

Cranmer Country Cottages Carbon Footprint Report

Overall Total Emissions

Organisations can dual-report their emissions in order to take advantage of the benefits of low-emission green tariffs, exported renewable electricity and other carbon emissions offsets.

These must be Qualifying and Certified offsets in order to be reported in this way.

The graph below (Figure 1) shows the total emissions for the business (including all heating oil, LPG and electricity) for each year calculated on the 2019 conversion factors (Blue line) in order to demonstrate the actual emissions savings of the business through reduced consumption rather than the benefits of the greening of electricity supplies in the UK. This is referred to as a 'Location' based report as the emissions are calculated from the units used within each scope and the average conversion factor for the UK electricity grid.

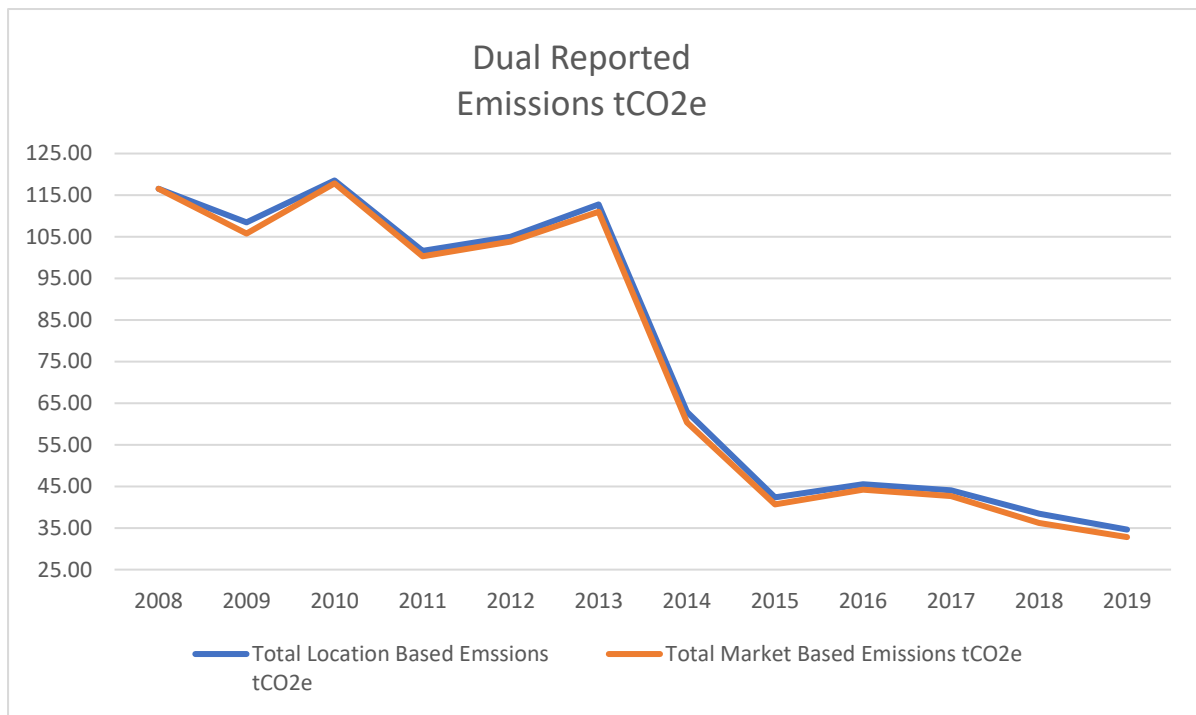


Figure 1: Total Carbon Emissions Dual Report for Cranmer Country Cottages Based on 2019 Conversion Factors

The red line shows the emissions based on the total consumption minus the excess renewable electricity generated by wind and solar PV that it has been assumed is exported back to the grid. It has been assumed that 75% of the renewable electricity generated on site is used within the business and 25% is exported back to the grid.

This measure of emissions (Market Based Emissions) may also be used to indicate carbon emissions offsetting from purchasing certified green electricity tariffs or carbon offsetting credits. It has been assumed these are not in place at this time. Data used for these calculations is shown in Tables 1 and 2 at the end of this report.

