Solar PV in social housing– generation, self-consumption, export, and value optimisation: a practical guide for UK social housing providers

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Scope. This guide explains how rooftop solar photovoltaic (PV) systems work, how to understand (and maximise) self-consumption and export, and how to get the best overall value for tenants and landlords. It focuses on Great Britain arrangements for export payments (SEG).

Audience. Asset, energy, retrofit, housing management, and finance colleagues involved in specifying, installing, operating, and explaining solar PV systems in social housing.

Disclaimer: This guide provides general information for social housing providers. It does not constitute financial, legal, or technical advice for specific projects. Readers should seek appropriate professional advice for their circumstances. Information is correct as of June 2026, but regulations and market conditions may change.

Glossary of Key Terms:

Key Term	Meaning
DNO	Distribution network operator. The company that owns and runs the local electricity distribution network (poles/wires) and approves/records connections like solar PV.
ESCO	Energy service company. An organisation that delivers and/or finances energy measures and is paid based on energy performance or services provided (e.g., managing PV assets, selling energy, maintaining systems).
Export MPAN	A separate MPAN for the export meter point. Used when export is metered separately (or required by the network/supplier) so exported electricity can be recorded and paid accurately.
G98/G99	UK grid-connection standards for small-scale generation. G98 is for smaller "fit-and-notify" inverter connections (subject to limits); G99 is for larger or more complex systems that typically need prior DNO approval and may involve more detailed checks.
Inverter	The device that converts the PV panels' DC electricity into AC electricity used in homes and the grid. It also manages grid protection functions and can limit/export power depending on settings and connection agreement.
kWh	kWh (kilowatt-hour) is an amount of energy over time. Bills are charged in kWh.
kWp	kWp (kilowatt-peak) is the rated size of the PV array under standard test conditions. It is used to describe installed capacity.
MCS	Microgeneration Certification Scheme. A UK quality assurance scheme that certifies small-scale renewable products and installers (often required by lenders/funders and for some export payments).
MPAN	Meter point administration number. A unique reference (usually 13 digits) that identifies a specific electricity supply/metering point at a property.
SEG	Smart export guarantee (Solar Export Guarantee). A UK requirement for larger electricity suppliers to offer at least one tariff that pays eligible generators for electricity exported to the grid (payments depend on the supplier and tariff).

Contents

1 Solar PV basics in plain English

Solar photovoltaic (PV) panels convert daylight into electricity (direct current, DC). An inverter then converts this into usable alternating current (AC) for the building. Output varies hour-by-hour and season-by-season: it is typically highest around midday in spring/summer and lowest in winter.

Typical system lifespan: Panels typically last 25-30 years with about 0.5% annual degradation. Inverters last 10-15 years and need replacement.

1.1 Key terms you will see in designs, handover packs and monitoring portals

- kWp (kilowatt-peak) is the rated size of the PV array under standard test conditions. It is used to describe installed capacity.
- kWh (kilowatt-hour) is an amount of energy over time. Bills are charged in kWh.
- Generation is the electricity produced by the PV system.
- Self-consumption is the portion of generation used on-site at the time it is produced.
- Export is any surplus generation sent to the electricity grid.
- Import is any electricity drawn from the grid when PV generation is insufficient for on-site demand.

For residents and frontline teams, the simplest message is, use electricity during the day when the PV is generating, because electricity used immediately offsets electricity that would otherwise be bought from the grid.

2 Understanding generation, self-consumption, import and export

At any moment, a building's electricity 'balance' works like this: PV generation first supplies on-site loads. If generation is higher than demand, the excess is exported. If demand is higher than generation, the shortfall is imported.

2.1 A simple way to explain the flows:

- Self-consumption (kWh) = generation (kWh) minus export (kWh).
- Import (kWh) = on-site demand (kWh) minus self-consumption (kWh).
- Because PV output changes throughout the day, increasing daytime use generally increases self-consumption.

Example: A typical 4kWp system generates 3,500 kWh/year. Without optimization: 40% self-consumption (1,400 kWh), 60% export (2,100 kWh). With optimization: 50-70% self-consumption possible.

Fuel-poverty focused guidance often uses everyday examples (for example, kettles and washing machines) to explain why running appliances during PV hours increases the 'free' electricity used on-site. [11]

3 How to get the most value from solar PV systems

The 'best value' outcome is usually achieved by combining: (a) high self-consumption, (b) a competitive export tariff for any surplus, and (c) good system performance over its life (monitoring + maintenance).

