

Your solar proposal

Thanks for choosing us to provide a design for a solar PV system at Black Horse House, 4 Tape St, Cheadle, Stoke-on-Trent . We're delighted to supply the attached proposal for a 12.18 kW solar array.

We expect your system to generate 10,206 kWh of clean electricity every year, and save 2,167 kg CO2 of carbon.

There are full details on the following pages. We hope you enjoy the read!

Kind regards,

Bradley Wood

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This proposal is for:

Andrew Savage

Black Horse House
4 Tape St
Cheadle
Stoke-on-Trent
ST10 1BD

Prepared

30 September 2024

Valid for

30 days



12.18 kW PV System



£14,058 inc VAT: Expected payback 3 years. Estimated first year savings £2,873



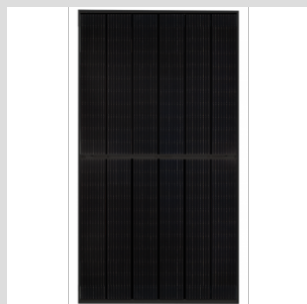
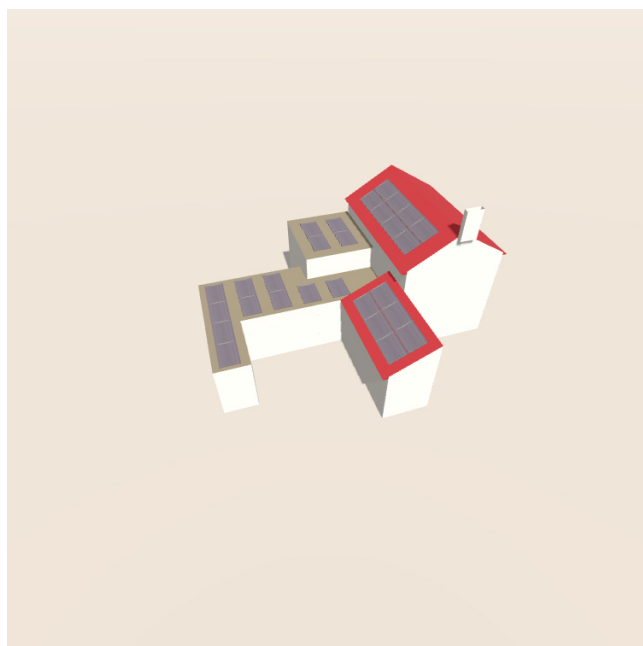
10,206 kWh/yr: Annual CO₂ savings of 2,167 kg

System Overview

Your system comprises **28 Jinko Tiger Neo 435W N-Type All Black Mono solar panels** to collect sunlight and turn it into DC electricity.

The panels will be connected to **1 Growatt MIN 8000 TL-X2 Three MPPT 1ph inverter**, which converts the DC electricity into mains (AC) electricity.

We include all the isolators, wiring and meters needed to connect the system safely to your electrical system. Your system will be installed and certified by our trained installation team.



Solar Panels: Jinko Tiger Neo 435W N-Type All Black Mono x 28

No description

Model

Power 435 watts

Dimensions 1134 x 1762mm



Inverter: Growatt MIN 8000 TL-X2 Three MPPT 1ph

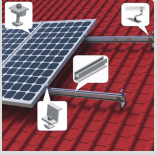
Compact residential inverter with Three MPPT and DC switch

AC Power 8000 watts

Trackers 3

System components

Mounting



Fastensol pitched roof mounting system

Fastensol are an excellent value, fully MCS accredited choice for pitched roof mounting systems, suitable for the majority of roof types.



Fastensol flat roof mounting system

The Fastensol tray is a ballasted solution suitable for both ground mounting and flat roofs, primarily for landscape installations of any scale.

System Performance

We have made an estimate of the annual energy generation of your system. This takes into account the following factors that affect the output of a solar array.

The location of the system

Sunlight is weaker near the poles than near the equator. We use data from a meteorological model of the intensity of sunlight over the course of the year in different locations all over the world.

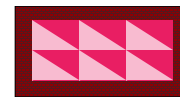
The orientation of the system

Solar panels that face south receive a little more sunlight than panels that face east or west. However, in diffuse light the orientation of the panels makes little difference, so the effect is less marked than many people imagine.

The degree of shading

If you have trees, neighbouring buildings or nearby high ground that will shade your PV array, the output of the system will be reduced. We have used a 'sunpath diagram' that estimates how often sunlight will be blocked from reaching the panels.

