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Making solar standard

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Paul Hutchens

CEO

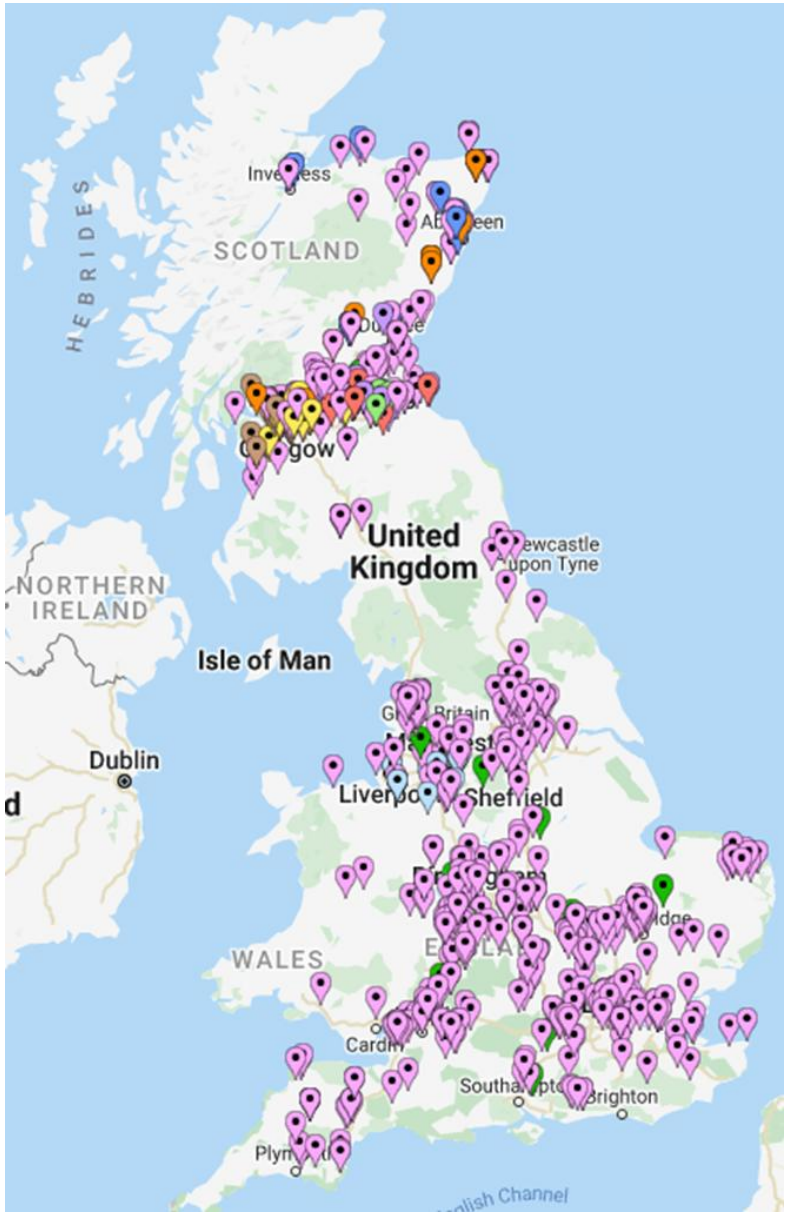
Our Story

- Established in 2007 to address the threat of climate change
- We work with some of the biggest residential housebuilders in the UK including Barratt, Taylor Wimpey and Redrow
- Eon took on a 49% share in the business in 2020
- We've now installed solar PV on over 32,000 homes, along with supporting green technologies
- Our mission is to make solar standard

Our reach

We are the only National Solar PV specialist.

From our two main offices in the Midlands and Scotland we serve the whole of the UK



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Our credentials

Eco2Solar installs Solar PV on

2,000 homes

per month on average

We have helped housebuilders meet their sustainability targets for

17 years

Our teams are currently working on

640+ sites

nationwide

To maintain high quality standards we audit

100%

of our installations

We directly engage

75 installation teams

across the UK

We have access to up to

100 E.on engineers

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Our clients

We are preferred/group deal Solar PV suppliers to

We also supply to

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Future Homes Standard Part L 2022

	Option 2 – 2022 **Fabric improvements with technology**	2025 **Future Homes Standard**
Purpose	31% improvement on Part L 2013	Phase out fossil fuels to achieve net-zero carbon ambitions
Improvements	Building services, improved window and roof U-values + technology e.g. PV, heat pumps	Future Homes standard fabric + low carbon heating e.g. heat pumps, PV