The Breakdown of Scope 1 and Scope 2 Emissions

The Scope 1 emissions include those from operations within direct control of the business. This includes heating oil and LPG consumption at Cranmer Country Cottages (Figure 2) both of which have fallen substantially since the installation of biomass district heating, ground source heat pumps and solar thermal water heating.

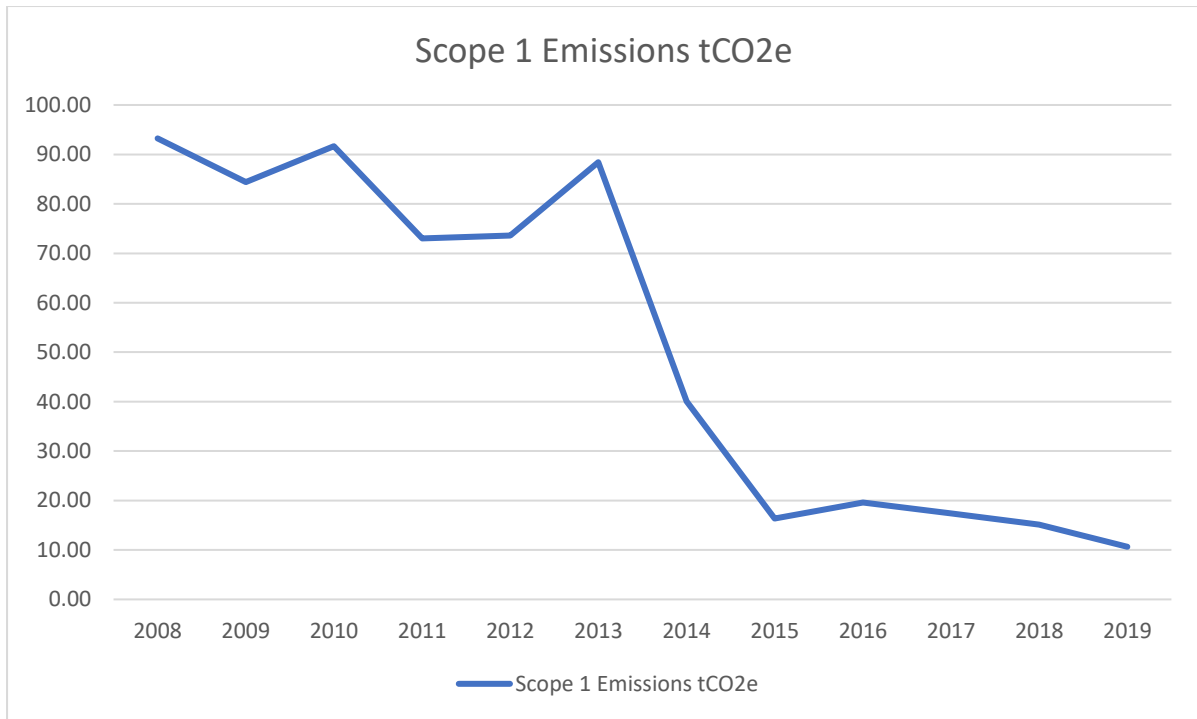


Figure 2: Scope 1 (Direct) Emissions at Cranmer Country Cottages Based on 2019 Conversion Factors

The Scope 2 emissions at Cranmer Country Cottages covers the electricity consumption (Figure 3). The blue line shows the Location based emissions calculated from the units of imported electricity (kWh) per year and the official 2019 conversion rates for the UK grid.

