

Watt TF Full HHD Sample

MPAN: 100000sample

Analysis window: 15 Nov 24 – 14 Nov 25 • 363 days



INDICATIVE SYSTEM SIZE

85.0 kWplargest array reaching $\geq 70\%$ annual self-consumption

SOLAR METRICS

RECOMMENDED SIZE **85.0**kWp • largest size with self-consumption $\geq 70\%$ ANNUAL GENERATION **100,610**

kWh • 950 kWh/kWp benchmark

SOLAR USED ON SITE **60,371**

kWh • 60.0% self-consumption

SELF-SUFFICIENCY **38.1%**

of site demand met on site

EXPORTED SURPLUS **40,238**

kWh • paid at the export rate

EST. ANNUAL BENEFIT **£11,872**

Site Parameters dual tariff, day 15p / night 10p

INDICATIVE SOLAR COST **£74,353**

700 £/kWp • screening estimate

SOLAR SIMPLE PAYBACK **6.3 yrs**

0% annual escalation • 15-year screen

ELECTRICITY BILL WITHOUT SOLAR **£22,207**

exact copy of full-year Est. Annual Cost

ELECTRICITY BILL WITH SOLAR **£10,334** (53%

less)

Est. Annual Cost minus Est. Annual Benefit

• BATTERY STORAGE OPTION

None

DC

AC

AC storage: charges from solar surplus, discharges against site demand and peak-shaves identified weekday DUoS Red periods, and load-shifts by charging from the grid at the night rate for use across the day.

Only dual-tariff savings are included in this AC model. Usage was detected in the DUoS Red and Amber (orange) bands; additional peak-shaving savings may be possible. Full valuation requires a separate text-based energy-bill analysis.

• SOLAR + AC BATTERY ASSESSMENT

SOLAR SIZE WITH BATTERY

106

kWp · matches your manual system size override

RECOMMENDED BATTERY SIZE

48

kWh model recommendation · 0.5C charge/discharge

ANNUAL GENERATION

100,610

kWh · 950 kWh/kWp benchmark

SOLAR USED ON SITE

72,409

kWh · 72.0% self-consumption · plus 16,461 kWh night-rate charging used on site

SELF-SUFFICIENCY

45.7%

of site demand met by solar on site

EXPORT REMAINING

28,201

kWh still exported after the battery · paid at the export rate

EST. ANNUAL BENEFIT

£13,658

Site Parameters dual tariff, day 15p / night 10p, net of £1,646 night-rate charging

ELECTRICITY BILL WITHOUT SOLAR

£22,207

exact copy of full-year Est. Annual Cost

ELECTRICITY BILL WITH SOLAR + BATTERY

£8,548 (62% less)

Est. Annual Cost minus Est. Annual Benefit

ADDITIONAL BILL REDUCTION

£1,786

further reduction vs solar only (53% → 62% less than the no-solar bill)

BATTERY COST (INDICATIVE)

£23,900

500 £/kWh · screening estimate

SOLAR + BATTERY SIMPLE PAYBACK

7.2 yrs

total installed cost ÷ total annual benefit

Recommended storage: 48 kWh modelled capacity, discharging 28,499 kWh per analysis year (equivalent to 662 full cycles per year). AC load shifting: 16,461 kWh bought from the grid at the night rate (£1,646) and discharged across the day, valued at the day rate. The model uses fixed internal assumptions of 90% round-trip efficiency, 90% usable depth of discharge and 0.5C maximum charge/discharge power. DUoS Red peak shaving reduces consumption in those half-hours, but those charges cannot be valued from a pence-per-kWh input alone and would need a full bill analysis. Installed costs use the screening £/kWp (solar) and £/kWh (battery) inputs above.

• TARIFF INPUTS

SOLAR SYSTEM SIZE (KWp)

106

Recommended: 85.0 kWp. Enter a smaller or larger array to model it.

BATTERY SIZE OVERRIDE (KWH)

Auto

Optional whole-kWh override. Leave blank for automatic 10% cap increments.

Update Report

IMPORT UNIT RATE (P/KWH)

Site Parameters

EXPORT PAYMENT RATE (P/KWH)

7

SOLAR INSTALLED COST (£/KWp)

700

BATTERY INSTALLED COST (£/KWH)

500

MAXIMUM SIMPLE PAYBACK (YEARS)

15

ENERGY-COST ESCALATION (%/YR)

0

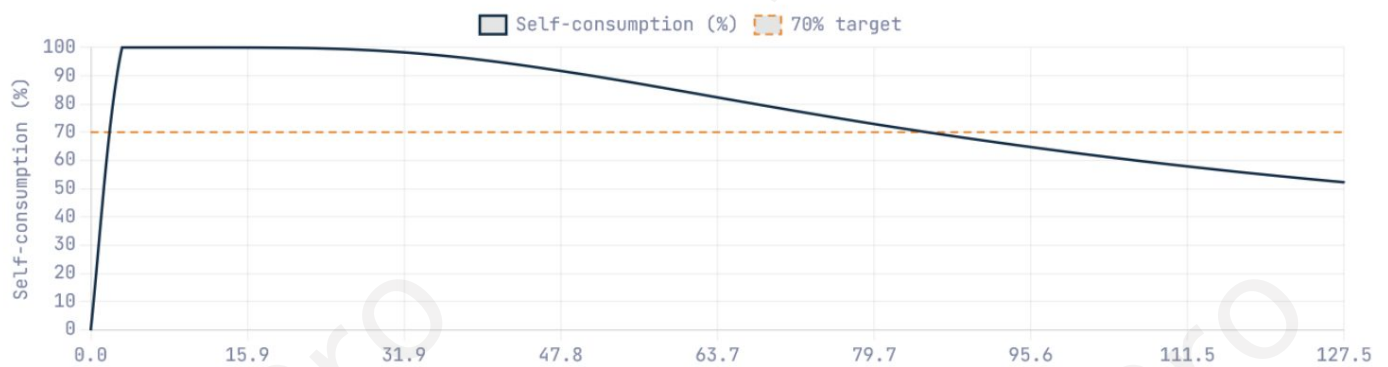
On-site savings valued at Site Parameters dual tariff, day 15p / night 10p. Leave the import field blank to use the Site Parameters rate, or enter a value to override it.