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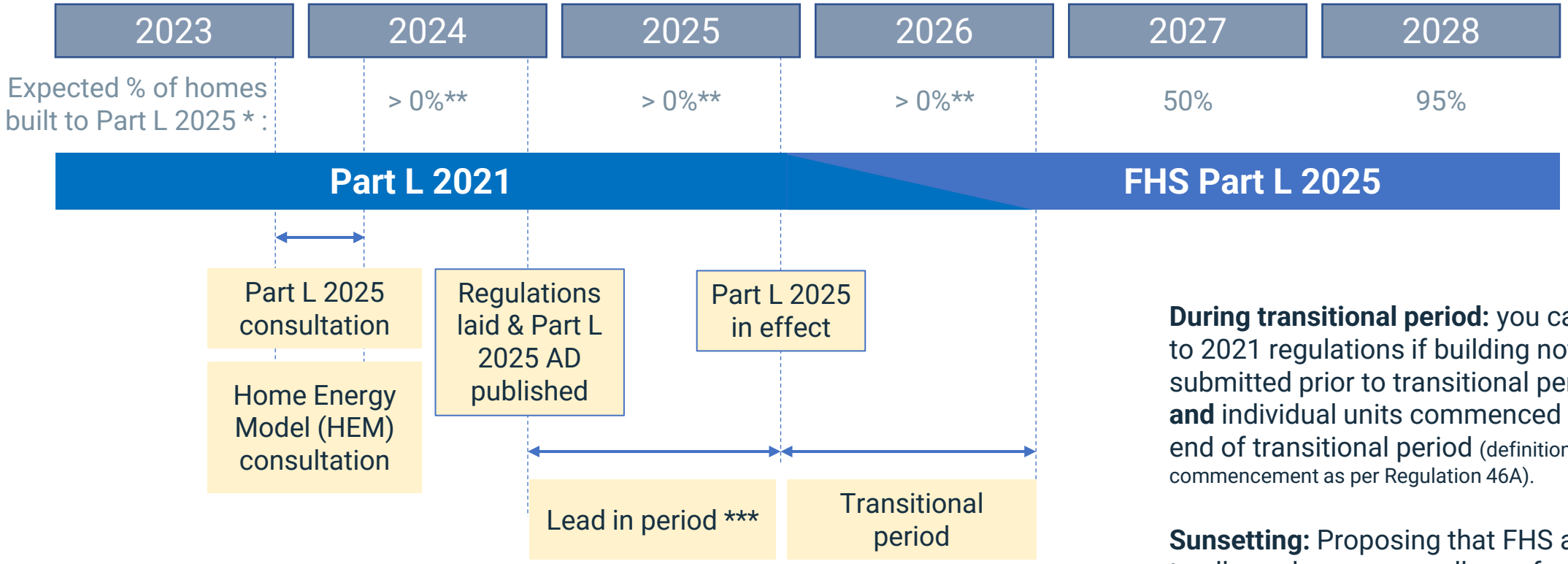
FHS 2025 Part L Timeline

Showing consultation option with up to 12-month lead in period ***



During transitional period: you can build to 2021 regulations if building notice is submitted prior to transitional period, **and** individual units commenced before end of transitional period (definition of commencement as per Regulation 46A).

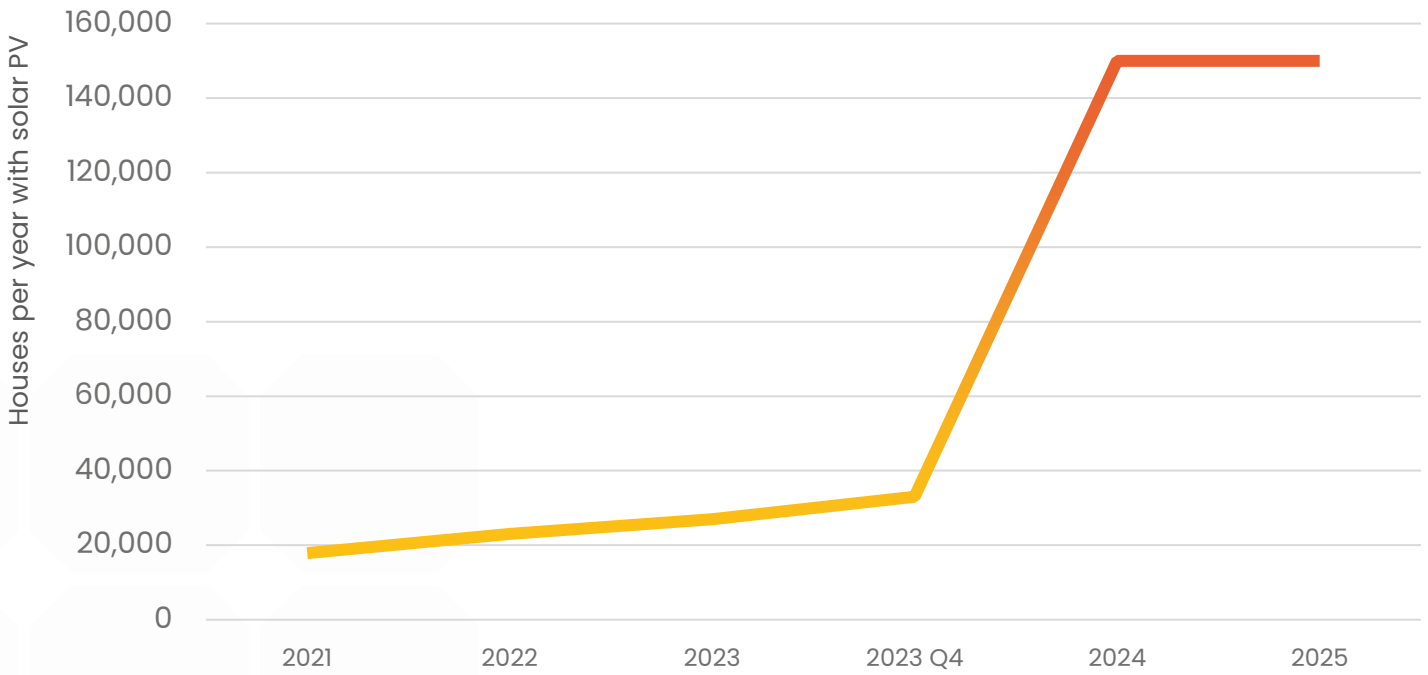
Sunsetting: Proposing that FHS applies to all new homes regardless of whether the site has benefitted from previous transitional arrangements (eg sites under 2006, 2010 & 2013 regs)

