Guarantee (SEG) scheme: <https://www.ofgem.gov.uk/environmental-and-social-schemes/smart-export-guarantee-seg>

Solar Energy UK produces a league table of rates paid: <https://solarenergyuk.org/resource/smart-export-guarantee/>

HOW MANY WILL I NEED AND HOW MUCH WILL IT COST?

A typical panel generates 300–400W. Comparing this to your current usage will give some idea of how many you need, although the timing of usage (daytime/evening, winter/summer) is also relevant. The cost will be determined not just by the actual panels, but by ensuring you meet planning restrictions, installation requirements, etc. Ensure you get the detail specified properly by taking professional advice for planning/faculty and using a Microgeneration Certification Scheme accredited installer: <https://mcscertified.com/>



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AESTHETICS

1. The church may have a large south-facing roof, but can the visual impact be limited and not disturb the amenity value of a neighbourhood or conservation area?
2. Planning permission (or a diocese faculty for Anglican churches) is more likely to be achieved if the panels can be disguised from ground level. For example, can they be hidden behind a parapet or an internal or valley roof (such as in this picture)? Can you place the cabling and power exchanger sympathetically?
3. Can you use black panels or solar slates to reduce visual impact?



Image: Solar panels at St Weonards

HOW LONG WILL IT TAKE?

The installation is the easy bit! The survey and permissions need to be thorough and detailed, and will take several months. St Augustine's Church (see case study) is in a north London conservation area, so the process took a year from the first quote to actual installation.



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LONGER READS & OTHER RESOURCES

The Church of England has a number of resources as part of their 'Practical Path to Net Zero' programme. They are applicable to all denominations. Here is one on solar PV: <https://youtu.be/1NoswkTtFA4>

Historic England has useful information for solar panels on heritage buildings here: <https://historicengland.org.uk/advice/caring-for-heritage/places-of-worship/making-changes-to-your-place-of-worship/advice-by-topic/renewable-energy-generation/>

What about providing electrical charging points for your congregation members to use whilst they worship? <http://www.communityenergywales.org.uk/en/latest/solar-powered-electric-vehicle-charge-points-in-dunvant>

A challenge for the future is that solar panels have a limited life so will need to be replaced. Find out about recycling here: <https://www.recyclesolar.co.uk/>

CASE STUDIES

St Augustine's Church in Highbury, north London, installed solar PVs: <http://www.cloudesley.org.uk/media/1303/st-augustines-solar-pv-case-study.pdf>

The lay chair of St Augustine's describes their installation: St Augustine's - <https://vimeo.com/519481395>

Hilfield Friary, one of our Gold Eco Churches, demonstrates the fun to be had seeing how much electricity is being generated at any one time with solar energy: <https://monitoringpublic.solaredge.com/solaredge-web/p/site/public?name=Hilfield%20Friary#/dashboardlic?name=Hilfield%20Friary#/dashboard>

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STRATEGIC DEVELOPMENT GOALS

Taking action on this topic will contribute to these UN Strategic Development Goals:

