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A Social Housing Perspective on Solar PV

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Introduction

Renewable technology to fuel our homes is becoming more commonplace to support decarbonisation and reduce reliance on the national grid. Solar PV (photovoltaic) can be directly used in a home and provides an opportunity for reduced electricity costs during day light hours. This is particularly relevant to social housing, as it continues to improve the energy efficiency of the housing stock whilst addressing fuel poverty for residents.

This quick guide on solar PV for social housing will explain the technology and its benefits, as well as the process for installation and operation that will be useful for residents understanding.

Readers that would like this document in a more accessible format should contact rise@turntown.co.uk.

What is Solar PV?

Solar photovoltaic panels use the sun's energy and convert this into electricity. The diagram shows how electricity is generated, converted, monitored and exported from the home either for residents use or to sell back to the grid. Each stage is numbered and explained below in its simplest terms. We will breakdown each stage more so that it explains the benefits for residents and what else is required prior to fitting and how residents can make the most of their installation through behaviour change.

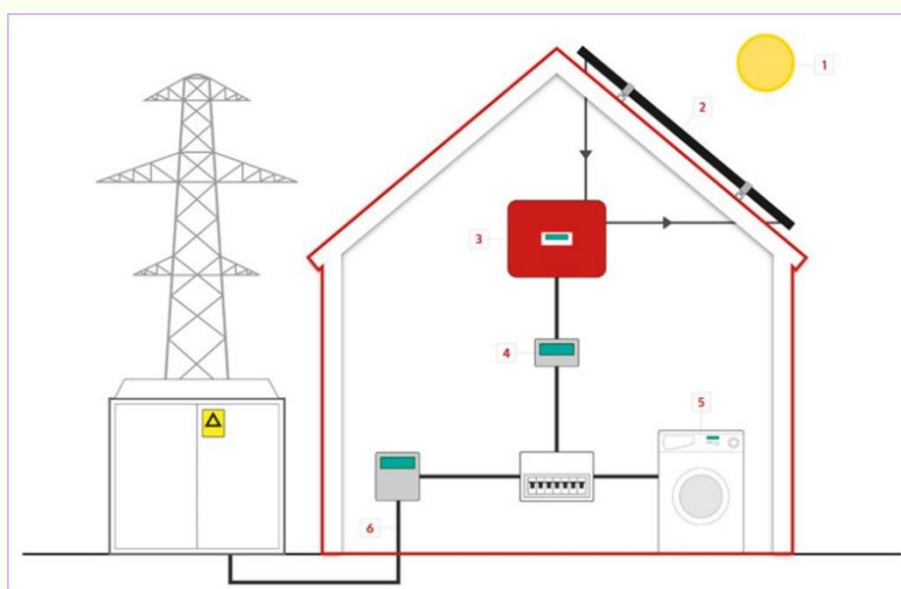
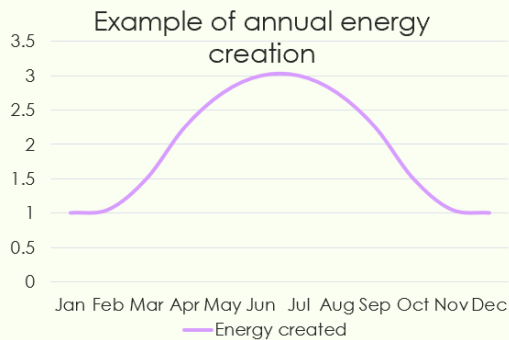


Figure 1 Diagram of how electricity is generated, transferred and exported.

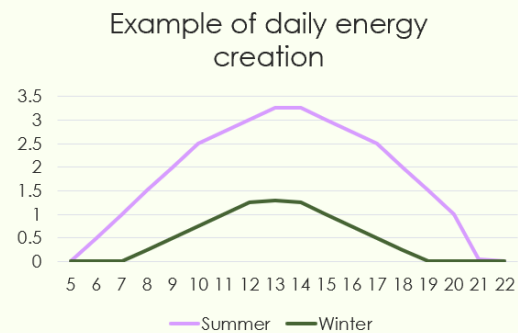
1. Sunlight

- The sun provides energy that reaches the panels.

