



**HES**  
Renewables

# Start your journey to energy independence

**Proposal For:**

**St Francis Xavier's  
Church, Hereford**

## Our Quality Accreditations





Solar PV | Batteries | EV Charging

Customer Reference Number: [REDACTED]

Mr. J Cook  
St Francis Xavier Church  
Hereford  
HR4 9AP

08<sup>th</sup> September 2023

## RE: SOLAR PV SYSTEM PROPOSAL

Dear Mr. Cook,

I am delighted to submit our proposal to supply and fit a renewable energy technology to your property.

This quotation includes details on the equipment we propose to install, an estimate of the performance you can expect from the system and other information that will enable you to make an informed decision on whether to proceed.

Accompanying this quotation, you will find:

- The full Performance Estimate and Information on the key components
- A leaflet describing the Renewable Energy Consumer Code (RECC) Quality Assured Contractors Scheme
- Information on IWA Insurance Company who provide our Insurance Backed Guarantee for your deposit and our 5 year workmanship guarantee

Financing your investment – The total costs of installation, labour and materials are as follows:

	<b>Total before VAT</b>	[REDACTED]
		<b>VAT at 0%</b>
	<b>Total excluding VAT</b>	[REDACTED]

If you wish to proceed with the installation, please contact me (details below) and I will send you a Contract with our terms of business which you will need to return to us, signed and dated. Upon receipt of the signed contract a deposit of 25% of the full order amount will be required to be paid. The remaining balance is payable on completion and commissioning of the system.

This quotation will be valid for 30 days from the date of issue and a cancellation form is included in our terms of business document. If you require any further information, please do not hesitate to contact me.

Kind Regards

[REDACTED]  
George Burrows  
Operations Director

### Hereford Energy Solutions Limited

Herefordshire Golf Club, Ravens Causeway, Wormsley, Hereford, HR4 8LY

Hereford Energy Solutions Limited is Registered in England and Wales.  
Registered number 14261648. VAT Registration number 424557884

Office: 01432 808782

[enquiries@hesrenewables.co.uk](mailto:enquiries@hesrenewables.co.uk)

[www.hesrenewables.co.uk](http://www.hesrenewables.co.uk)

## Why Choose Hereford Energy Solutions (HES) Ltd

HES is a Herefordshire based enterprise and provides exceptional professional services while championing sustainable green energy solutions. HES is technically led, rather than sales driven and will endeavour to ensure the design is the best technical solution of a renewable energy system that meets the customers requirements. HES only installs quality components and places an emphasis on honest and open advice and will deliver well designed, professionally installed systems that fully comply with building and electrical regulations.

All our staff and installers are employees and not subcontractors. All are well trained individuals with a personal, friendly and professional approach. Keeping the customer well informed on our processes and forging good customer relationships is key to our customer satisfaction.

As a member of the RECC – The Renewable Energy Consumer Code, HES is a business that has signed up to abide by the high standards set out by RECC which provides customers with the confidence and reassurance on the quality of services and goods delivered by HES. This also includes HES providing a Deposit Protection Certificate for customers when a deposit payment is made and on completion of the installation will also provide customers with a workmanship guarantee for 5 years.

HES are accredited with the Microgeneration Certification Scheme (MCS) which is an important quality assurance mechanism that certifies installers and products in the renewable energy sector and enables all customers to benefit from the Smart Export Guarantee available to homes and businesses that can generate electricity.

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# YOUR SOLAR QUOTE

**Hi John.**

Thanks for choosing us to provide a design for a solar PV system at St Francis Xavier Church, HR4 9AP.

We're delighted to supply the attached proposal for a 12.45 kW solar array.

We expect your system to generate 11,528 kWh of clean electricity every year, and save 2,448 kg CO<sub>2</sub> of carbon.

