



Campaign to Protect  
Rural England  
Standing up for your countryside

# SOLAR DESIGN TIPS

your 10-point guide

*Helping you use solar design  
that fits with your building  
and local environment*



*'Rooftop solar panels offer homeowners the chance to reduce their environmental impact and save on their energy bills. But homeowners must take care to place solar panels in a way that minimises visual impact and retains the character of their homes. Unless proper thought is given to their design and placement, there is the risk that solar panels can have a negative impact on the appearance of homes.'*

***Edward Bagnall,  
partner of estate agents  
Tayler and Fletcher***

# SOLAR DESIGN

Deciding to use solar panels or tiles in your home is a great step, but the wide choice of systems can be daunting. To help you make up your mind, we've put together some quick pointers on working out what is best for you. The better the system fits with the building, the better it fits with its surroundings, keeping both you and your neighbours happy.

Whichever stage you are at, here are our 10 principles to think about when it comes to choosing a product, working out how to position it and considering the wider environmental setting.

**Solar PV (photovoltaics) can be installed through two approaches:**

- **Building Applied Photovoltaics (BAPV) which are installed to the building after its construction.**
- **Building Integrated Photovoltaics (BIPV) which refers to approaches that integrate solar PV into the building and its components.**

# PRODUCT

## 1. Colour and contrast

**Colour wise:** the colour and finish of solar panels and how they reflect light should be chosen to fit in with the building or surroundings. The majority of crystalline and thin film panels are dark blue or black; within these shades are a variety of finishes and tones to help make the panels unobtrusive.



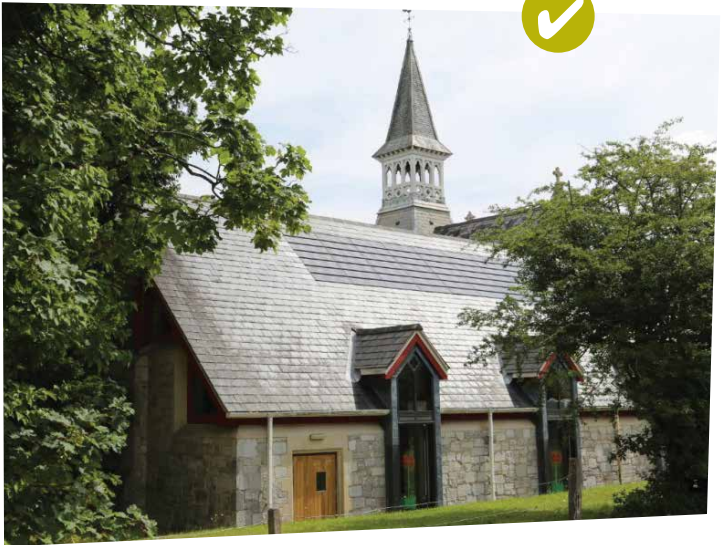
## 2. Framing

**To frame or not to frame:** panels without frames, or black-framed panels, should be used where framed panels would detract from the building. Untreated or natural finished metal panel frames can look out of place and draw unnecessary attention to the panels. Many manufacturers sell panels with frames that are painted or anodised to blend in better with the building.



### 3. Size

**Size it up:** think about the size of all the parts of the system. It helps to match it with other building components, such as windows or building/roof stones – this can help your system to look more like an integral part of the roof, and fit in with the building and its surroundings.



# APPLICATION

## 4. Symmetry in panel layout

**Super symmetry:** the way in which panels are laid out in relation to one another can make a huge difference to the appearance of the system – symmetrical installations tend to work much better. If feasible, it's worth moving roof 'furniture', such as aerials and flues, to enable a symmetrical solar installation to be put in place.



## 5. Coverage

**Edge to edge:** think about how the installation relates to the shape of the roof or building. If it's possible, covering the whole roof is often the way to go. If the roof is not symmetrical, don't visually overload the roof – if you can't achieve a clean edge, then install fewer panels.





## 6. Complementing features

**Get in style:** consider the style of the building and, if possible, position the solar PV panels so they are in proportion to the building and its features. For example, they can resemble roofing elements such as roof lights or windows. Whether they are portrait or landscape can also make an impact. And if you are building a house from scratch, it's worth looking into BIPV and integrating the solar energy system into the design of the house.



## 7. Mounting system

**Sitting pretty:** solar PV applied to the roof will need a mounting system to hold the panels in place. The advantage of 'in-roof' systems over 'on-roof' systems is that the mounting system is not visible. If you're using an on-roof system, pay particular attention to minimising the distance between the roof and the panel mounting system and cutting back protruding rails.



# SETTING & WIDER CONTEXT

## 8. Roof positioning

**Low visibility:** for non-domestic buildings or houses with inverted pitch roofs, sometimes called London roofs or butterfly roofs, solar PV can be installed in the valley of a roof, or on roofs that are not visible from the ground or other buildings. In such situations where the panels are hard to see from the ground, less attention needs to be given to principles related to the product or application of the system.



## 9. Neighbouring solar roofs

**Neighbourly love:** solar PV on adjacent houses of the same type may look odd or out of place if the approaches are very different. For example, if neighbours use different sizes and colours of panels or position them differently in relation to the roofs, it can have a significant impact. So start by taking a look at your neighbours' panels and see if you can find a similar style to fit with theirs.

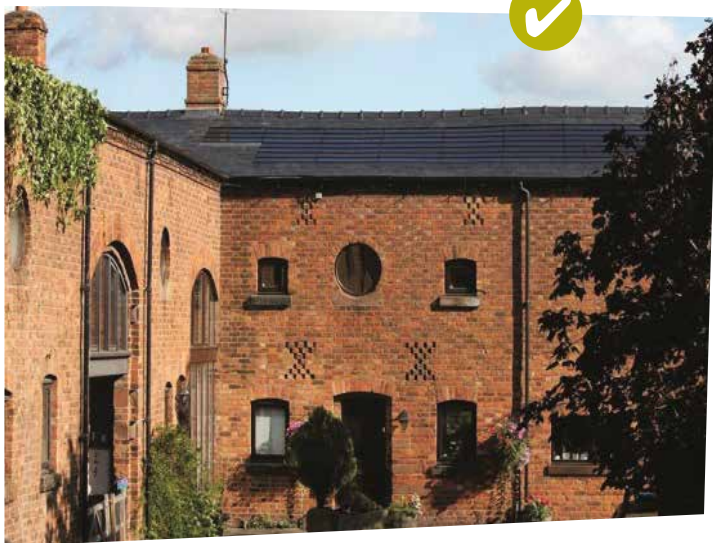




**The inevitable:** of course, as more people install solar panels, some cumulative impact will occur. As technology develops it will be challenging, if not impossible, to create uniformity between newer installations and older systems on neighbouring homes.

## 10. Planning designations

**The landscapes around you:** small-scale solar installations do not normally require planning permission. For some buildings there may be special requirements if they are listed or located in a National Park, Area of Outstanding Natural Beauty, World Heritage Site or conservation area. If in doubt, contact your local planning authority.



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This guide was put together by Campaign to Protect Rural England with financial support from CPRE Gloucestershire. It is based on the report **Ensuring Place-Responsive Design for Solar Photovoltaics on Buildings** produced for us by BRE National Solar Centre. The report is available at [www.cpre.org.uk](http://www.cpre.org.uk), which also has more information about CPRE's work to protect our landscapes and tackle climate change.



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