Roof diagrams



Lower Pitched Roof
Orientation: 58° Pitch: 26°

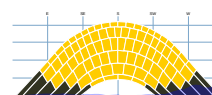


Main Flat Roof
Orientation: 58° Pitch: 18°

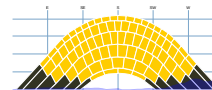


Upper Flat Roof
Orientation: 58° Pitch: 18°

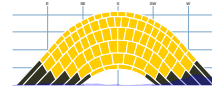
Sunpath diagrams



Shade factor: 1.00
Kk: 836



Shade factor: 1.00
Kk: 836



Shade factor: 1.00
Kk: 845

**We expect your system to generate
10,206 kWh per year**

Installation data

Installation capacity of PV system – kWp (stc)	12 kWp
Orientation of the PV system – degrees from South	See roof diagrams
Inclination of system (pitch) – degrees from horizontal	See roof diagrams
Postcode region	Zone 6

Performance Calculations

kWh/kWp (Kk)	See sunpath diagrams
Shade Factor (SF)	See sunpath diagrams
Estimated output (kWp x Kk x SF)	10206 kWh

Estimated PV self-consumption

Assumed annual electricity consumption	24000kWh
Expected solar generation consumed in property	5746kWh

Important note: The performance of solar PV systems is impossible to predict with certainty due to the variability in the amount of sunlight from location to location and from year to year. This estimate is based upon a model that takes account of meteorological data at your location and makes an allowance for losses due to shading of the panels. This is a complex calculation however, and no model can be 100% accurate. It should not be considered a guarantee of performance. If shading is present on your system that will reduce its output to the factor stated. This factor was calculated using industry standard shading methodology and we believe that this will yield results within 10% of the actual energy estimate stated for most systems.

Your energy explained

In addition to the MCS calculation of system output we have run a more detailed model of your system to estimate how much of the electricity generated by the system you are likely to use yourself and how much will go to the grid.

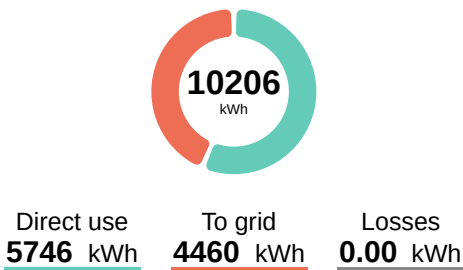
Smart Export Guarantee (SEG) information

The Smart Export Guarantee (SEG) enables Generators to receive payments from electricity suppliers for the electricity they export back to the National Grid, providing specific criteria are met. Your installation will be MCS accredited, which means that you should be able to apply for SEG payments from your electricity supplier. Further details on the SEG and its eligibility requirements, including how to apply, can be found online at [ofgem.gov.uk](https://www.ofgem.gov.uk)

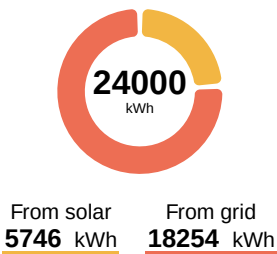
Where your electricity will come from in a typical year

Based on an electricity usage of 24,000 kWh per year, the graph below shows how much electricity used in the property is expected to come directly from the solar panels (blue) and how much is expected to be imported from the grid (red).