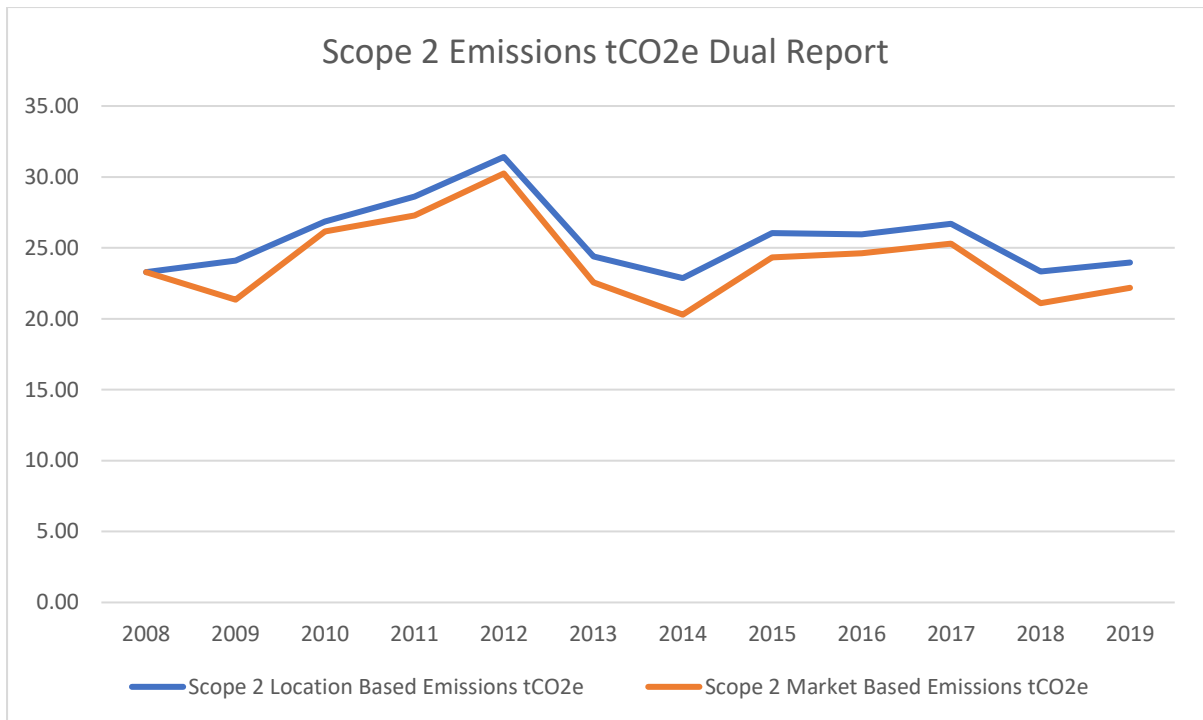


Figure 3: Scope 2 (Indirect) Emissions at Cranmer Country Cottages Based on 2019 Conversion Factors

The red line shows the adjusted (dual reported) market-based emissions which take into account the assumed excess renewable electricity generated on site and exported to the grid.

This is an example based on an assumed export rate of 25% of the electricity generated on site for your reference and more accurate exporting figures may be required.

Normalised Carbon Emissions Reporting

The total emissions data reported above do not allow for changes within a business' structure, premises portfolio or productivity. In order to more accurately assess the energy efficiency or carbon footprint of a business each year's emissions needs to be normalised against a suitable metric.

In the case of accommodation one such metric is occupancy rate, in the case of Cranmer Country Cottages this is measured in the number of bed-nights per year.

When the total carbon emissions figure for the business is normalised against the bed night figure it can be seen that the emissions per bed/night drops from 0.034tCO₂e in 2008 to 0.005 in 2015 (Figure 4), from where it has stabilised.