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

Kind regards,

Martin Farmer

HES Renewables



**12.45 kW PV System**

15 x 415W & 15 x 415W  
panels,  
1 x Huawei 10kW M1 3ph  
hybrid



**████████ inc VAT**

Expected payback 7  
years. Estimated first  
year savings ██████████



**11,528 kWh/yr**

Annual CO<sub>2</sub> savings  
of 2,448 kg

# System Overview

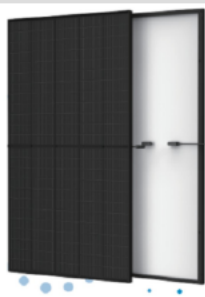
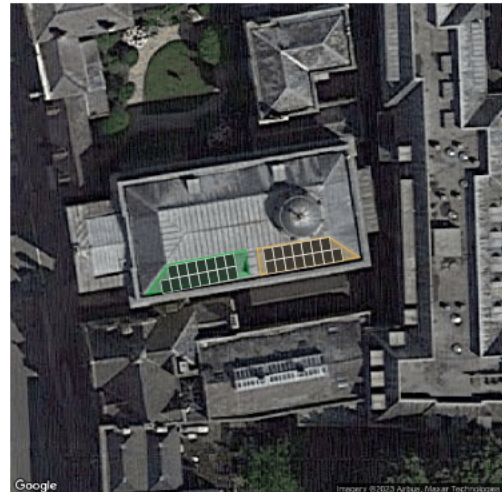
Your system comprises **30 Trina Vertex S 415W All Black Mono solar panels** to collect sunlight and turn it into DC electricity.

The panels will be connected to **1 Huawei 10kW M1 3ph hybrid inverter**, which converts the DC electricity into mains (AC) electricity.

A **Huawei LUNA 5kWh Lithium Ion Battery battery storage system** will allow you to store excess energy from sunny days, so that you can use your generated electricity at night too.

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.

## Satellite Image



### Solar Panels: Trina Vertex S 415W All Black Mono x 30

The Trina Vertex S provides a great balance of power, size and weight, offering 21.3% efficiency, with up to 65W more power for just an additional 6cm...

Model	TSM-DE09R.05
Power	415 watts
Dimensions	1134 x 1762mm



### Inverter: Huawei 10kW M1 3ph hybrid

Huawei's three phase Hybrid inverter offers an unrivalled combination of safety, value and functionality, in a corner of the market where options are ...

AC Power	10000 watts
Trackers	2

# System components



## **Battery: Huawei LUNA 5kWh Lithium Ion Battery x 2**

The huawei Luna Battery offers a flexible, scalable modular design with a powerful 100% depth of discharge and 4-layer safety protection.

Capacity	5.000 kWh
Quantity	2



## **Mounting: Renusol pitched roof mounting system**

Renusol is a German engineered PV roof mounting system. It is extremely versatile and compatible with the most popular roof coverings used in the UK.

Designed for	Natural Slate roofs
Colour	Not specified

# 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.

**We expect your system to generate  
11,528 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

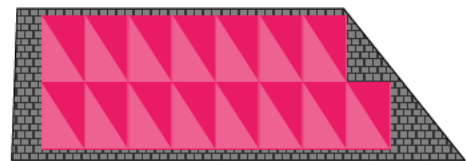
### Performance Calculations

kWh/kWp (Kk)	See sunpath diagrams
Shade Factor (SF)	See sunpath diagrams
Estimated output (kWp x Kk x SF)	11528 kWh

