



Royal Borough of Kingston Efficient Homes Show

Why
Do
Solar
At
Home?



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Royal Borough of Kingston Efficient Homes Show Why Should We Get Solar Panelling Installed?

Solar Photovoltaic / Thermal ->



Harness Sun to

<- generate electricity / warm water->



Passive vs. Active Solar Water Heaters - Pros and Cons # ...

Photovoltaic generated Electricity can be used towards:

- Reduction of your Electricity Bill
- Storage of Power in a battery
- Hot Water (Immersion Heater / Solar diverter[not with Combi Boiler])
- Fed into the Grid for others' needs/ **Smart Export Guarantee**



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Why Should We Get Solar Panelling Installed?

Considerations

Roof – Good condition plus



Parameter	Ideal	Comments
Pitch/Angle/Tilt	36	30 to 45 degs best but even a flat roof or vertical wall surface work (see table overleaf)
Direction Roof is facing	South	Works all round to E or W and even N facing panels produce
Shadows	Small level	Productivity Impacted but can be tempered





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Overall optimum is c36 Deg Tilt and South facing BUT don't let that deter. Typical house roof is 20-45Deg
Tilt/Direction efficacy impact



Tilt \ Direction	E/W	South-East/ South-West	South
0 (Flat roof)	84%	84%	84%
20	82%	91%	96%
30	81%	93%	100%
40	78%	93%	100%
50	74%	91%	98%
70	64%	82%	89%
90 (Face of wall)	50%	65%	71%



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Possible answer(s) to some issues

Shadows – Weakest link rule on a string
Eg 7 panels in series all work at lowest rate i.e. shaded panel

Panel Level Optimisers on affected panels

- Adaptive Technologies (DC Optimisers where needed/split cells)
- Micro-inverters (convert DC to AC at each panel)
- Smart Panels using Diode Bypass technology

Weight of panels – Lightweight panels or film

Residential line of Panels (100% circular). ★★

Made of Recycled materials and up to 65% lighter
Made by Dutch Firms SoLarge/EconCore





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Why Should We Get Solar Panelling Installed?

Steps to take

Read up on the websites referred on final 2 slides*
{* Be better placed when dealing with Sales rep}

Check if you'll need any planning permission

Grants under Energy Company Obligation ECO4
(For example people on Universal Credit/Pension Credit etc)

Use Microgen'n Certif'n Scheme(MCS) Accredited Installers

Obtain several quotes (recommend 5)

Due Diligence - Vetting / Word of Mouth





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Pleasant Surprises

Minimal decline of energy production per annum *

Reliability of Inverter **

Now come with extensive guarantees

(* Studies in last few years suggest 0.25 to over 1% per annum.
AMSAT-OSCAR7 1974=>1981 => Open Circuit 2002=>2025

** Typically housed in a garage or utility room.
Some Grid-linked ones can be kept in shade outside.

Loft is NOT recommended as extreme heat
impacts efficiency just as it needs to work hardest.
Dimensions typically 0.6M X 0.4M X 0.2M)

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Lessons from experience sales people don't mention

Pigeons like nesting underneath



– Install robust, sturdy wire mesh or blocker

– **Spikes didn't work** for me and...

<https://goldshotexterminating.net/bird-pigeon-control-spikes>

The customer is often confused as to why the spike they paid someone else to put on the roof didn't keep the pigeons away. The answer is actually pretty simple: those bird spike strips don't move and they can't cover the entire roof. Therefore, they just don't work.



Extreme distribution of production over the year.

(1 day in Summer can be as much
as a couple of weeks in depth of winter)