* Government assumption (FHS consultation stage Impact Assessment)

** Due to local authority requirements (such as the London Plan), and other drivers, a proportion of new homes are being built to a standard similar to the FHS 2025

*** The consultation gives options for either a 6-month or up to 12-month lead in period. The 12-month option is illustrated here.

The challenge to the supply chain



Assumptions	2021	2022	2023	2024
Houses Built England	178,790	180,000	180,000	180,000
% Needing PV	10%	15%	30%	80%
Houses with PV	17,879	27,000	54,000	144,000
Increase from 2021	**x1**	**x1.5**	**x3**	**x8**

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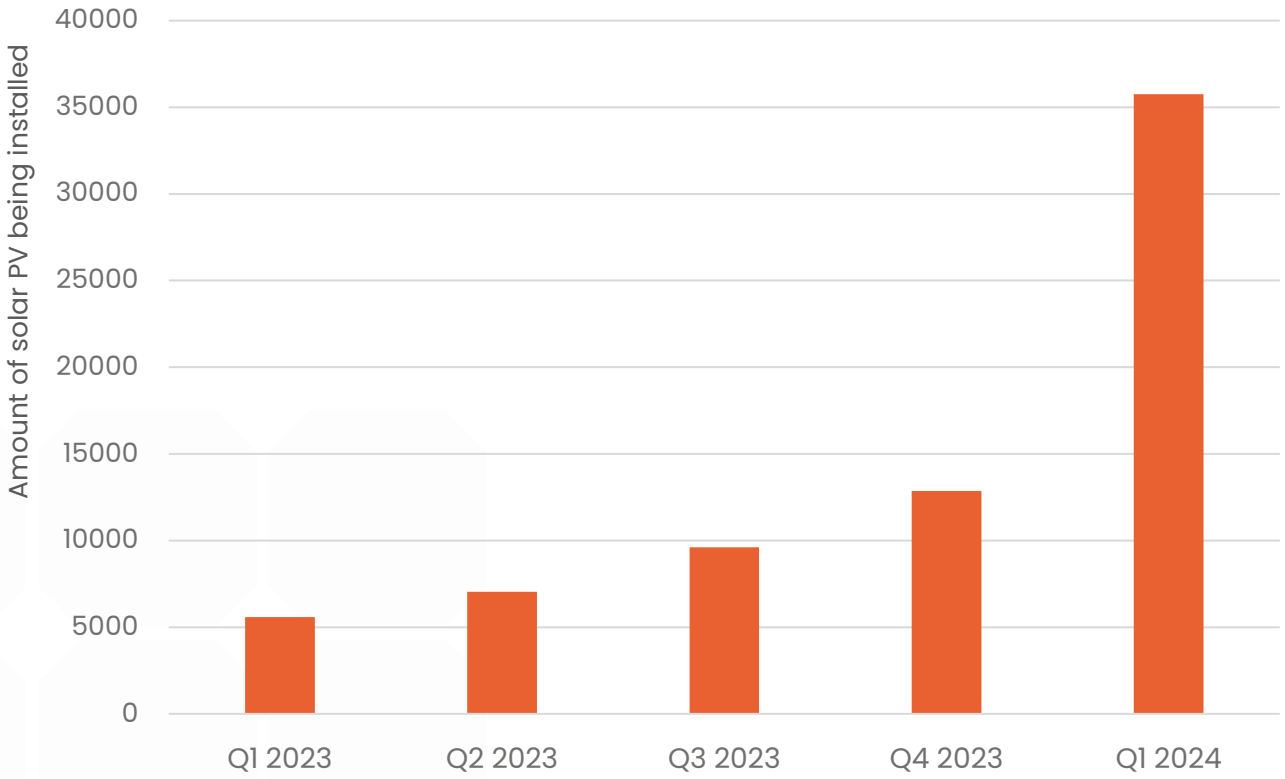
The real challenge



Q1 of 2024 is double the amount of solar being installed YEARLY currently.

