

CSGH Higher Tregarne Solar Park CO₂ Analysis Report

March 2019

Higher Tregarne Solar Park

CO₂ Analysis Report

Executive Summary

Aardvark Certification Ltd (ACL) has been instructed by John Laing Environmental Assets Group Ltd to assess and report against the carbon savings achieved by their 4.92MW solar park located in Higher Tregarne, Cornwall. This assessment considers the CO₂ savings made as a result of the solar park's energy production and export to the grid.

Asset Introduction

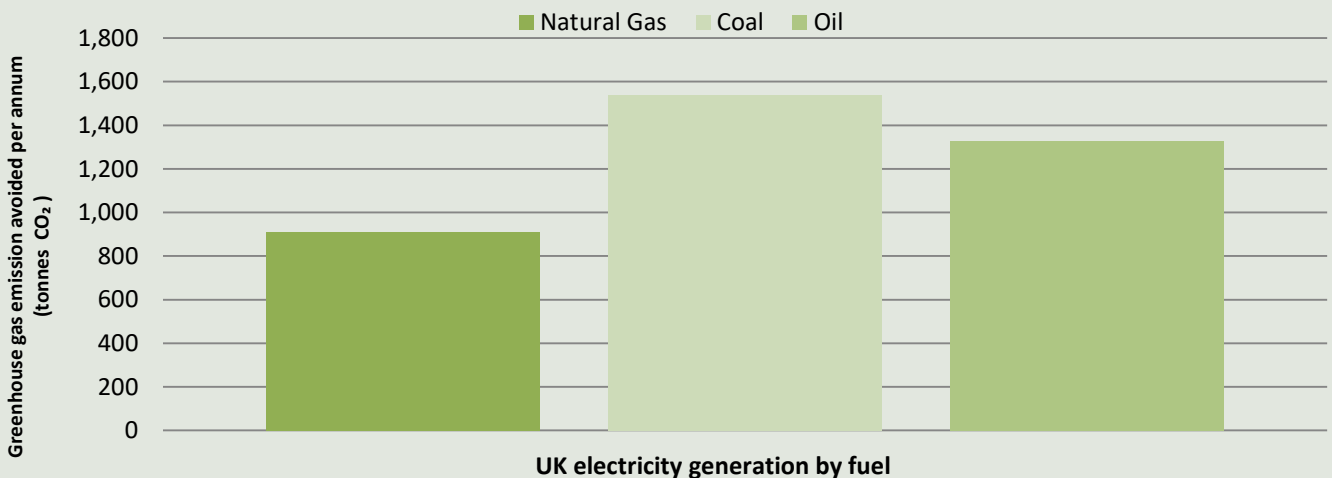
The Higher Tregarne Solar Park comprises of an array of ground mounted solar panels giving a total installed capacity of 4.92MW. Each year an average of 4,945MWh of renewable electricity has been produced. Since commissioning in March 2014 the solar park has produced 23,937MWh of electricity. During the course of the installations total lifetime it is anticipated that up to 109,110MWh will be produced.

The renewable energy generated by the solar park is fed directly into the grid via the transformer. The grid management system converts the current generated by the generator into an AC current according the requirements and standards given by the local utilities operator.



CO₂ Savings

The preceding summary of energy generation from the solar park enables illustration of the quantities of CO₂ that have been avoided had the Higher Tregarne solar parks annual electricity production (4,945MWh) been produced by conventional fossil fuel sources.



GHG Emissions Avoided

Fuel Type	Average Annual (tonnes CO ₂ e)	Lifetime Saving (tonnes CO ₂ e)
Natural Gas	910	20,072
Coal	1,538	29,275
Oil	1,327	33,946

Higher Tregarne Solar Park

CO₂ Analysis Report



Energy Production

As there are no green house gas emissions associated with the operational phase of a solar park, the renewable energy produced by the Higher Tregarne Solar Park offsets 100% of the equivalent fossil fuel derived energy.

Total Energy Produced (per annum)			UK Generated Electricity	Solar PV Generated Electricity
			0.28307	0.000
Electricity	4,945,000	kWh	1,399,781	0.00
				1,399,781

What do these savings mean?

The forecast CO₂ savings the Higher Tregarne Solar Park will achieve over its lifetime is equivalent to:

- removing the combined emissions of 567 medium sized diesel cars every year from UK roads for the lifetime of the asset.
- Power 1,326 residential properties based upon the national average electricity consumption statistics.
- Provide enough power to drive a Nissan Leaf 14,54,118 million miles a year – equivalent to driving 584 times around the circumference of the earth
- Boil enough water for 865 million cups of tea

CO₂ Forecast

Based on the quantity of electricity the solar park produces each year, an average of 1,400 tonnes CO₂e per annum will be offset compared to the emissions associated with electricity produced for the UK Grid. It is expected that during the course of the solar parks remaining 20.2 years of operational life, a further 24,110 tonnes CO₂e will be saved.

Other Emissions to Air Avoided

In addition to offsetting CO₂ emissions, other greenhouse gas emissions are also avoided including CH₄ and N₂O. Based on the amount of electricity produced by the Higher Tregarne Solar Park per annum, emissions of these gasses which have been avoided have been calculated and shown below.

CO ₂ e of CH ₄ emissions avoided kg/yr	CO ₂ e of N ₂ O emissions avoided kg/yr
3,264	7,566

Community Benefits

As well as the various environmental benefits the Higher Tregarne Solar Park delivers, it also contributes directly to the local community. A fund has been established which the solar park contributes to on an annual basis. A sum of £24,600 was paid in to the fund in 2015 with an ongoing annual RPI linked payment of £5,449 being paid to the fund for the lifetime of the project.

The fund benefits the Mawnan Parish Council who can use the proceeds for the development of projects or endeavours within the area that have measurable local community benefit with preference given to projects that promote sustainability.

Higher Tregarne Solar Park

CO₂ Analysis Report



Methodology

This report has been prepared in good faith by Aardvark Certification Ltd based on data obtained from the owner/operator of the asset reviewed. Our calculations of CO₂ savings are based on IFI Approach to GHG Accounting for Renewable Energy Projects. Baseline Emission Factors used in this analysis are taken directly from the Department for Business, Energy & Industrial Strategy Greenhouse gas reporting: conversion factors 2018.

Liability

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