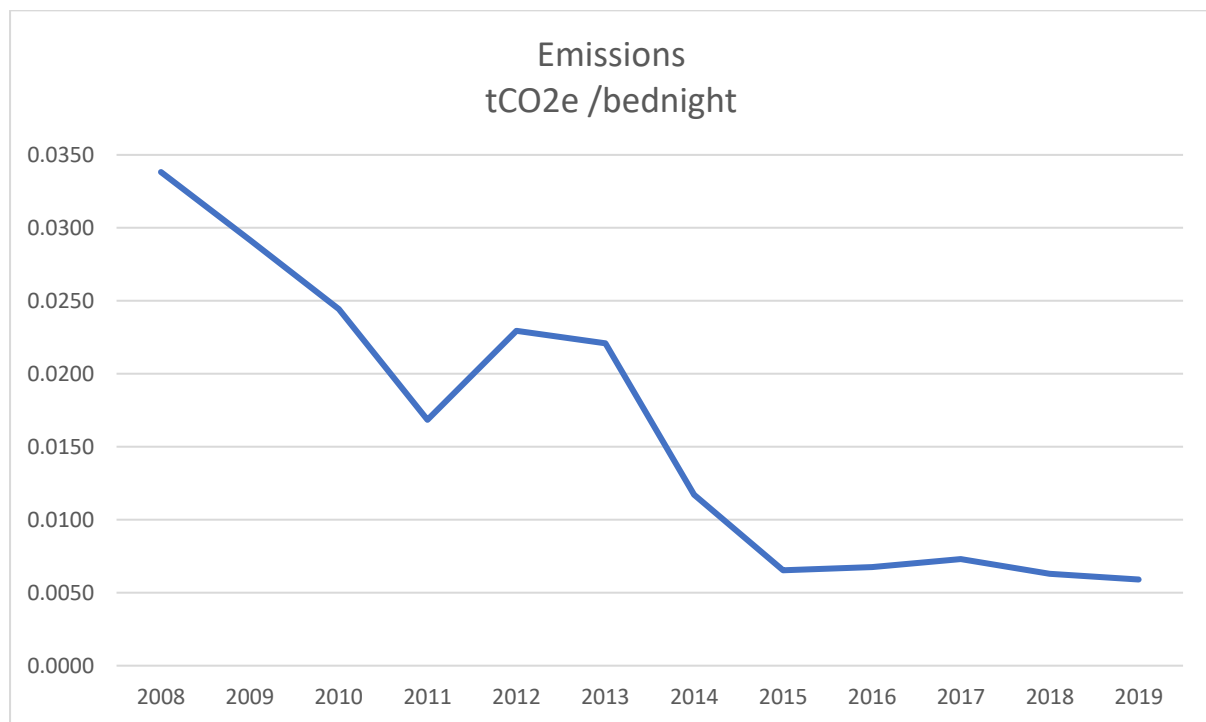


Figure 4: Normalised Carbon Emissions Based on Occupancy Rates Based on 2019 Conversion Factors

Emissions Saved Since 2008

Calculating the tCO₂e emissions based on the actual conversion factors for each has been carried out to establish a measure of the actual emissions from the business for the 12-year period since 2008 compared to the emissions it may have produced had none of the emissions reduction improvements been carried out.

The Total of the emissions made, calculated for each year's specific conversion factors, is 1083tCO₂e (Table 3).

Had the emissions remained at the 2018 level of 125.19tCO₂e/year the total emissions for the 2008 to 2019 period would have been 1502tCO₂e.

Had this level continued, the emissions from the business would have been 420tCO₂e more than that calculated to have been actually emitted.

Assumptions

The published conversions factors for 2012 have been applied to the years 2008 to 2012 as the data was not readily available for the years prior to that. For each subsequent year the published conversion factors for the corresponding year have been applied.

No correction has been made for the level of occupancy for each year as, in the interests of a conservative estimate for the total emissions savings made, it has been decided that the base level consumption of the facility, whether occupied or not, would be unduly distorted.