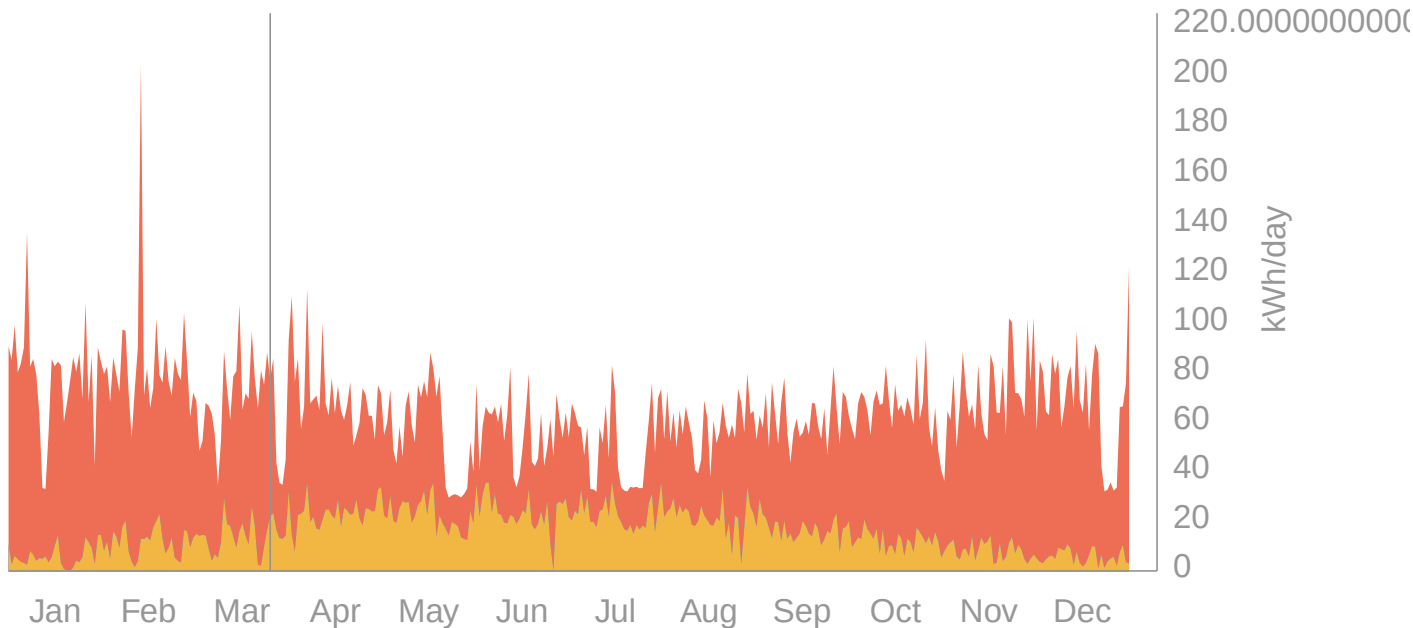
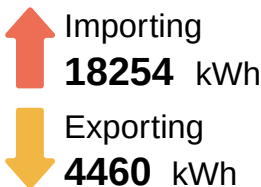
Annual Generation



Annual Consumption



Annual Import/Export

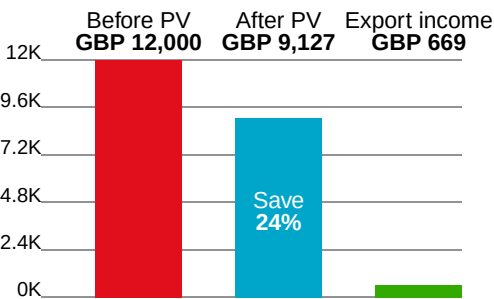


Financial Benefits

Based on our model we expect you to self consume 5,746 kWh of the 10,206 kWh of electricity the system should generate - providing 24% of the annual electricity consumption of 24,000 kWh in the property.

At an electricity tariff of £0.50/kWh, that's a saving of **£2,873** on your electricity bill - down from £12,000 at present! Your new bill could be just **£9,127** per year.

4,460 kWh of excess solar energy will be exported to the grid. If you are paid by your supplier at £0.15 per kWh, you will receive an additional **£669** in income from them.



Overall, your savings and benefits are expected to be around £3,542 in the first year after the system is installed.