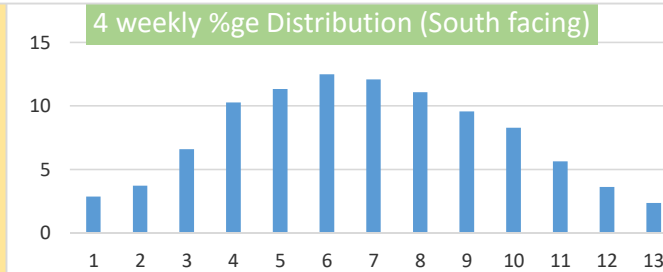
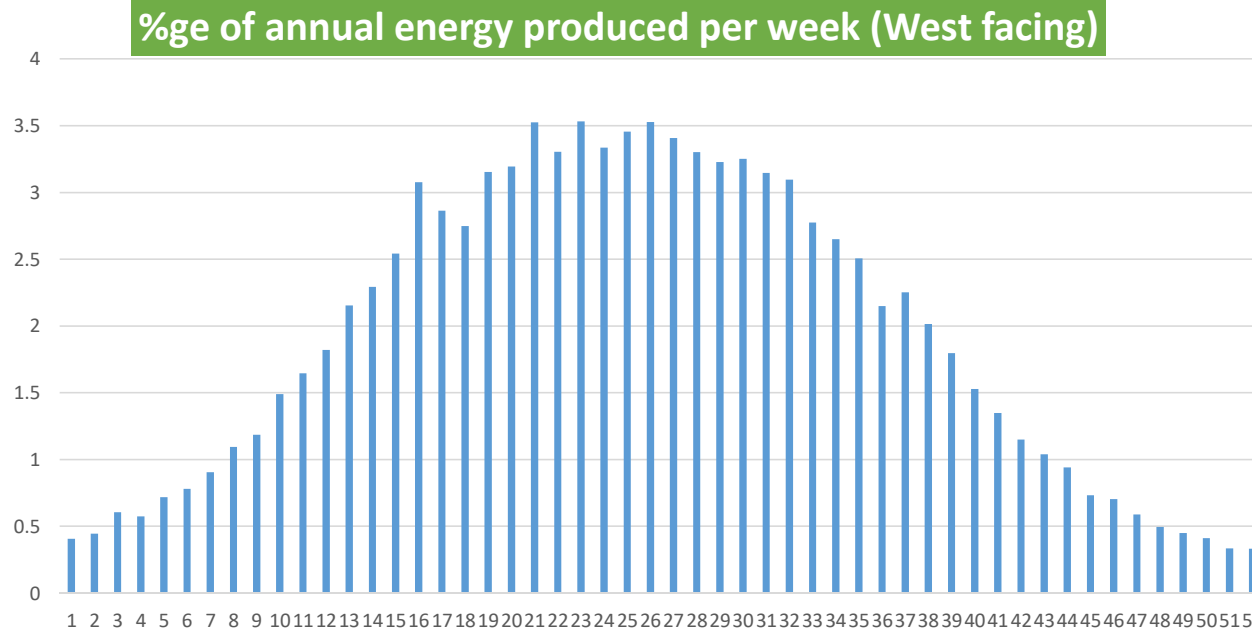


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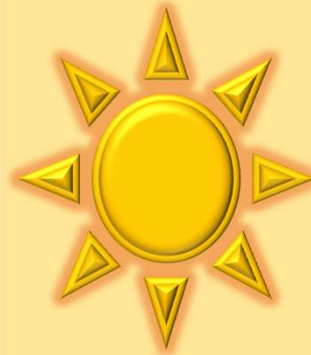
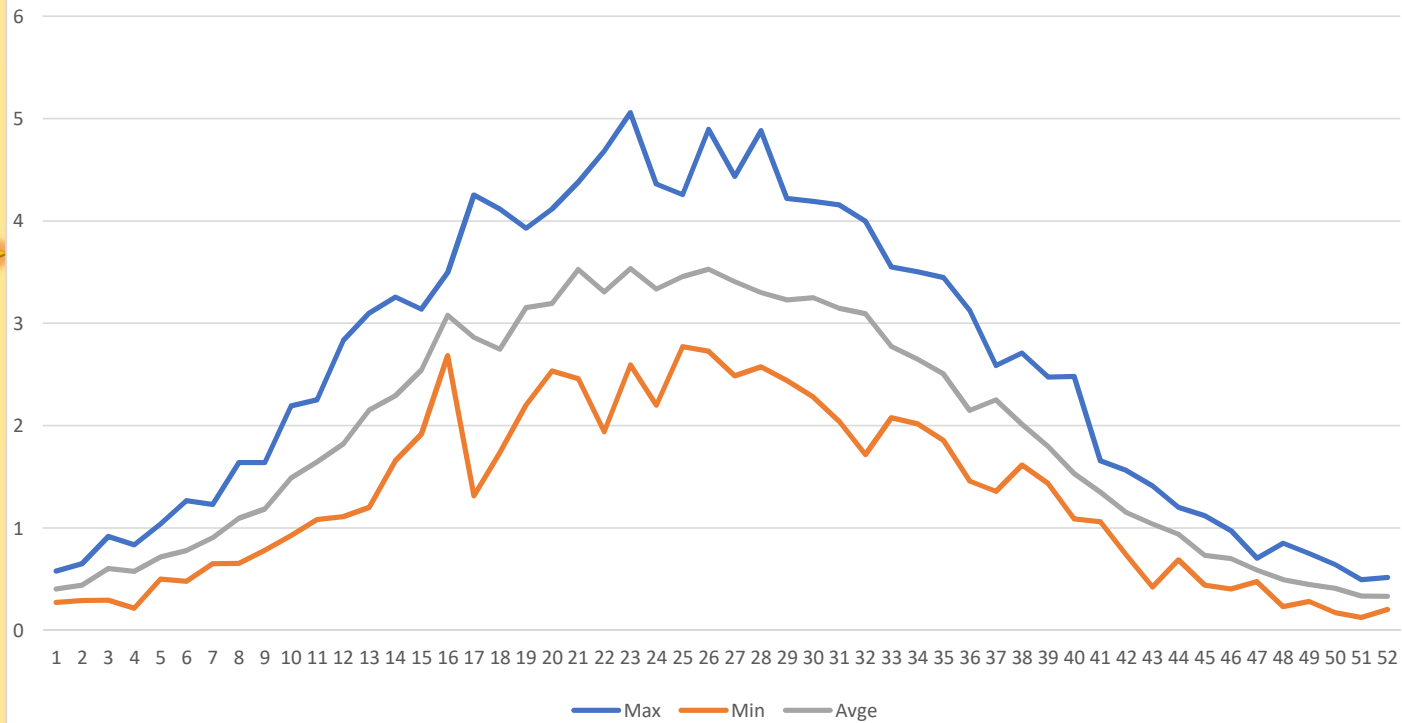
Lessons from experience, sales people don't mention