3.1 Increase self-consumption (use more PV on-site)

- Shift flexible loads into daylight hours where possible (for example, laundry, dishwashers, cleaning equipment, communal plant operation).
- Use timers and smart plugs for predictable daytime operation (for example, immersion heater top-ups where appropriate).
- Consider hot water 'diverters' where homes have suitable cylinders: they route surplus PV generation to heat water instead of exporting it.
- Consider battery storage where it makes sense: it stores daytime surplus for evening use and can improve self-consumption, but it adds cost and complexity.
- Support residents with simple 'when to use appliances' guidance. Behaviour change can be low-cost and immediate. Where landlords install but tenants pay bills, ensure clear communication so tenants understand and realize benefits.

Energy Saving Trust case material shows how a diverter and battery can materially change how much grid electricity a household needs in summer, and how batteries can shift use into evening periods. [10]

Update on the PV battery installation pause across the Capital Schemes (Warm Homes: Local Grant, Warm Homes: Social Housing Fund Wave 3 and Social Housing Decarbonisation Fund: Wave 2). DESNZ have confirmed that PV batteries are once again an eligible measure for installation on the schemes as of 2nd February 2026.

3.2 Combine PV with smart tariffs (where the contract structure allows)

- Time-of-use tariffs can reduce the cost of any imported electricity (for example, cheap overnight periods). This can pair well with batteries, where allowed by the export arrangement.
- Be clear who holds the electricity account (landlord, tenant, or a communal supply) because this determines who benefits from tariff choices and how savings are distributed.

3.3 Maximise lifetime performance

- Avoid shading where possible (trees, new rooftop equipment, adjacent buildings). Small amounts of shading can disproportionately reduce output on some layouts.
- Specify monitoring that can report generation and faults at building or dwelling level, so underperformance is detected early.
- Plan for inverter replacement during the system life (panels commonly have long performance warranties; inverters often have shorter warranties).

- It is advisable to prevent bird roosting/nesting by fitting non-invasive mesh "skirts" around the array perimeter using clip-on systems that attach to the panel frame (no drilling or gluing). These are designed to be removable for servicing and are widely used to avoid warranty issues.
- Consider orientation: south-facing is optimal, but east and west-facing installations can still be viable and produce good output.

4 Export payments and the Smart Export Guarantee (SEG)

In Great Britain, the Smart Export Guarantee (SEG) requires certain electricity suppliers (SEG licensees) to offer export tariffs and pay eligible generators for electricity exported to the grid. Suppliers set their own rates and contract terms, but tariffs must always be above zero. [1, 2, 3, 5]

4.1 Eligibility and what you will be asked for

- Technology and size: solar PV is eligible, typically up to 5 MW total installed capacity. [1, 3]
- Certification: many suppliers require evidence that the installation is suitably certified; for many smaller solar PV systems this is commonly an MCS certificate or equivalent. [3, 6]
- Metering: SEG payments are based on export meter readings (often via a smart meter). You will typically need an export-capable meter arrangement and an export MPAN. [1, 4]
- You can usually choose a different supplier for export payments than the one supplying imported electricity. [2, 3]

4.2 Practical steps to set up export payments

1. Confirm ownership and contractual rights: who is the 'generator' in the SEG contract (landlord, tenant, ESCO, managing agent)?
2. Make sure the metering arrangement supports export measurement and that the export MPAN is in place where required. [4]
3. Collect evidence for the application pack: commissioning documents, certificates (for example MCS where applicable), and meter details. [3, 6]
4. Compare SEG tariffs periodically. Rates and terms vary and can change over time. [2, 5]

Good practice for social housing is to decide early how value will be shared (lower service charges, tenant bill savings, reinvestment into energy support), and to avoid arrangements that are hard to explain to residents.

Note: switching SEG supplier is possible but may have notice periods.

5 Metering, monitoring and data you should ask for

If you cannot measure it, you cannot manage it. For social housing programmes, specify metering and monitoring at a level that supports performance assurance, resident communications, and export settlement.