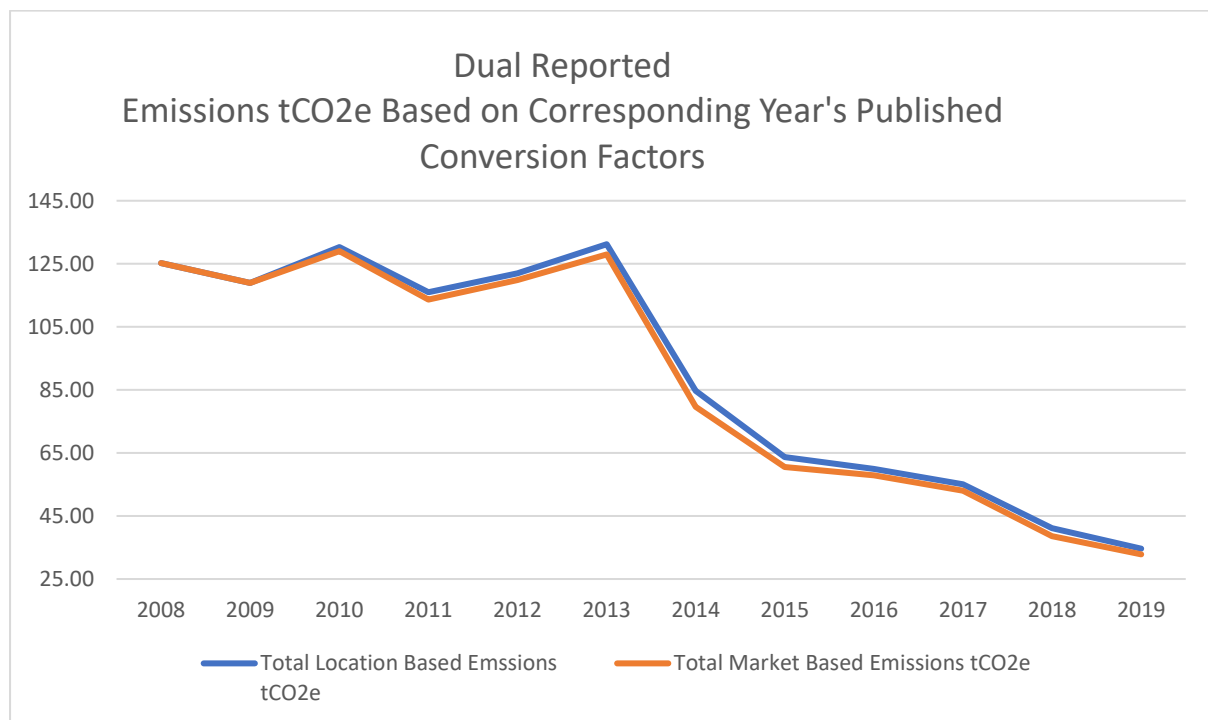


Figure 5: Dual Reported Total Emissions Based on Corresponding Year's Conversion Factors