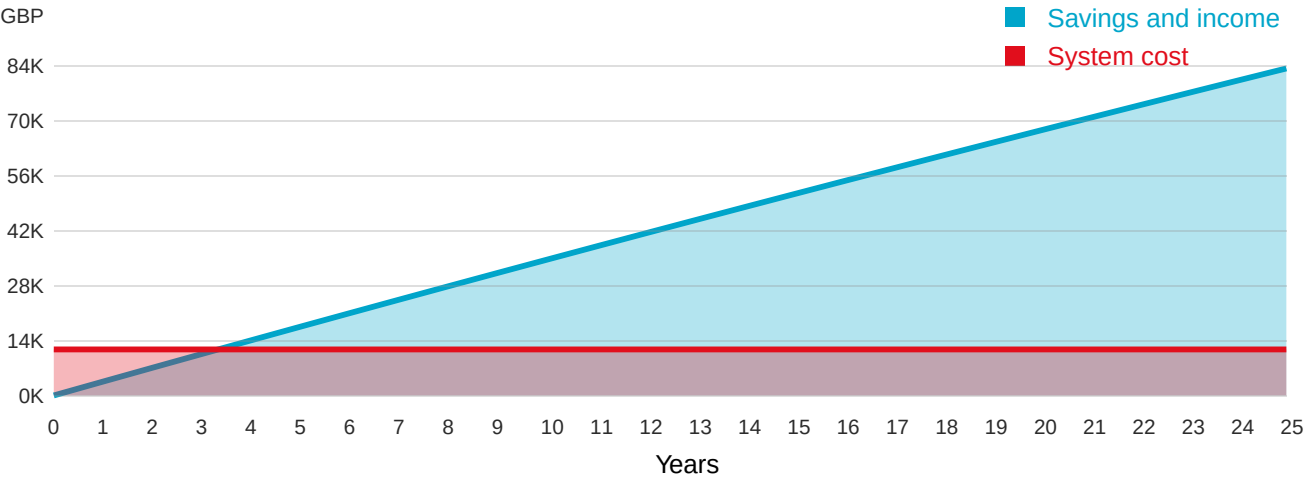
Payback

Using a more detailed model that also takes account of longer term factors such as inflation, gradual degradation in panel output over time and financial discount rates¹, we expect the system to pay for itself in 3 years.

Over a projected 25 year lifetime, we expect the system to have a **Net Present Value of £71,527**. A positive net present value is a good indication that an investment is financially worthwhile.

Disclaimer: Nothing in life is certain. Cloudy periods, growing trees, and even pigeon droppings can affect the output of your array. No-one really knows how electricity tariffs will change in the future, or what inflation will be in 10 years time. We have based our calculations on an inflation rate of 4%, electricity price that increases with inflation, a discount rate¹ of 4%, an import electricity tariff of 50p/kWh, and export payments of 15p/kWh. Returns are not guaranteed.

¹ Financial discounting is a method used to calculate the worth of future money in today's terms.



Environmental Benefits

Your new PV system will supply your property with clean, green electricity - and in sunny periods some will also be exported back to the grid.

Overall you'll be making a big contribution to reducing CO₂ not just by lowering the carbon intensity of your own electricity, but by putting low-carbon electricity back in the grid for others to use too.

Your current electricity supply produces

5,096 kg CO₂
each year

23% will be supplied by solar, saving

1,166 kg CO₂
each year

4,713 kWh will be exported, saving

1,001 kg CO₂
each year

Total savings

2,167 kg CO₂
each year

**Your yearly CO₂
reduction of 2,167 kg
is equal to...**



**a car ride of 7,739
miles**



**CO₂ absorbed by 99
trees**

Disclaimer: We calculate and compare the likely annual CO₂ emissions for your home based on your generation and usage with the solar PV system detailed in this document versus estimates for a property like yours using energy from the grid. Your actual CO₂ emissions will depend on lots of factors, like how much energy your solar panels generate, how much of this energy you use directly and how much energy you continue to use from the grid. To calculate what these savings equate to in miles driven, we base this on the CO₂ emissions of an average sized diesel car as outlined in the UK government's 'Greenhouse gas reporting: conversion factors 2022' (<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2022>). To calculate what these savings equate to as the average amount of CO₂ absorbed by trees, we base this on a rate of 25kg per tree per year. Trees absorb anywhere between 10 and 40kg of CO₂ per year on average, depending on a whole host of factors including the species, location, planting density, and age.

Quote



Andrew Savage
Black Horse House
4 Tape St
Cheadle
Stoke-on-Trent

Quote reference: 809791
Quote date: 30/09/2024
Quote by: Bradley Wood
Quote validity: 30 days

Description of goods and services	Price
Goods	
28x Jinko Tiger Neo 435W N-Type All Black Mono solar panel	
Growatt MIN 8000 TL-X2 Three MPPT 1ph inverter	
NET Emlite Bi-directional Meter ECA2.n*	
Label sheet	
iBoost +	
WCED 6 Way Consumer Unit Enclosure	
Growatt ShineWiFi-X	
2x AC isolator - IMO - 40A 4-pole	
28x Tigo Retrofit Frame Mounted Optimiser TS4-A-O	
6x MC4 4mm Connector Pair	
250m reel of 4mm ² solar cable	
100x Fastensol end clamp (30mm black)	
20x Fastensol mid clamp (30mm black)	
16x Fastensol black end cap	
52x Fastensol portrait flat tile roof hook	
52x Hookstop protector	
12x Fastensol rail splice	
17x Fastensol silver rail 3550mm	
21x Fastensol flat roof tub	
84x Fastensol mini rail 140mm	
6x Fastensol rail bolt	

Services
Labour
Scaffolding

Total before VAT £11,715.61
VAT at 20% £2,343.12

Total including VAT £14,058.73

Order form

To proceed with this order please sign below to acknowledge that you have read and accept the information contained within this quote document and our terms and conditions.

Customer signature	Customer name	Date
_____	_____	_____