Q1 2023	Q2 2023	Q3 2023	Q4 2023	Q1 2024
44,697	44,697	44,697	44,697	44,697
12%	16%	22%	29%	80%
5,587	7,040	9,610	12,851	35,758
		Transition period ends		Full implementation

England (all completed and scheduled work across England)

Averages per month (2024)	Jan-May	June-July	Aug	Sept	Oct
1st Fix	570	**1,193**	1,160	1,627	**?**
2nd Fix	370	**780**	823	1,101	**?**

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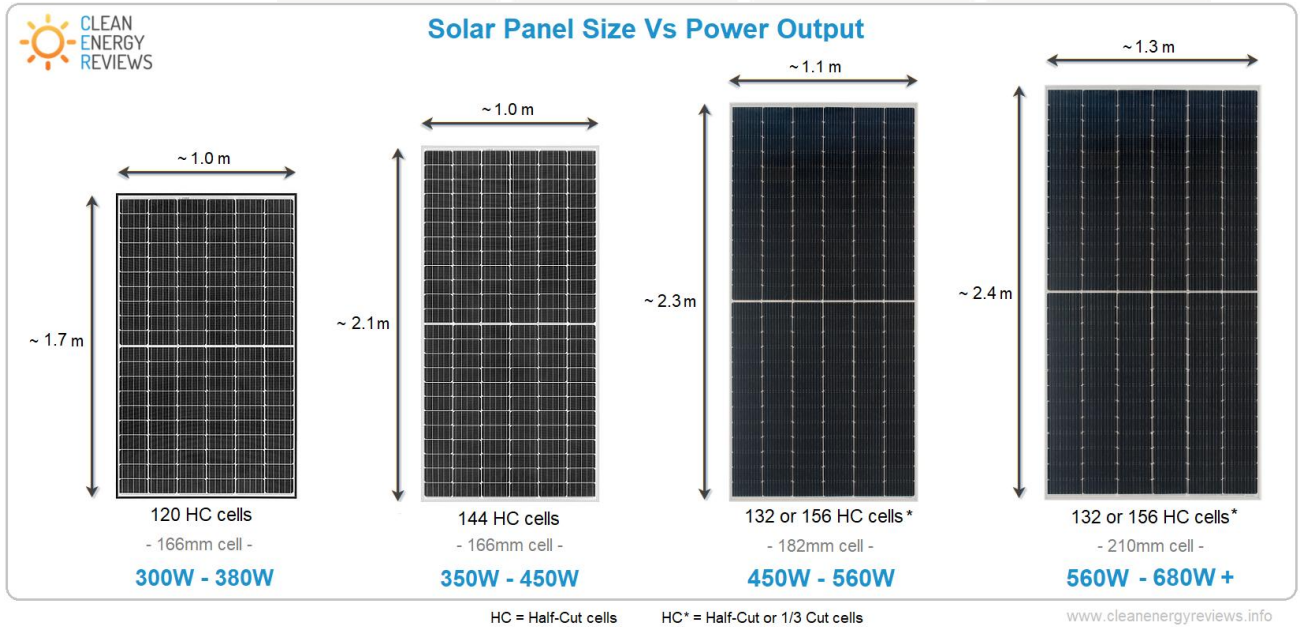
Claire Enstone

Director of Technical

Solar PV Technology

- Over the last few years solar panel technology progression has focussed on increasing efficiency and output
- 10 years ago 270W was the maximum output for a standard solar panel
- Solar cells and panel dimensions have increased substantially
- Cell technology has evolved which enables higher efficiencies
- Today 400-500W panels are common place and the most powerful ones can produce upwards of 650W
- Roof design consideration needed



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Integrating Solar PV into new homes

- A great way to hit your SAP targets effectively
- Plot specific designs
- In-roof solar panels sit flush with roof tiles
- Installation fits into your building schedule in two fixes
- Generate clean and free electricity all year round
- Long term savings for the homeowners

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Apartment Blocks

In-roof option for pitched roofs blocks

Generated electricity can be designed to feed both or one of:

- Landlord supply
  - single phase up to 10Kw
  - 3phase 5kW +

- Individual supply to flats
  - Inverter in each flat
  - Microinverters
  - SolShare

