

Amber Fryingdown Solar Park

CO₂ Analysis Report

March 2019

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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 4.9MW solar park located near Ellisfield, Basingstoke, Hampshire. This assessment considers the CO₂ savings made as a result of the solar park's energy production and export to the grid.

Asset Introduction

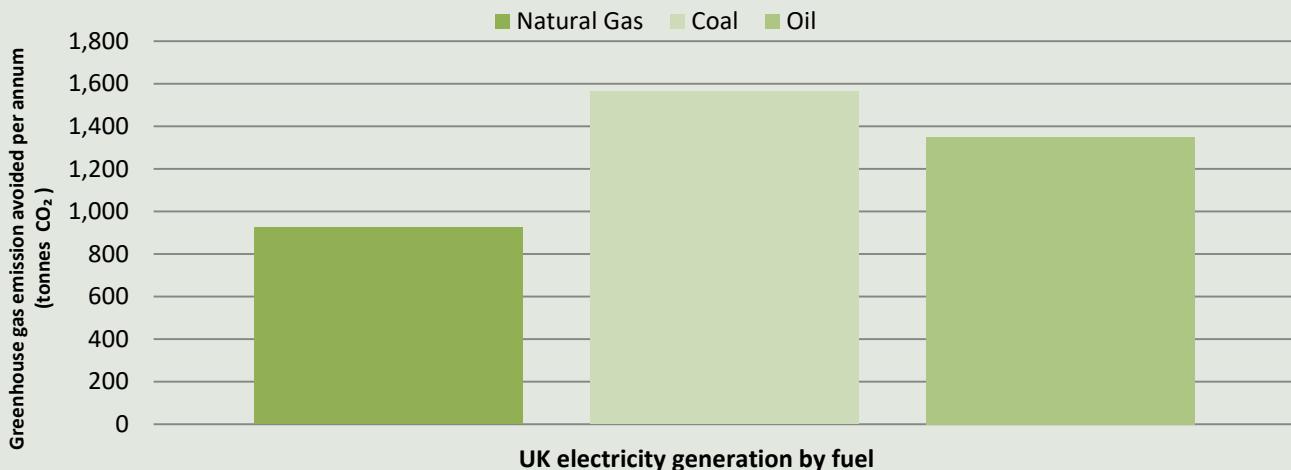
The Amber Fryingdown Solar Park comprises of an array of ground mounted solar panels giving a total installed capacity of 4.9MW. Each year an average of 5,027MWh of renewable electricity has been produced. Since commissioning in February 2012 the solar park has produced 34,790MWh of electricity. During the course of the installations total lifetime it is anticipated that up to 120,937MWh 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 Amber Fryingdown solar park's annual electricity production (5,027MWh) been produced by conventional fossil fuel sources.



GHG Emissions Avoided

Fuel Type	Average Annual (tonnes CO _{2e})	Lifetime Saving (tonnes CO _{2e})
Natural Gas	925	22,248
Coal	1,564	32,449
Oil	1,349	37,626

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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 Amber Fryingdown Solar Park offsets 100% of the equivalent fossil fuel derived energy.

Total Energy Produced (per annum)		UK Generated Electricity	Solar PV Generated Electricity
	Conversion factors	0.28307	0.000
Electricity 5,027,000 kWh	CO ₂ Equivalent (kg CO ₂ e)	1,422,993	0.00
	CO ₂ Difference (kg CO ₂ e)		1,422,993

What do these savings mean?

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

- removing the combined emissions of 629 medium sized diesel cars every year from UK roads for the lifetime of the asset.
- Power 1,348 residential properties based upon the national average electricity consumption statistics.
- Provide enough power to drive a Nissan Leaf 14,785,294 million miles a year – equivalent to driving 594 times around the circumference of the earth
- Boil enough water for 880 million cups of tea

CO₂ Forecast

Based on the quantity of electricity the solar park produces each year, an average of 1,423 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 18.1 years of operational life, a further 24,386 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 Amber Fryingdown 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
3,318	7,691

Community Benefits

As well as the various environmental benefits the Amber Fryingdown Solar Park delivers, it also contributes directly to the local community. The renewable energy scheme sponsors a community notice board contributing £1,000 per annum to fund the board and pay for its upkeep. The notice board is for the benefit of Ellisfield and is managed by Ellisfield Parish Council.

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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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