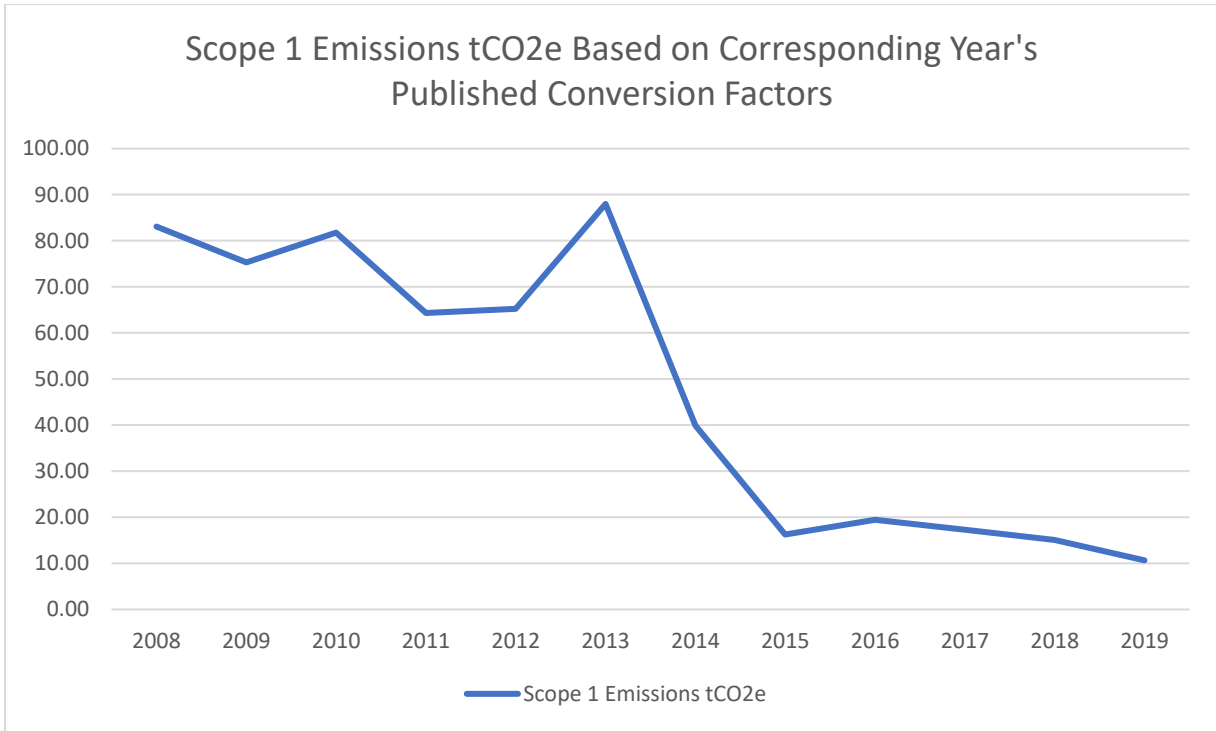


Figure 6: Scope 1 Emissions Based on Corresponding Year's Conversion Factors

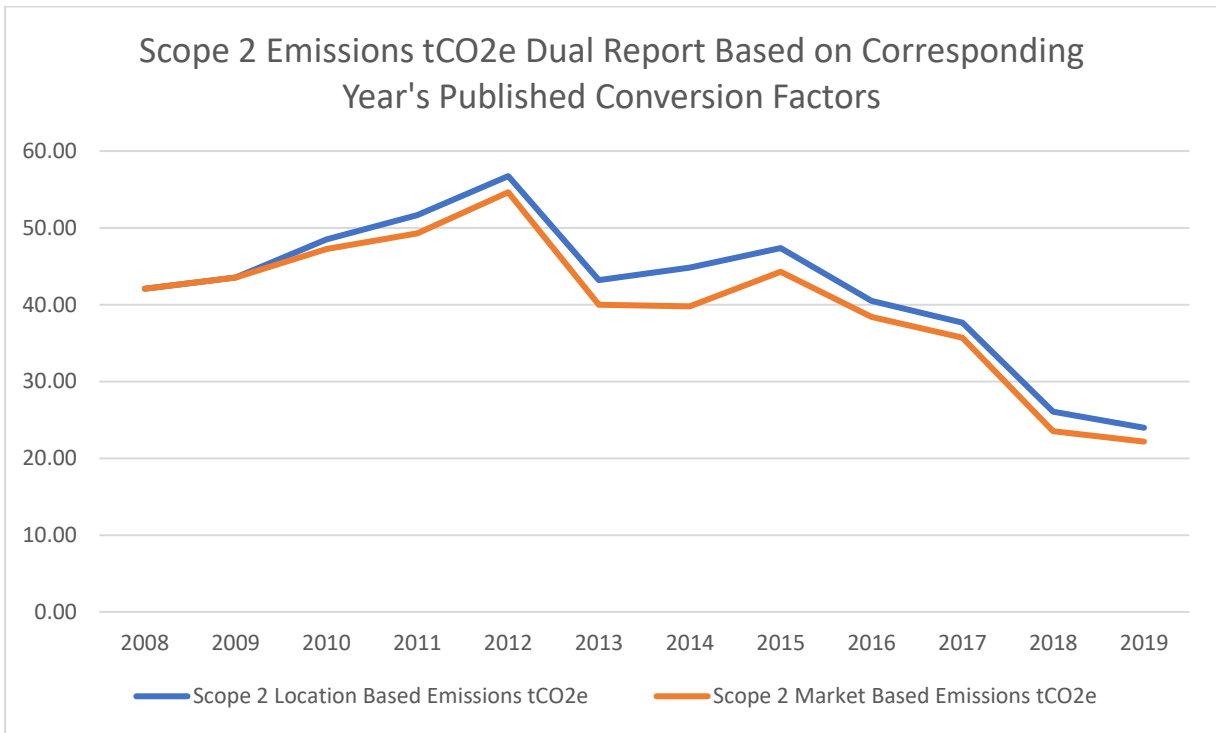


Figure 7: Scope 2 Emissions Based on Corresponding Year's Conversion Factors

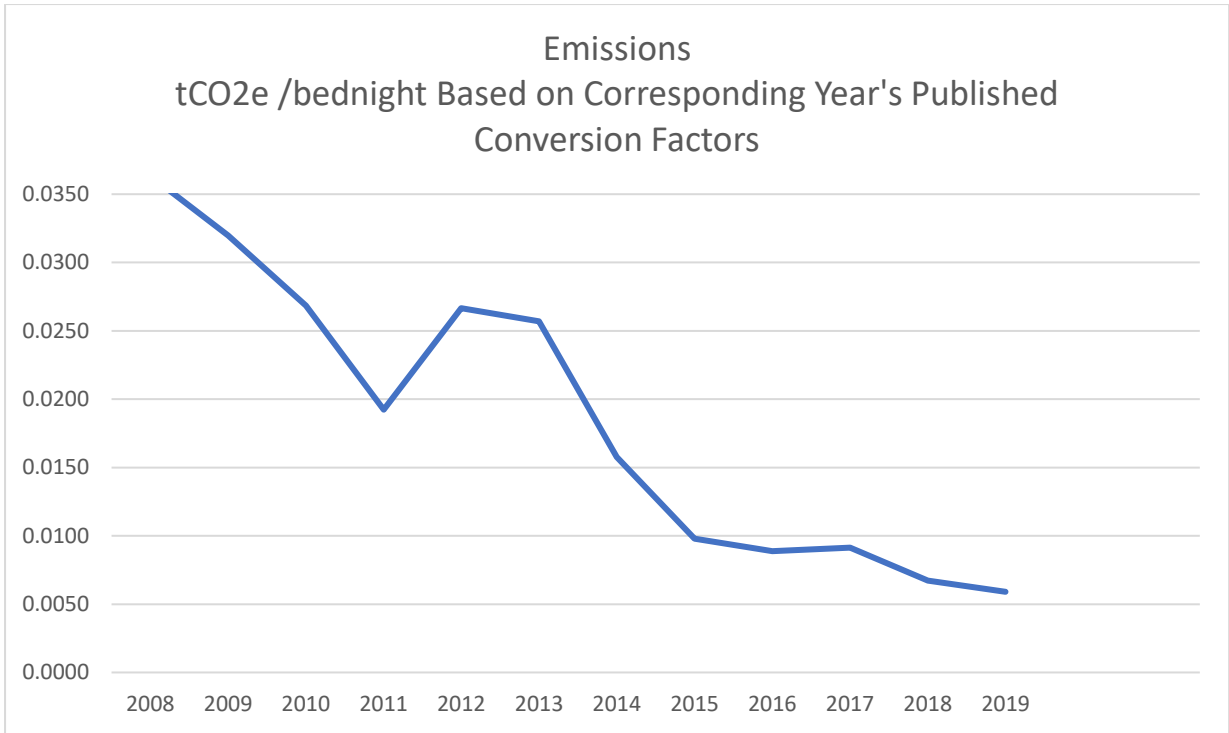


Figure 8: Emissions Per Bed/Night Based on Corresponding Year's Conversion Factors

Table 1: Consumption Data Supplied by Cranmer Country Cottages and the Associated Carbon Equivalent Emissions Based on 2019 Conversion Factors

Year			2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019	
Emission scope	Category		Consumption	2008 Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e
Direct Emissions (scope 1)	Liquid Fuel	LPG_litres	16411	28.13	15216	26.08	16278	27.90	10236	17.55	11678	20.02	10413	17.85	5425	9.30	2556	4.38	1489	2.55	0	0.00	2378.00	4.08	1736	2.98
		Burning oil (heating)_litres	21218	65.11	19000	58.30	20786	63.78	18072	55.46	17464	53.59	22990	70.55	10026	30.77	3909	12.00	5556	17.05	5666	17.39	3592.00	11.02	2500	7.67
Imported Emissions (scope 2)	Electricity	Electricity	73701	23.29	76297	24.11	84951	26.84	90532	28.61	99400	31.41	77173	24.39	72366	22.87	82380	26.03	82141	25.95	84498	26.70	73842.00	23.33	75877	23.98
Indirect Emissions (scope 3)	Water supply and treatment Non Business Owned Mileage	Water supply																								
		Diesel: Small car_miles																								
Total Emissions tCO2e				116.53		108.49		118.53		101.61		105.02		112.78		62.93		42.41		45.56		44.09		38.43		34.62
Total number of bednights				3445		3719		4851		6030		4578		5104		5376		6498		6748		6028		6109		5864
tCO2e/bednight				0.034		0.029		0.024		0.017		0.023		0.022		0.012		0.007		0.007		0.007		0.006		0.006

Table 2: Renewable Energy Generation at Cranmer Country Cottages and the Assumed Excess Renewable Electricity Exported to the Grid