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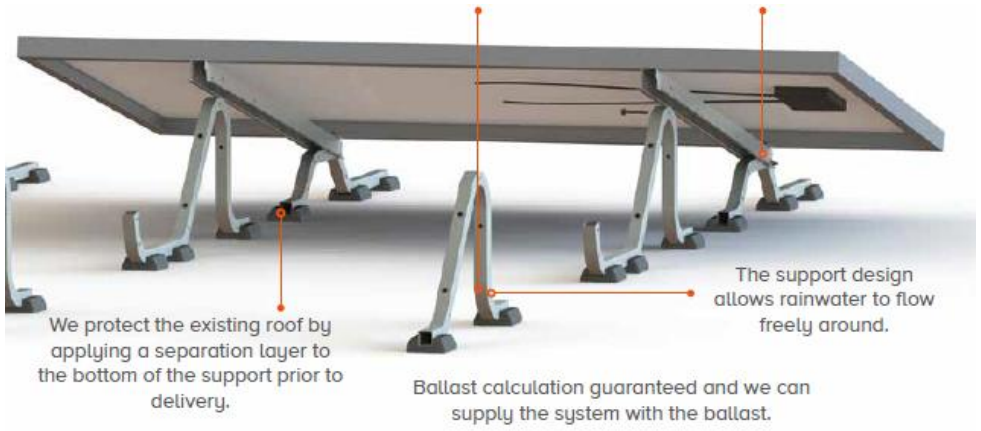
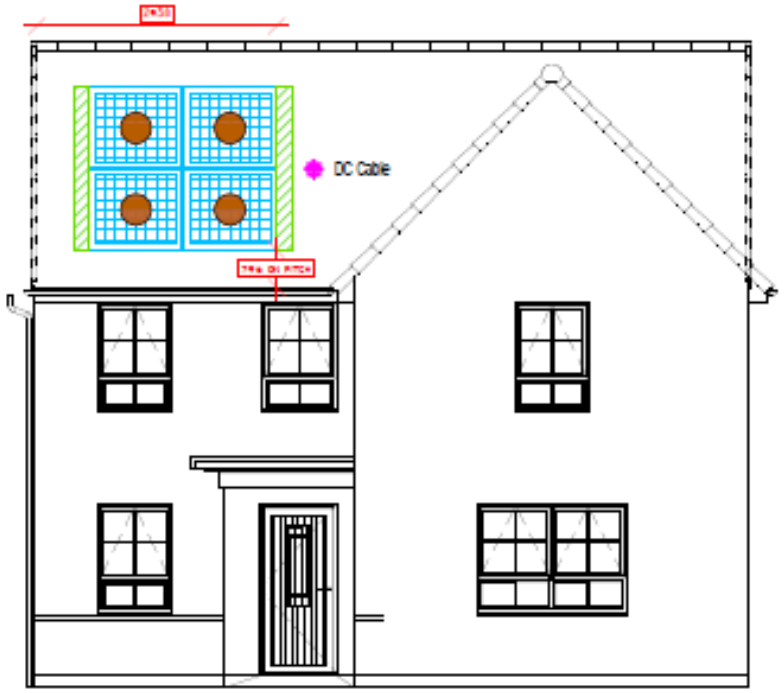
Apartment Blocks

- We can install large systems on flat roofed apartment blocks
- Compatible with ply membranes, standing seam, trapezoidal, green/sedum roofs etc
- Different mounting systems to work with various roof surfaces eg:
  - Ballasted
  - Direct fixed
  - Clamps



New-build solar process



1. We work from your SAP report which will give us a kWp target per plot
2. We work from your house-type drawings and site plan to design the PV panel layout to meet the target
3. Drawings & electrical specification are issued for your approval
4. We apply to the DNO on your behalf for approval to connect the Solar PV systems to the grid
5. Our first fix is the PV panels being installed while the roof is at felt & batten stage
6. Your electrical contractor runs cable from the roof void down to the consumer unit and supplies an RCBO
7. At our 2nd fix we fit the inverter, isolators and generation meter.
8. We connect the PV to the mains power, test and commission the system

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1st Fix

Drawing

Installation

End result

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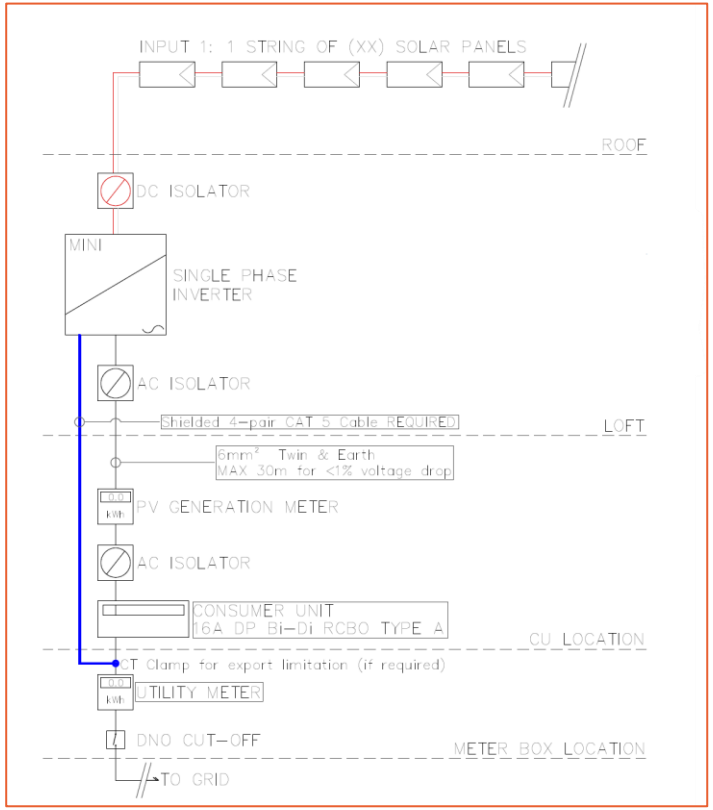
2nd Fix

Drawing



Inverter

Consumer Unit

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How Solar PV works

1 **Light**

The sun gives off light, even on cloudy days

2 **The panels**

Solar Photovoltaic (PV) cells on the panels turn the light into DC electricity

3 **The inverter**

The current flows into an inverter, which converts it to AC electricity ready to use