## Roof diagrams

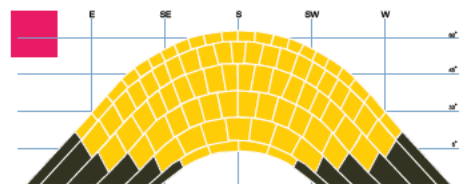


Orientation: -11° Pitch: 30°

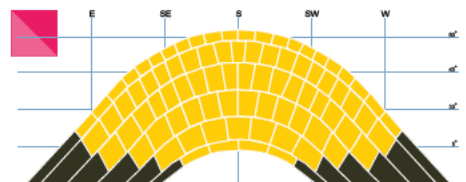


Orientation: -10° Pitch: 30°

## Sunpath diagrams



Shade factor: 1.00 Kk: 926



Shade factor: 1.00 Kk: 926

**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

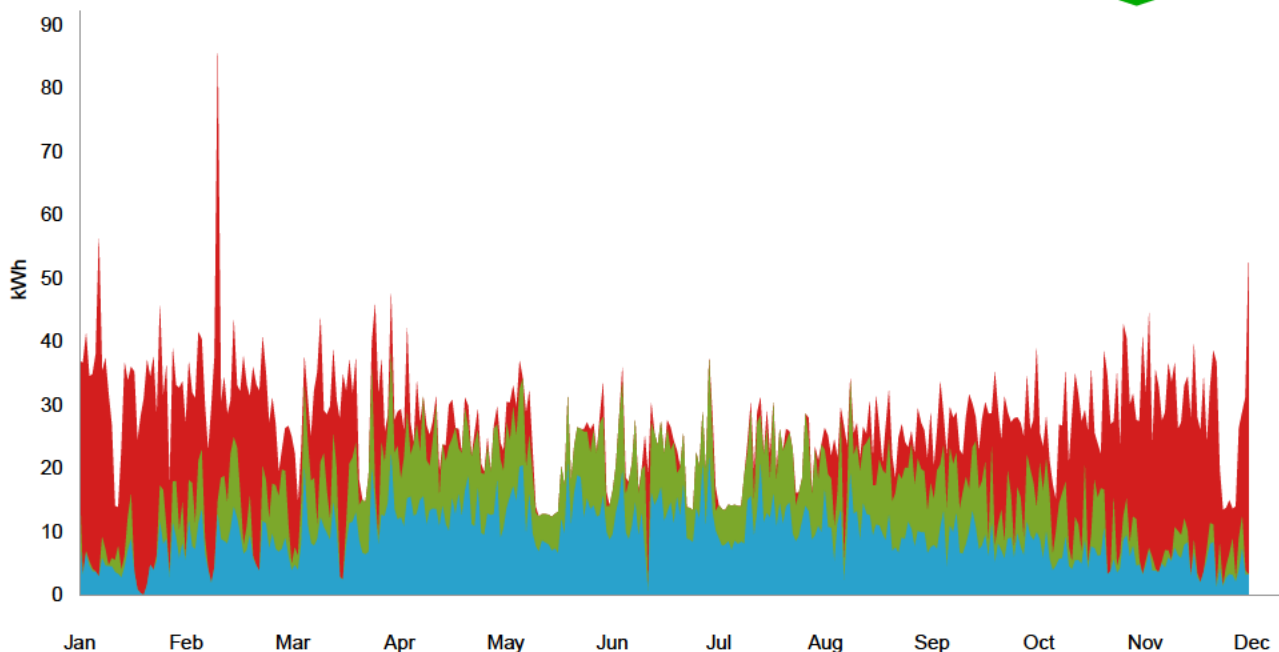
In addition to the MCS calculation of system output we have run a more detailed model of your system to estimate how much of the electricity generated by the system you are likely to use yourself and how much will go to the grid.

## Smart Export Guarantee (SEG) information

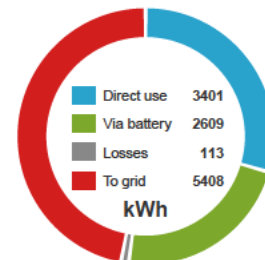
The Smart Export Guarantee (SEG) enables Generators to receive payments from electricity suppliers for the electricity they export back to the National Grid, providing specific criteria are met. Your installation will be MCS accredited, which means that you should be able to apply for SEG payments from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

## Where your electricity will come from in a typical year

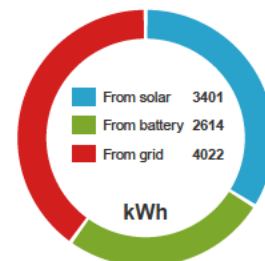
Based on an electricity usage of 10,000 kWh per year, the graph below shows how much electricity used in the property is expected to come directly from the solar panels (blue), how much is expected to come from battery storage (green), and how much is expected to be imported from the grid (red).



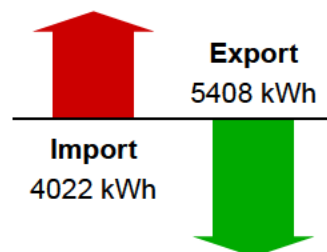
## Annual Generation



## Annual Consumption



## Annual Import/Export

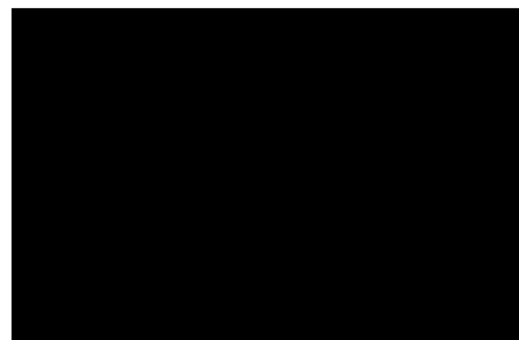


# Financial Benefits

Based on our model we expect you to self consume 6,065 kWh of the 11,528 kWh of electricity the system should generate - providing 61% of the annual electricity consumption of 10,000 kWh in the property.

At an electricity tariff of [REDACTED], that's a saving of [REDACTED] on your electricity bill - down from [REDACTED] at present! Your new bill could be just [REDACTED] per year.