ESTIMATED ANNUAL BENEFIT

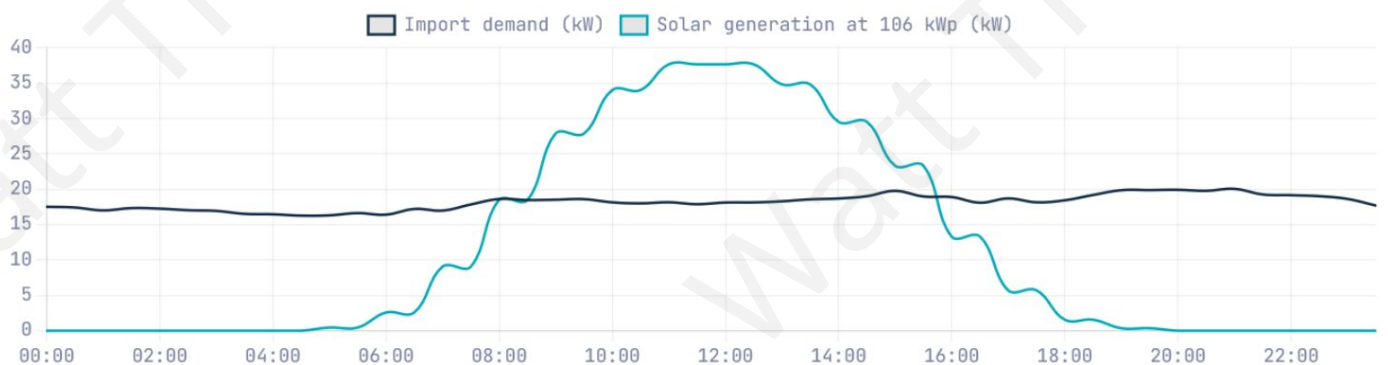
Solar used on site (60,371 kWh of avoided import)	£9,056
Exported surplus (40,238 kWh × 7p)	£2,817
Total indicative annual benefit	£11,872

Annual benefit figures. The simple payback cards are screening estimates based on the installed-cost inputs above.

SOLAR SIZING CURVE (ANNUAL SELF-CONSUMPTION VS SYSTEM SIZE)



IMPORT VS SOLAR GENERATION (AVERAGE HALF-HOURLY PROFILE, KW)



SYSTEM SIZE OPTIONS (ANNUAL FIGURES)

Self-consumption target	Size (kWp)	Generation	Used on site	Self-sufficiency	Export	Est. annual benefit
85%	59.3	56,210 kWh	47,786 kWh	30.2%	8,424 kWh	£7,758
80%	67.5	63,965 kWh	51,173 kWh	32.3%	12,793 kWh	£8,571
75%	75.9	71,928 kWh	53,947 kWh	34.1%	17,981 kWh	£9,351
70% • recommended	85.0	80,482 kWh	56,350 kWh	35.6%	24,132 kWh	£10,142
65%	95.0	89,984 kWh	58,490 kWh	36.9%	31,493 kWh	£10,978
60%	106	100,610 kWh	60,371 kWh	38.1%	40,238 kWh	£11,872

Each row is the largest array whose modelled annual self-consumption still reaches the target. Beyond each size, additional generation is increasingly exported.

• ASSUMPTIONS & LIMITATIONS

- Generation benchmark: 950 kWh per kWp per year. The half-hourly generation shape is derived from PVGIS v5.2 hourly PV output for Birmingham (52.48°N, 1.90°W), free-standing crystalline silicon at the optimal tilt (40°), 14% system losses, averaged across 2016–2020 and normalised to the benchmark yield.
- Sizing rule: the recommended size is the largest array whose modelled annual self-consumption reaches 70%. Self-consumption is $\text{solar used on site} \div \text{solar generated}$; self-sufficiency is $\text{solar used on site} \div \text{site demand}$.
- Demand: the uploaded half-hourly import is treated as the site's underlying electricity demand across the analysis window (15 Nov 24 – 14 Nov 25, 363 days). Consumption is assumed unchanged after installation.
- Money: on-site solar is valued at the import unit rate in force in each half hour (dual-tariff aware); exported surplus is valued at the export payment rate (7p per kWh, change above).
- Not modelled: shading, roof orientation and area, structural and grid connection limits, panel degradation, tariff changes, maintenance, and future changes in demand. The result is an indicative consumption-based estimate, not a roof survey or quotation.

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