4 **The electricity**

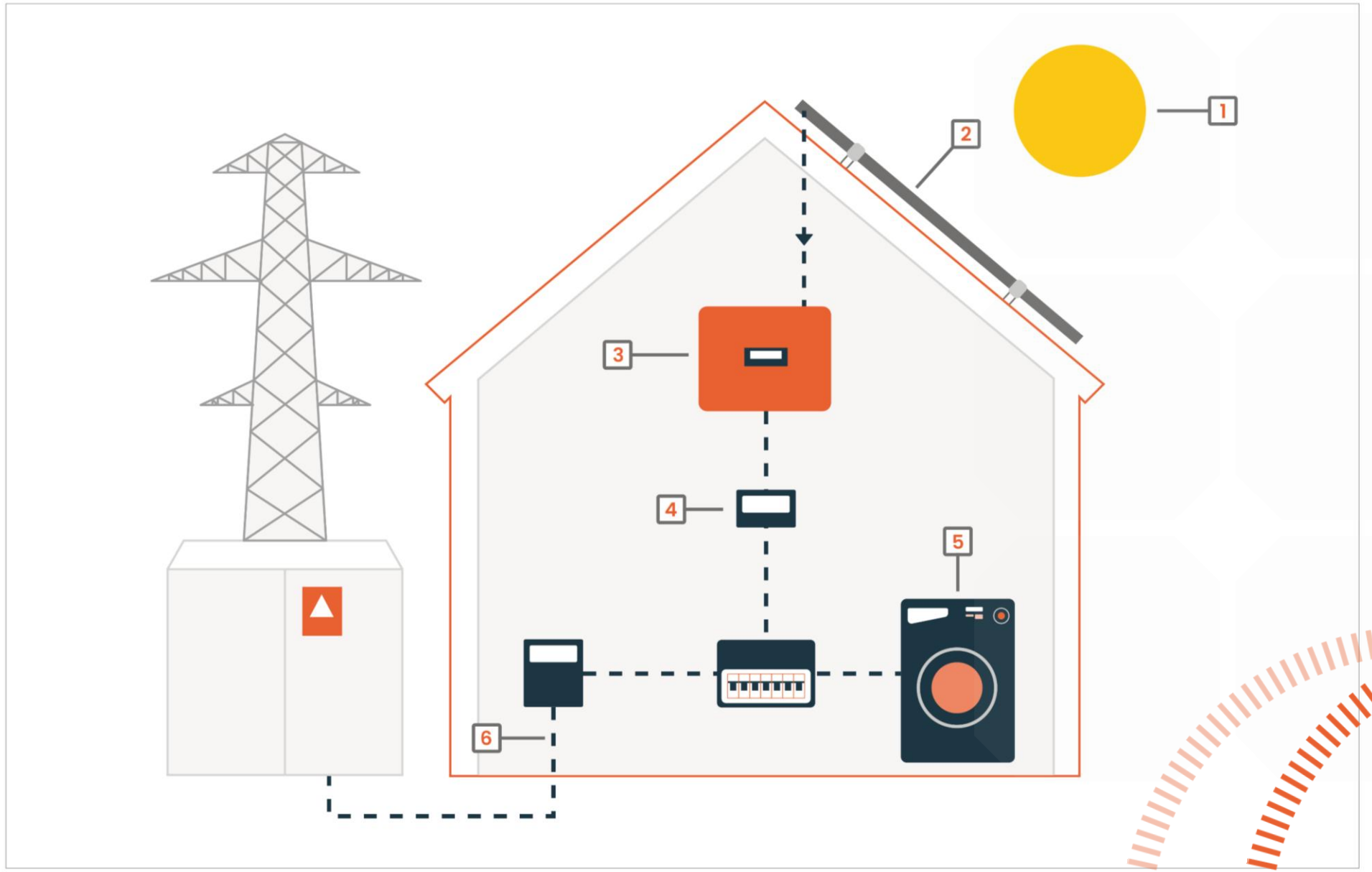
The current is fed through a meter and then into your home's consumer unit. The meter will measure all of the electricity generated by the solar PV system

5 **Powering the home**

Plug in and switch on. Your system will automatically use the free electricity you've generated, then switch back to the grid as needed