**Overall, your savings and benefits are expected to be around [REDACTED] in the first year after the system is installed.**



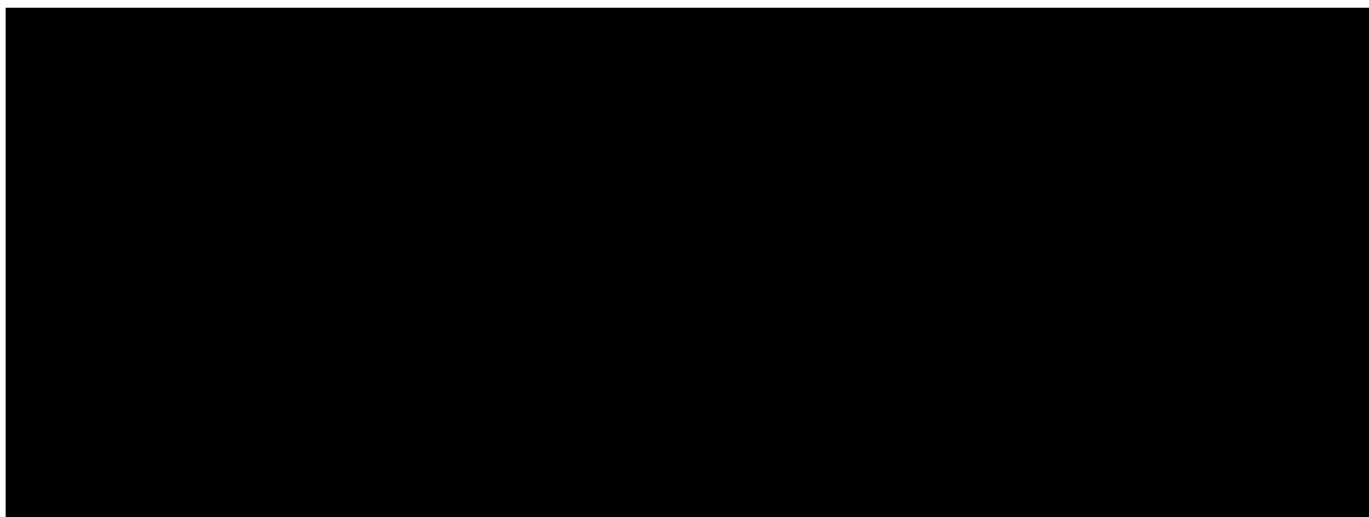
## Payback

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 rates<sup>1</sup>, we expect the system to pay for itself in 7 years.

Over a projected 25 year lifetime, we expect the system to have a **Net Present Value of [REDACTED]**. 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 2%, electricity price that rises with inflation, a discount rate<sup>1</sup> of 4%, an import electricity tariff of [REDACTED] and export payments of [REDACTED]. Returns are not guaranteed.

<sup>1</sup> 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 CO<sub>2</sub> 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**

**2,123** kg CO<sub>2</sub>  
each year

**61% will be supplied by solar, saving**

**1,288** kg CO<sub>2</sub>  
each year

**5,463 kWh will be exported, saving**

**1,160** kg CO<sub>2</sub>  
each year

**Total savings**

**2,448** kg CO<sub>2</sub>  
each year

**Your yearly CO<sub>2</sub>  
reduction of 2,448 kg  
is equal to...**



**a car ride of 8,742  
miles**



**absorbed by 112  
trees**

Disclaimer: We calculate and compare the likely annual CO<sub>2</sub> 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 CO<sub>2</sub> 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 CO<sub>2</sub> 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 CO<sub>2</sub> absorbed by trees, we base this on a rate of 25kg per tree per year. Trees absorb anywhere between 10 and 40kg of CO<sub>2</sub> per year on average, depending on a whole host of factors including the species, location, planting density, and age.

# Quote



John Cook  
St Francis Xavier Church  
HR4 9AP

Quote reference: [REDACTED]  
Quote date: 11/09/2023  
Quote by: Martin Farmer  
Quote validity: 30 days

Description of goods and services	Price
<b>Goods</b> 30x Trina Vertex S 415W All Black Mono solar panel Huawei 10kW M1 3ph hybrid inverter Em-lite EMP1 Three Phase meter Label sheet Huawei LUNA BMS Huawei *3ph* Smart Power Sensor (Meter with CTs) 1L 50mm x 50mm trunking & end caps four way metal enclosure for battery DC switch Three Phase Board (4 useable Ways) 2x AC isolator - Projoy 20A 4-pole 2x Huawei LUNA 5kWh Lithium Ion Battery 2x IMO DC isolator 16A 2p 1string 4x Pair of MC4 connectors 4x 50m reel of 4mm <sup>2</sup> solar cable 16x Renusol black universal end clamp 52x Renusol black universal mid clamp 16x Renusol silver end cap 68x Renusol slate roof hook 16x Renusol rail splice 8x Renusol slate screw (bag of 21) 22x Renusol silver rail 3300mm	

Services  
scaffold  
labour  
misc

**Total before VAT**

**VAT at 0%**

**Total including VAT**