5.1 Minimum data points to request in handover packs and portals:

- Installed PV capacity (kWp), module and inverter make/model, and single line diagram.
- Generation readings (kWh) at least daily (half-hourly is ideal for diagnostics).
- Export readings (kWh) if export payments are claimed under SEG. [1, 4]
- Any export limitation settings (for example where the DNO has imposed an export cap).
- Fault and performance alerts, and a clear route for triage and repair.
- API access or CSV export functionality for independent analysis
- Monitoring platform access credentials and data retention policy

5.2 Grid connection notifications (G98/G99) and why they matter:

- Installations must be notified or approved by the local distribution network operator (DNO) depending on size and configuration.
- MCS guidance summarises the common pathway: small systems can be notified after commissioning under Engineering Recommendation G98 (often within 28 days), while larger systems typically need prior permission under Engineering Recommendation G99. [7] G99 applications take longer depending on DNO and complexity.
- DNOs also publish their own connection guidance (example DNO guidance is available from National Grid). [8]

6 Operations and maintenance: what 'good' looks like

A solar PV system is generally low maintenance, but it still needs planned ownership and a clear service route.

6.1 Good practice includes:

- Define who monitors performance (contractor, landlord, managing agent) and how often.
- Set performance expectations and what triggers investigation (for example, sustained under-generation versus expected seasonal patterns).
- Keep roofs safe and accessible: plan for safe access, and coordinate with roof repairs.
- Plan a clean roughly every 12–18 months, adjusting for local conditions (trees/birds, coastal salt, dusty agriculture, construction). Many installers suggest spring and early autumn as good opportunities [13]. Note that in most UK locations, rainfall usually provides adequate cleaning. Manual cleaning is only needed if monitoring shows reduced performance. Use deionized water and soft brushes - never pressure washers.
- Maintain clear resident contact routes for issues (for example, inverter alarms, unexpected shutdowns). Residents should report inverter red light/error codes; no generation on sunny days; and unusual noises.
- Plan for component replacement during life (commonly inverter replacement). MCS consumer guidance highlights that inverters may need replacement during the panel life. [6]
- Insurance: Ensure buildings insurance covers PV equipment and notify insurers.

- Fire safety: Ensure DC isolators are accessible for emergency services; conduct fire risk assessments.
- Cybersecurity: If internet-connected, ensure appropriate security measures.

7 A delivery checklist for social housing providers

Use this as a practical 'what good looks like' checklist from feasibility to ongoing operation.

7.1 Feasibility and design

- Confirm roof condition, remaining roof life, structural constraints, and any fire and building safety requirements for rooftop equipment.
- Assess shading and orientation, and document expected annual generation assumptions.
- Decide the metering model early (tenant meter, landlord meter, communal/landlord supply, or a hybrid) because it drives who benefits and how export is claimed.
- Plan resident communications early: set realistic expectations (winter output is much lower than in summer).
- Check planning constraints (conservation areas, listed buildings)
- Assess electrical infrastructure capacity
- Consider coordination with other retrofit measures
- Evaluate split incentive implications

7.2 Procurement and compliance

- Specify installer competence and appropriate certification. MCS sets standards for products, contractors and installations and is commonly used as evidence for SEG eligibility. [3, 6]
- Require DNO notification/approval evidence (G98/G99) in the handover pack. [7, 8]
- Require a clear Operations & Maintenance (O&M) plan, warranty details, and monitoring access for the landlord.
- Consider specifying the expected annual generation and an acceptable tolerance range.

7.3 Handover and resident support

- Create a comprehensive handover pack
- Schedule 3-6 month post-installation review
- Establish clear escalation routes
- Provide a simple resident leaflet explaining how, for example, generation varies; using electricity in daylight increases self-consumption; what to do if an inverter alarm occurs.
- Where export payments are retained by the landlord (or an ESCO), explain the benefit pathway clearly (for example, lower service charges, reinvestment in energy support).
- Signpost residents to independent advice about SEG and export tariffs where relevant. [5, 11]

8 Financial considerations

8.1 Typical installed cost per dwelling (domestic scale):

- Recent UK "typical home" benchmarks often land around **£6k–£7k+** for a standard domestic system, but it varies a lot by roof type, access/scaffolding, and electrical complexity. The Energy Saving Trust quotes an average home system cost of around £6,100.
- MCS quotes the average home solar PV system cost in 2025 as just over £7,000 [6].
- For portfolio planning and benchmarking, DESNZ publishes official small-scale PV cost data by size band (cost per kW over time) [14].