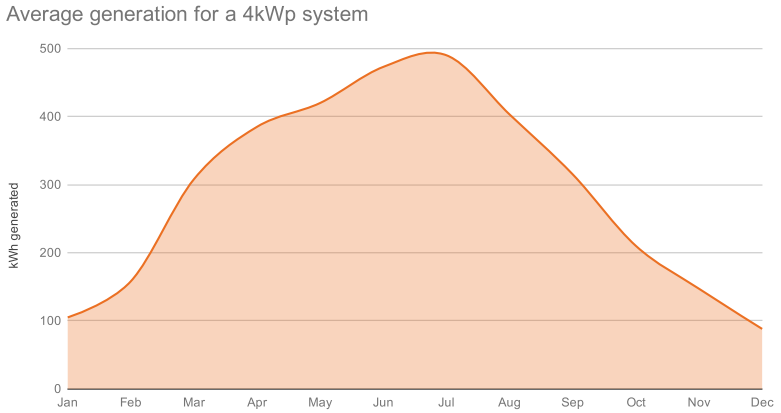
6 **The National Grid**

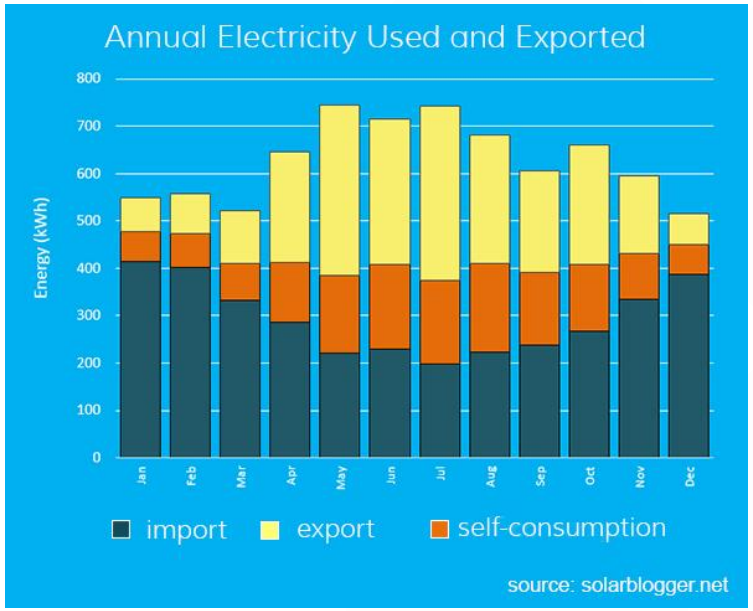
Any electricity you don't use is exported to the grid for others to use



Solar Power Performance

- An effective renewable technology despite UK's varied weather
- Exposure to irradiance is the key factor for generation yield
- This is affected by:
  - Static factors - location, orientation from south, inclination angle of the panel
  - Varying factors: time of year, weather & shading
- Southerly facing is best but East & West also a good option
- Energy usage profiles vary but max self consumption of solar power is around 40% per year in the average home





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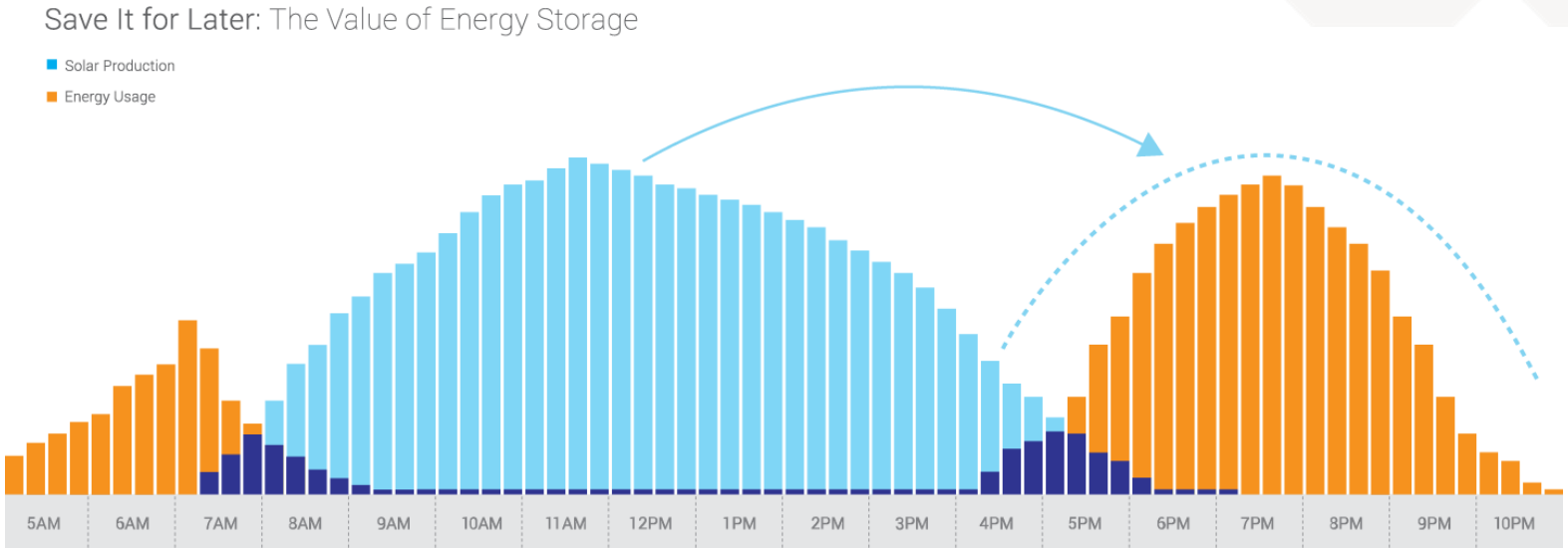
Battery Storage