- The solar panels will generate electricity when there is sufficient daylight available.



Amount of energy created varies across the year.



Amount of energy created varies during the day.

Figure 2 Energy generation variability due to time of year and day

2. Solar PV Panels

- The panels installed on the roof convert sunlight into direct current (DC) electricity.
- The amount of electricity produced depends on factors such as the time of year and the way they are orientated.

3. Inverter

- The inverter is where the electricity passes through and converts the electricity into the correct current for use within the home, from a Direct Current (DC) to an Alternating Current (AC).
- The inverter will also monitor the performance of the solar PV system.

4. Meter

- A meter will record the amount of electricity produced from the solar PV system.
- This data is used to verify energy generation.

5. Household use

- The electricity generated is used first by appliances within the home, such as washing machines, lighting, televisions, and refrigerators.
- Using this first reduces the amount of electricity that is purchased from the grid.

6. Export into the grid

- Any electricity not used in the home can be exported through the electricity meter to the national grid.

Key considerations before installation

Solar panels



Before installing, properties should be assessed for their suitability and needs based on these main points:

Orientation:

When deciding on the orientation, panels tend to be mounted so they are south facing. This is because the sun travels across the southern part of the sky throughout the day, meaning panels with this orientation receive the most sun exposure.

Fixture type:

Different options to how panels are mounted to roof include fixings or integration to the roof. A decision may be based on the age and condition of the roof, as well as its readiness for retrofit.

Software for maximising array:

Online programmes can support where you think your panels are best suited for maximum potential generation. These use aerial imagery, mapping data and roof measurements to assess factors such as roof size, pitch, shading and azimuth (the direction the roof faces relative to south). Publicly available and subscription-based tools can be used, as well as Google Earth for a first pass observation.

Shared occupancy roofs:

Considerations of installing solar PV on a shared roof includes considering the metering and billing arrangements and how benefits will be distributed equally. Solar sharing technologies exist to ensure that allocation of supply meets the demand equally. Benefits of the scheme allow the financial viability of the scheme to be shared and enable installations on traditional domestic homes that otherwise would be unsuitable.

However, maintenance, metering requirements and tenancy agreements may need to be reviewed to distinguish terms of the panels with residents of the building.

System size:

The electrical demand of the household will dictate the size of the system required and therefore the connection type. There are 2 types of connection suitable to domestic properties solar installation:

- G98 Connection – Smaller PV installation
- G99 Connection – Larger PV installation

The energy generated per phase should also be considered, if the system size generates below 3.68kW, the G98 is suitable, anything above requires a G99 connection.

If installing the G99 connection, you must contact the District Network Operator (DNO) ahead of installation and gain approval, however for a G98 connection its best to inform the DNO in advance, but you generally don't need their permission. You can then connect the Solar system and inform them of the solar array.

Protecting panels:

Consideration should be given to what could damage the panels and maintaining long-term performance through protection. A common issue is birds nesting beneath the roof mounted solar panel. This can lead to damage, noise and maintenance issues. Installing netting around your panels will reduce the likeliness of this happening.

Inverters

A DC current is generated from the solar PV, whilst an AC is used in the home.

Different inverters can be used:

- String inverter – all panels wired together and into a single inverter.
- Micro inverter – individual mini-inverters for each panel connected through a central inverter in the house.

These both require considerations for how it will be ventilated, accessed, how to meet fire safety standards and what maintenance and replacement needs it may have. Inverters generally have a lifespan of 10 years, whilst panels have a lifespan of 25.



Figure 3 String inverter from exeenergy.co.uk

Meters and exports

A solar PV system relies on its own meter, separate from the main energy meter already installed.

Considerations prior to installation in relation to a meter include:

- Whether surplus energy can be exported.
- Whether residents take part in Smart Export Guarantee (SEG) schemes. These are government backed schemes that pay for the electricity you give back to the national grid.
- How payments are managed.

If you decide to use an export meter, as a social landlord you need to decide who is going to benefit from the export.

