

**RISE**

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# Battery Storage and Solar Photovoltaics

Quick guide

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[www.riseretrofit.org.uk](http://www.riseretrofit.org.uk)

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# Summary

This quick guide document aims to address some of the common misconceptions in domestic retrofit regarding battery storage and solar photovoltaics (PV). This document has been designed to help local authority (LA) officers and registered providers advise residents regarding battery storage and solar PV measures.

## What is solar PV?



Solar PV systems turn sunlight into electricity through the 'solar cells' they contain. These cells are made from thin layers of a material (usually silicon) between layers of glass. Electricity leaves the panel and passes through an inverter system that makes it ready for use in the home. Solar panels are typically installed on roofs to maximise exposure to the sun.

Figure 1: Solar panels installed on roofs. Source: <https://www.gov.uk/government/news/new-planning-rules-to-boost-solar-rollout-and-slash-energy-bills>

## What is battery storage?

Domestic battery storage is typically used with solar PV and allows surplus electricity generated by solar panels to be stored for later use instead of being exported to the electricity grid.

When electricity is generated with solar PV it doesn't often align with typical household electricity usage (households typically use more electricity in the early mornings and evenings when the sun is rising and setting/set). Electricity generated by solar panels that does not end up being used by the household is fed back into the electricity grid. Although households may receive payment for it, it is not as much as the money that would be saved if the power were used by the household.



Figure 2: Household battery storage. Source: <https://www.cahillrenewables.co.uk/services/battery-storage/>

# Busting common misconceptions

## **'The technology is too expensive'**

Battery storage and solar PV systems technology are developing quickly, and costs are projected to continue to decline. The cost of a solar PV system depends on the size of the array, the type of solar cells used and the ease of installation at a particular site. For more information about considerations when fitting solar panels, see the RISE toolkit.

A retrofit assessor will review a home to determine whether battery storage along with solar PV makes sense for a property and for the project objectives. If this is the case, then a household may be eligible for funding. Most solar PV systems require little maintenance, and the panels should last for decades.

## **'Battery storage will provide backup in the event of a power cut'**

Not all batteries will provide backup if there is a power outage. If providing backup power is important, this should be discussed with the Retrofit Assessor as some rewiring and a larger storage capacity to accommodate the reserve may be required. However, it is important to keep in mind that the aims of the Warm Homes scheme are primarily to improve the energy efficiency of homes, lower fuel bills, and make progress towards net zero targets. Therefore, funding may not be allocated for measures which do not support these aims.

## **'I don't have space in my home to install battery storage'**

Generally, batteries should be installed indoors in a cool and well-ventilated space, shaded from direct sunlight, and within 6-9 metres of PV arrays. The further the distance, the higher the electrical losses.

Batteries should ideally be kept at around 15°C with 50% humidity. They can tolerate a wider temperature range for short periods, but this will impact on their efficacy. Temperatures below 0°C and above 35°C will impact on the battery's efficacy.

A Retrofit Assessor will check these requirements and advise as to the suitability of battery storage for a home.

## **'Solar only works when the sun is shining, and I still need power when it's overcast or raining'**

While solar PV systems generate more electricity with direct sunlight, electricity may still be generated in overcast weather conditions. Finding an unshaded spot is best, however sometimes shading is unavoidable for parts of the day. Some solar PV systems can minimise the impact of shading using 'optimisers' which enable power from unshaded panels to be drawn into the system without the negative impact associated with a partially shaded array.

### **'I don't have enough space on my roof for solar panels'**

Space is a major consideration for a solar PV system. A typical system of 4kW capacity will take up around 20m<sup>2</sup> of roof area.

### **'I rent my home so I can't install a solar PV system or battery storage'**

Landlords who have tenants who meet the eligibility criteria may be able to access grant funding. Landlords are required to make a minimum contribution of one third towards the total cost of works.

There is eligibility criteria guideline for landlords who must agree with tenants on the nature of retrofit measures prior to commencement of work.

### **'I will require planning permissions to install a solar PV system'**

Solar PV panels are considered 'permitted developments' and probably won't require planning permission. However, exceptions apply and it's best to check with the local planning office for guidance. If the property is a listed building or within a conservation area or national park, restrictions may apply.

## **Helpful resources**

[Solar Panels Advice – Energy Saving Trust](#)

[Storing Energy – Energy Saving Trust](#)



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