8.2 Common cost drivers

- **Scaffolding and access** (especially blocks, sheltered schemes, complex roofs).
- **Roof condition** (if you need re-roofing or structural strengthening, PV is rarely the main cost).
- **Electrical upgrades** (consumer unit, isolators, cable routes, fire-stopping, meter position).
- **DNO connection requirements** (application effort, export limits, upgrades) under **G98/G99** routes.
- **Metering/export setup** (if you need export metering and an export MPAN for SEG).
- **Design/standards compliance** (MCS installation standard and relevant electrical standards).
- **VAT:** In Great Britain a **0% VAT rate** applies to installation of specified energy-saving materials (including solar PV) **from 1 May 2023 to 31 March 2027** (then it reverts to 5%).

9 References

Keep a copy of key PDFs in your programme evidence pack in case web pages move.

[1] Ofgem: Smart Export Guarantee (SEG) overview.
https://www.ofgem.gov.uk/environmental-and-social-schemes/smart-export-guarantee-seg

[2] GOV.UK: Smart Export Guarantee (SEG) guidance page.
https://www.gov.uk/government/publications/smart-export-guarantee-seg-earn-money-for-exporting-the-renewable-electricity-you-have-generated

[3] Ofgem: Smart Export Guarantee (SEG) - guidance for generators.
https://www.ofgem.gov.uk/guidance/smart-export-guarantee-guidance-generators

[4] Ofgem: Guidance for SEG licensees (metering and export MPAN expectations).
https://www.ofgem.gov.uk/sites/default/files/docs/2019/12/guidance_for_seg_licensees_final.pdf

[5] Energy Saving Trust: Smart Export Guarantee explained. https://energysavingtrust.org.uk/advice/smart-export-guarantee

[6] MCS Certified. Solar Panels. Discover the benefits of solar panels and what to expect from an MCS certified solar installation. https://mcscertified.com/consumers/technologies/solar-photovoltaic-pv/

[7] MCS Certified: Notifying distribution network operators (G98/G99 overview). https://mcscertified.com/notifying-dnos/

[8] National Grid: Get connected–Solar and Wind. https://connections.nationalgrid.co.uk/get-connected/solar-and-wind/

[9] Energy Saving Trust: Solar panel savings and calculator information. https://pvfitcalculator.energysavingtrust.org.uk/

[10] Energy Saving Trust: Case study highlighting batteries and diverters (how self-consumption can be increased). https://energysavingtrust.org.uk/case-study/installing-solar-and-saving-energy/

[11] Energy Redress / NEA: Understanding your Solar PV System (fuel-poverty oriented explainer PDF). https://energyredress.org.uk/sites/default/files/2024-05/Understanding%20your%20Solar%20PV%20System_NEA_2020.pdf

[12] Renewable Energy Consumer Code (RECC): consumer protection code that dovetails with MCS. https://www.recc.org.uk/scheme/consumer-code

[13] Energy Saving Trust: Solar panel cleaning and maintenance explained. https://energysavingtrust.org.uk/solar-panel-cleaning-maintenance

[14] DESNZ. Solar Photovoltaic (PV) cost data. https://www.gov.uk/government/statistics/solar-pv-cost-data

10 Further reading

Centre for Sustainable Energy. A complete guide to solar PV. https://centreforsustainableenergy.ams3.digitaloceanspaces.com/wp-content/uploads/2023/06/27144952/advice-leaflet-solar-PV.pdf

Energy Networks Association. Distributed Generation Connection Guide: G98 & G99. https://dcode.org.uk/assets/250507dg-guide-2025.pdf

National Energy Action. Evaluating solar PV with Electric Heating with North Devon Homes: Main Report. https://www.nea.org.uk/wp-content/uploads/2025/07/PV-with-electric-heating-main-report-final.pdf

Solar Energy UK Guidance. Industry best practice manual 3.0, Guidelines for the operation and maintenance of rooftop solar photovoltaic systems. https://solarenergyuk.org/wp-content/uploads/2026/01/OM-Guidance-0.3-FINAL-1.pdf

Solar Wizard. Solar Wizard calculates the potential to generate electricity from rooftop solar panels for homes in England, Scotland and Wales. https://solarwizard.org.uk/