- Solar on it's own – "use it or lose it"
- Solar with battery storage can extend self consumption to around 70%
- Batteries can also be charged from the solar panels and from the grid to take advantage of cheaper tariffs at off-peak times
- DC coupled systems are best suited to new-build homes



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Battery Storage & Fire safety

- PAS63100 published by BSI in March 2024 in response to the increasing numbers of Battery Energy Storage Systems (BESS) being installed
- Aims to help designers and installers manage the associated fire hazards by defining safety requirements and considerations
- Will have an impact on integrating battery storage into new-build homes
- Considerations such as location, fire detection and protected connection points
- House design in the future will need to include dedicated space for BESS

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Microinverters

PROS

- Optimises power generation
- Rapid shutdown at panel
- Removes live DC cable through building
- Easy to extend PV system
- Longer warranties

CONS

- Higher cost
- Internet connectivity often required

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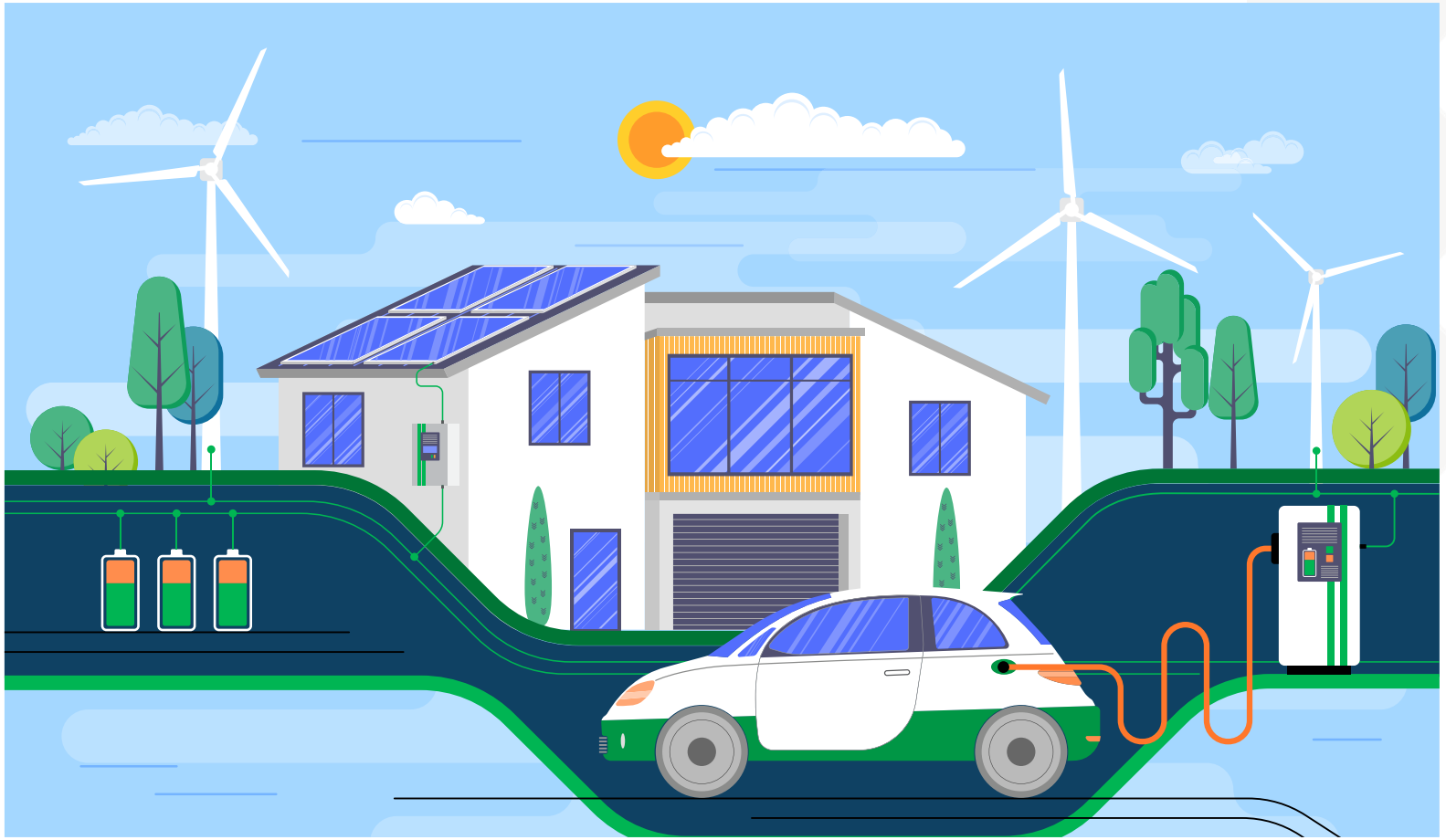
The Connected Home



The ideal future home:

- Solar on the roof generating clean and free electricity
- Battery storage to extend self sufficiency
- EV chargers
- Air Source Heat Pump
- Home Energy Management System (HEMS) to monitor and dynamically manage generation and usage

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Thank you

Any questions?