Renewable Generation			2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020	
			Consumption	2008 Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e
Wind	75%	Electricity	0		0	2.76	6544	2.07	12634	3.99	8315	2.63	11051	3.49	16329	5.16	8304	2.62	4867	1.54	5582	1.76	14272.50	4.51	12290	3.88		0.00
Solar PV	75%	Electricity	0	0.00	0	0.00	0	0.00	0	0.00	2747	0.87	6213	1.96	8136	2.57	7836	2.48	7867	2.49	7713	2.44	7015.50	2.22	4836	1.53		0.00
Pool Solar Thermal	100%	Electricity	0	0.00	0	0.00	7000	2.21	10000	3.16	9800	3.10	9800	3.10	9800	3.10	9000	2.84	9000	2.84	0	0.00	0.00	0.00	0	0.00		0.00
Swallow Cott Solar Th	100%	Electricity	0	0.00	0	0.00	0	0.00	1733	0.55	1733	0.55	1733	0.55	1733	0.55	1733	0.55	0	0.00	0	0.00	0.00	0.00	0	0.00		0.00
Eco Barns Solar Therm	100%	Electricity	0	0.00	0	0.00	2600	0.82	2600	0.82	2600	0.82	2600	0.82	2600	0.82	261	0.08	2755	0.87	2204	0.70	2194.00	0.69	1611	0.51		0.00
Eco Barns Gnd Source	100%	Electricity	0	0.00	0	0.00	30000	9.48	30000	9.48	30000	9.48	30000	9.48	30000	9.48	30270	9.56	35550	11.23	29420	9.30	32870.00	10.39	30000	9.48		0.00
District Biomass	100%	Electricity	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	177766	56.17	250780	79.24	264527	83.59	243019	76.79	252580.00	79.81	279612	88.35		0.00
Renewable Energy Exported																												
			Consumption	2008 Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e
Wind	25%	Electricity	0		0	2.76	2181	0.69	4211	1.33	2772	0.88	3684	1.16	5443	1.72	2768	0.87	1622	0.51	1861	0.59	4757.50	1.50	4097	1.29		0.00
Solar PV	25%	Electricity	0	0.00	0	0.00	0	0.00	0	0.00	916	0.29	2071	0.65	2712	0.86	2612	0.83	2622	0.83	2571	0.81	2338.50	0.74	1612	0.51		0.00

Table 3: Consumption Data Supplied by Cranmer Country Cottages and the Associated Carbon Equivalent Emissions Based on the Conversion Factors Published for each Year

Year			2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		Total Since 2008			
Emission scope	Category		Consumption	2008 Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e	Consumption	Total tCO2e						
Direct Emissions (scope 1)	Liquid Fuel	LPG_litres	16411	28.30	15216	26.24	16278	28.07	10236	17.65	11678	20.14	10413	17.49	5425	9.17	2556	4.34	1489	2.52	0	0.00	2378.00	4.07	1736	2.98				
		Burning oil (heating)_litres	21218	54.82	19000	49.09	20786	53.70	18072	46.69	17464	45.12	22990	70.50	10026	30.71	3909	11.95	5556	16.91	5666	17.33	3592.00	11.01	2500	7.67				
Imported Emissions (scope 2)	Electricity	Electricity	73701	42.07	76297	43.55	84951	48.49	90532	51.68	99400	56.74	77173	43.21	72366	44.82	82380	47.36	82141	40.50	84498	37.66	73842.00	26.05	75877	23.98				
Indirect Emissions (scope 3)	Water supply and treatment Non Business Owned Mileage	Water supply																												
		Diesel: Small car_miles																												
Total Emissions tCO2e				125.19		118.88		130.26		116.02		121.99		131.21		84.71		63.65		59.93		55.00		41.12		34.62	1083	Total tCO2e emissions since 2008		
Total number of bednights				3445		3719		4851		6030		4578		5104		5376		6498		6748		6028		6109		5864	64350	Total Bed/nights		
tCO2e/bednight				0.036		0.032		0.027		0.019		0.027		0.026		0.016		0.010		0.009		0.009		0.007		0.006	12	no of years 2008-2019 inclusive		
tCO2e/bednight baseline				0.036		0.036		0.036		0.036		0.036		0.036		0.036		0.036		0.036		0.036		0.036		0.036	1502	Total if unchanged since 2008		
																											420	tCO2e saved		