

**Chimney Sheep total operation CO2 and money savings report.**  
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**Chimney Sheep**

A Chimney Sheep blocks domestic chimneys over an open fire, when the fire is not in use. The aim of the Chimney Sheep is to decrease heating loss from households by reducing the air that is being lost through the chimney.

**Objectives**

The objective of this project is to use test data from previous analysis of the Chimney Sheep alongside the Chimney Sheep sales figures to calculate the cumulative amount of carbon and money saved by customers throughout the lifetime of Chimney Sheep sales.

**Methods**

The company provided the total sales data of Chimney Sheep up to July 2017. The company had commissioned BSRIA to analyse the Chimney Sheep, using this data the total carbon and money savings were calculated. The detailed BSRIA report broke down savings by the type of heating that the household used. The heating types were mains gas, heating oil and electric. By using data from Ofgem, shown in Table 1, it was possible to apply percentages to the different heating types and their relative distribution across households in Great Britain. The ‘other heating’ shown in the Ofgem data included Oil, Coal and LPG, due to the low percentage and relative carbon outputs and costs of each of the heating types within ‘other heating’ the percentage was used to represent heating oil.

**Table 1 Number of households by heating (Ofgem, 2015)**

		<b>Total Great Britain</b>
<b>Number of households by heating (000's)</b>	Total number of households	<b>26,253</b>
	Electrics heating systems	<b>2,231</b>
	Mains gas heating	<b>22,094</b>
	Other heating	<b>1,928</b>
<b>Percent of households by heating</b>	Electric heating	<b>8.5%</b>
	Mains gas heating	<b>85.2%</b>
	Other Heating	<b>7.3%</b>

By breaking down the heating types in to relative percentages, a more accurate picture of the effect that Chimney Sheep are having across Great Britain is given. The BRSIA data also showed that the amount of insertion and removal of the Chimney Sheep changes its effectiveness. The best results were between 40-300 insertions. Forty insertions cover up to 16 months and three hundred insertions covers a period of 10 years, which none of the Chimney Sheep have been in place for. To reflect this change in effectiveness the sales data was separated into up to 16 months and over 16 months.

Table 2 shows the data extracted from the BSRIA report and used in the calculations. At the request of the company, the calculations include the airflow data for both 40 m<sup>3</sup>/h and 80 m<sup>3</sup>/h.

**Table 2 Data extracted from BSRIA report for use in the cumulative analysis**

Test Cycle	Airflow m <sup>3</sup> /h	CO <sub>2</sub> Savings (tonnes/annum)			Cost Savings (£/annum)		
		Mains Gas	Heating Oil	Electric	Mains Gas	Heating Oil	Electric
1	40	0.101	0.165	0.120	13.26	24.53	24.84
40	40	0.103	0.168	0.122	13.45	24.87	25.19
1	80	0.200	0.327	0.238	26.22	48.49	49.11
40	80	0.202	0.330	0.240	26.47	48.95	49.57

### Total savings

The cumulative data in Table 3 is a compilation of the individual carbon and money saving data from the BSRIA calculations. The data represents the cumulative months of use alongside the cumulative sales data.

**Table 3 Total cumulative savings calculated**

Airflow	Total CO <sub>2</sub> Savings (tonnes)	Total money savings (£)
40 m <sup>3</sup> /h	9952.577	1465086
80 m <sup>3</sup> /h	19856.31	2895793.6

The total carbon savings for the 40m<sup>3</sup>/h data is equivalent to the CO<sub>2</sub> sequestered by 257,932 tree seedlings within their first 10 years. The 80m<sup>3</sup>/h data is equivalent to the CO<sub>2</sub> sequestered by 23,388 acres of forest in a year (EPA.gov).

### References

EPA. (2017). *Greenhouse Gas Equivalencies Calculator*. Available: [https://www.epa.gov/sites/production/files/widgets/ghg\\_calc/calculator.html#results](https://www.epa.gov/sites/production/files/widgets/ghg_calc/calculator.html#results). Last accessed 1st December 2017.

Ofgem. (2015). *Appendices for insights paper on households with electric and other non-gas heating*. Available: [https://www.ofgem.gov.uk/sites/default/files/docs/appendices\\_for\\_insights\\_paper\\_on\\_households\\_with\\_electric\\_and\\_other\\_non-gas\\_heating\\_0.pdf](https://www.ofgem.gov.uk/sites/default/files/docs/appendices_for_insights_paper_on_households_with_electric_and_other_non-gas_heating_0.pdf). Last accessed 27th November 2017.