- Resident - The landlord must give permission for the resident to export the excess energy to the grid. This requires the resident to sign up to an export tariff. It is often awkward for the resident to do this, but it does help them with an extra income and reduced energy bills. As they move out, they must cancel their contract with the energy supplier
- Landlord – The landlord can set up export contracts with an energy supplier for these homes and take the income from the energy supplier. This can

cause issues with the residents who feel they should be able to access the Smart Export income.

Storage

Excess energy can either be exported to the grid to generate income or stored to provide energy resilience for your home.

Options to achieve this include:

- Battery storage systems
- Solar diverters linked to hot water systems
- Electric vehicle charging integration



Figure 4 Solar battery storage from [TheSolarShed.co.uk](https://thesolarshed.co.uk)

Batteries are a popular option when it comes to storage solutions, but installation locations should be carefully considered. Installation guidance has now been re-issued based, after a short pause in the Warm Homes projects eligibility for grant funding claims.

*For Warm Homes projects, the November 2025 pause meant that batteries became an ineligible measure, until 2 February 2026 when DESNZ communicated to all GRs that **this pause on PV Batteries had been lifted.***

Battery installations must continue to follow the MCS battery installation standard (MIS 3012).

Figure 5 DESNZ statement on battery installation compliance

Resident advice post installation

Housing providers should issue advice and support to residents to ensure the equipment is understood and well used to their benefit.

This may include:

- A handover from the contractor to the resident, including neighbourhood training and further support sessions.
- Leaflets and other forms of guidance issued to help current and future residents.
- How to guides kept in the home.

This does not have to be solely issued by the housing providers and the contractors, local charities, the DNO and other residents can support their neighbourhood and their adoption of solar PV.

Behaviour changes for residents

Understanding when a solar PV system generates the most electricity can help residents maximise the benefits of their installation. Adapting energy use habits to align with periods of peak generation can increase self-consumption of renewable electricity, helping to reduce energy bills and improve overall savings.

This may be specific to certain appliances, and when residents should think about using them to benefit from the free energy. A couple of examples have been included below:

- Use appliance timer functions to run washing machines and dishwashers during peak daylight hours.
- Avoid running multiple appliances at the same time to maximise the use of solar generated electricity consistently across peak daylight hours.

Other options for solar PV

Other solar PV options exist aside from roof mounted. This includes mounting arrays in gardens, open spaces, garages and car ports. Solar farms are becoming a popular option due to the income they generate and the biodiversity net gain they support. This is due to its ability to make better use of otherwise underutilised land. Sites can double up on their provisions by installing solar PV arrays in fields that also encourage greater ecological diversity, through re-wilding and habitat protection. Typically this could make use of:

- Unused grass areas
- Former garage sites
- Brownfield land
- Buffer zones round estates
- Large communal open spaces.



Figure 7 Ground mounted solar from EnergyHub



Figure 6 Ground mounted solar from Downing Renewables

Benefits and challenges of solar PV

Benefits and challenges depend on the pre and post fit installations considerations taken by the housing association and the residents.

Benefits

1. Reduced electricity bills for residents.
2. Lower risk of fuel poverty.
3. Reduced carbon emission associated to electricity used.
4. Improved energy efficiency and SAP scores (further increase for battery storage under SAP10).

Challenges

1. Solar panels are not suitable for every building type due to planning restriction such as listed buildings and conservation areas.
2. Housing associations may increase resident expectations from visible installations
3. Ongoing support and advice is required for residents to maximise savings from performance and user behaviour.

Summary

Solar PV installations have multiple benefits and can help social housing providers reduce carbon emissions, improve property energy performance, and support residents with energy costs to avoid fuel poverty.

Successful delivery depends on multiple factors, including:

- Careful property assessment
- Appropriate system design
- Effective resident engagement

By considering both the technical and behavioural aspects of solar PV, housing providers can help maximise the value delivered to residents and communities.

Resources

[Solar PV – A social housing perspective | RISE Masterclass](#)

[Fitting Solar Photovoltaic \(Solar PV\) Systems - Toolkit](#)

[Planning retrofit measures, Retrofit technical considerations, Support for businesses delivering retrofit - Toolkit](#)



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