

Carbon Footprint Estimation For Operator Members of the AVA

Introduction

In June 2021 the UK government published a Procurement Policy Note (PPN06/21) which requires companies bidding for projects over £5 million to provide a carbon reduction plan as part of their bid. This is just the latest and perhaps most visible sign that government and businesses are becoming more aware of their impact on the environment. Increasingly, the environment is being included in tenders and AVA members are being asked about their environmental credentials. One way the impact of a company on the environment is measured is the carbon footprint.

The carbon footprint is a measure of the amount of global warming gases the company is responsible for emitting as a result of its operations. It is usually divided into 3 categories or “Scopes”.

- **Scope 1** emissions are direct greenhouse gas emissions (generally carbon dioxide or methane) that occur from sources that are controlled or owned by the company, for example emissions resulting from fuel combustion in boilers, roasters or vehicles.
- **Scope 2** emissions are indirect greenhouse gas emissions associated with the purchase of electricity, heat, or cooling. They are accounted for by the company as they are a result of the company's energy use.
- **Scope 3** emissions include all sources not within the company's scope 1 and 2 and include things like energy usage of machines, end of life treatment of assets, employee commuting and business travel. Scope 3 emissions often represent the majority of a company's total greenhouse gas emissions. One of the most important tasks in working out the carbon footprint is to decide which aspects of the company's business are going to be included.

Companies generally have the data needed to calculate their scopes 1 and 2 emissions from utility invoices and bills for diesel or petrol. However, it is generally more difficult and time consuming to work out the scope 3 emissions. Because clients understand the difficulties involved the best response to a question on carbon footprint is to provide the scope 1 and 2 information and say which aspects of scope 3 you are considering.

The Carbon Trust has produced an informative guidance document available on <https://prod-drupal-files.storage.googleapis.com/documents/resource/public/Net-Zero-SME-v4.pdf>

This note only provides guidance on how to calculate your scope 1 and 2 emissions. A further note will provide guidance on scope 3.

Calculating Scope 1 and 2

Scope 1 relates to direct fuel consumption. If you have a gas boiler, this would be the amount of gas you use in a year. If you roast coffee, it would be the amount of gas that is burnt by the roaster. It will also include the amount diesel or petrol burnt by company vehicles in selling, operating and maintaining machines. All this information will be readily available in the company.

Scope 2 emissions are those involved in production of electricity used by the company in its premises.

In order to calculate the emissions resulting from scope 1 you need the annual use of gas, petrol and diesel in the units in the table. The figures for the utilities can be found on the invoices but the figures for fuel for vehicles may need a bit more work. Once you have the usage you merely multiply by the conversion factor in the table below to give the number of kilograms of carbon dioxide per year.



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Energy Source	Unit	Conversion factor	Kg of CO ₂
Natural Gas	Cubic metres	2.02135	
	kWh (net CV*)	0.20297	
Natural Gas	kWh (gross CV*)	0.18316	
Electricity	kWh	0.21233	
Diesel	Litres	2.70553	
Petrol	Litres	2.33969	
Total			tonnes

*CV is calorific value. Most invoices quote gross CV.

The conversion factor for electricity changes each year to reflect the change in the proportions of electricity generated by coal and by renewables. The figure given is the factor for 2021. The reduction for the past few years has been roughly 9% per year.

Burning fuels also produces small amounts of other greenhouse gases, mainly methane and nitrogen oxides. The amounts of these produced in connection with vending is too small to be worth measuring.

The figure in tonnes in the chart is your carbon footprint for scopes 1 and 2. This is not your total carbon footprint but it will be a good start if clients ask. Once you have your footprint then next stage is to develop a plan to reduce it.

Reducing the carbon footprint:

Once you have identified your carbon footprint for scopes 1 and 2 the next step is to plan how to reduce it year on year.

The simplest first step to reduce the carbon footprint is to change to a renewable energy tariff where the supplier guarantees that all the electricity comes from renewable sources since these emissions can be reported as zero.

Then review your uses of energy. Most energy wastage in small companies comes from equipment being left on overnight, lighting being inefficient or air conditioning being too warm. It is also worth considering losses of heat from the warehouse. Keeping the door closed or using plastic strips to reduce air movement both save money and help to keep birds out.

It may also be worth reviewing fuel usage to identify high users. Consider evaluating routes to ensure they still make fuel efficient sense. You may also find that changing the reaction times for engineers that you guarantee for clients would allow more efficient usage of their vehicles.

Operators who own their premises may choose to install solar panels to offset some of their energy usage.

Conclusion

Once you have the carbon footprint for scopes 1 and 2 you will need to consider what areas of the business should be included in scope 3.

The AVA will be providing further advice on this and on the development of a full carbon reduction plan including the options for offsetting your carbon emissions. Watch out for AVA Bulletins and Newsletters.

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