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Variability in %ge of annual production each week



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Significant Benefits to recover/offset investment

Reduced annual energy bills (using energy produced)
{savings £160->350 depending on usage profile and prices}

Smart Export Guarantee* (payments for unused energy)
{Payments £120-> >£1000 depending on usage profile + SEG rate}

Energy Performance Certificate Score++



May increase property value (helped further by battery storage)**

Optimise – Maximise solar output, adjust usage patterns, install a battery

(* Microgeneration Certification Scheme (MCS) qualified
+ Smart Meter in most cases

** Estimates range greatly Note: Any Net Zero targets for EPCs will become key

++ May yet influence Mortgage Rates)

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Savings and Indirect Benefits

Government has **0**ed VAT on components until Mar 2027

Significant reduction in your Carbon Footprint

Net CO₂e savings of 1 Tonne/year (typical home system)
(Annual amounts to 3600miles in Gasoline Car)

>>900kWh per annum per kW of System in this area
(My system is West facing making 800 its productivity impacted
v Due South)

Local employment





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Type	Cost/SqM	Efficiency	Lifespan	
Monocrystalline	£350	18-24	25-40	1 st Gen
Polycrystalline	£280	13-16	25-30	1 st Gen
Passivated Emitter & Rear Contact (PERC)	£360	17-20	25-35	Increase 1% eff'y => 5% more energy
Thin Film (Silicon)	£99	7-13	10-20	2 nd Gen Sheds/ Mobile Homes
Solar Tile	£300	10-20	25-30	For re-roofing or new build



[The 9 Types of Solar Panels in the UK | 2025 Comparison](https://theecoexperts.co.uk) by theecoexperts.co.uk



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Learn more on these websites



Federation of Master Builders (covers full installation)

<https://www.fmb.org.uk/homepicks/solar-panels/solar-panels-guide/>

<https://www.fmb.org.uk/homepicks/solar-panels/best-solar-panels/>



Centre for Sustainable Energy

<https://www.cse.org.uk/resource/home-energy-fact-sheets/>

<https://www.cse.org.uk/advice/solar-water-heating/>

<https://www.cse.org.uk/advice/a-complete-guide-to-solar-pv/>



Friends of the Earth

<https://friendsoftheearth.uk/climate/saving-energy-home-heating-and-insulation>



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[Learn more on these websites](#)

MicroInverter/Optimiser configurations

<https://aurorasolar.com/blog/module-level-power-electronics-mlpe-for-solar-design-a-primer/>

Cost effectiveness – great detail
(slightly misleading link name/updated 6/3/25)

<https://www.moneysavingexpert.com/utilities/free-solar-panels>

Smart Export Guarantee

<https://www.sunsave.energy/solar-panels-advice/exporting-to-the-grid/best-seg-rates>

The **importance** of Due Diligence - GET

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