Carbon Footprint & Project Register Training - handouts

Glossary

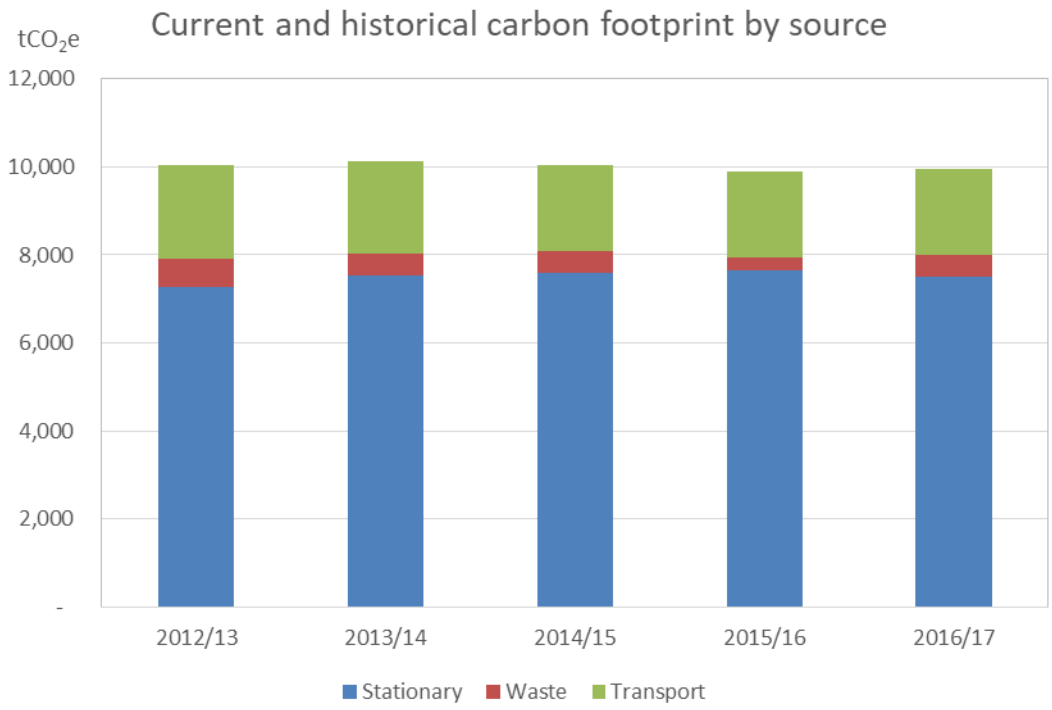
Business as Usual (BAU)	Changes to the organisation without any carbon management.
Carbon dioxide equivalent (CO_2e)	Carbon dioxide equivalent is a measure used to compare the emissions from various greenhouse gases based upon their global warming potential. For example, the global warming potential for methane over 100 years is 21. Therefore 1 tonne of methane released is equivalent to 25 tonnes of CO_2 (measured on a 100 year time horizon). Therefore CO_2e works as a single 'currency' for greenhouse gases.
Carbon emissions	Used as a shorthand to refer to Greenhouse Gas emissions that are included in the Kyoto Treaty. Carbon dioxide is the most common GHG and other gases can be measured in relation to it (see CO_2e).
Carbon reduction	An activity that reduces carbon emissions compared to a baseline scenario.
Climate Change	The large-scale, long-term shift in the planet's weather patterns or average temperatures.
Conversion factor	A numerical ratio to express a measurement from one unit to another unit e.g. miles to kilometres but also sometimes used instead of emission factor.
Decarbonisation	Usually refers to the electricity sector and refers to reducing the carbon intensity of electricity generated (emission per kWh) by increasing efficiency of supply and modal generation switching to renewables and low carbon sources.
Emission factor	The average emission rate of a given GHG for a given source, relative to units of activity.
Global warming	Refers to the recent and ongoing rise in global average temperature near Earth's surface. It is caused mostly by increasing concentrations of greenhouse gases in the atmosphere. Global warming is causing climate patterns to change. However, global warming itself represents only one aspect of climate change
Greenhouse	A gas in our atmosphere that absorbs and emits radiation within the

Gas (GHG)	thermal infrared range. There are naturally occurring greenhouse gases in our atmosphere which maintain surface temperatures in a range conducive to life. However, since the industrial revolution, anthropogenic sources of GHGs have increased hugely, leading to 40% increase in atmospheric concentration of carbon dioxide. This is causing increases in surface temperatures and the main cause of global warming and a large contributory factor in climate change. There are seven GHGs covered by the Kyoto Treaty but the main ones are carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) and action needs to be taken to reduce emissions of these.

Exercise 3a

The aim of this exercise is to encourage participants to look further at carbon footprint data. For each of the graphs below, work in pairs or small groups to answer the questions.

Graph 1



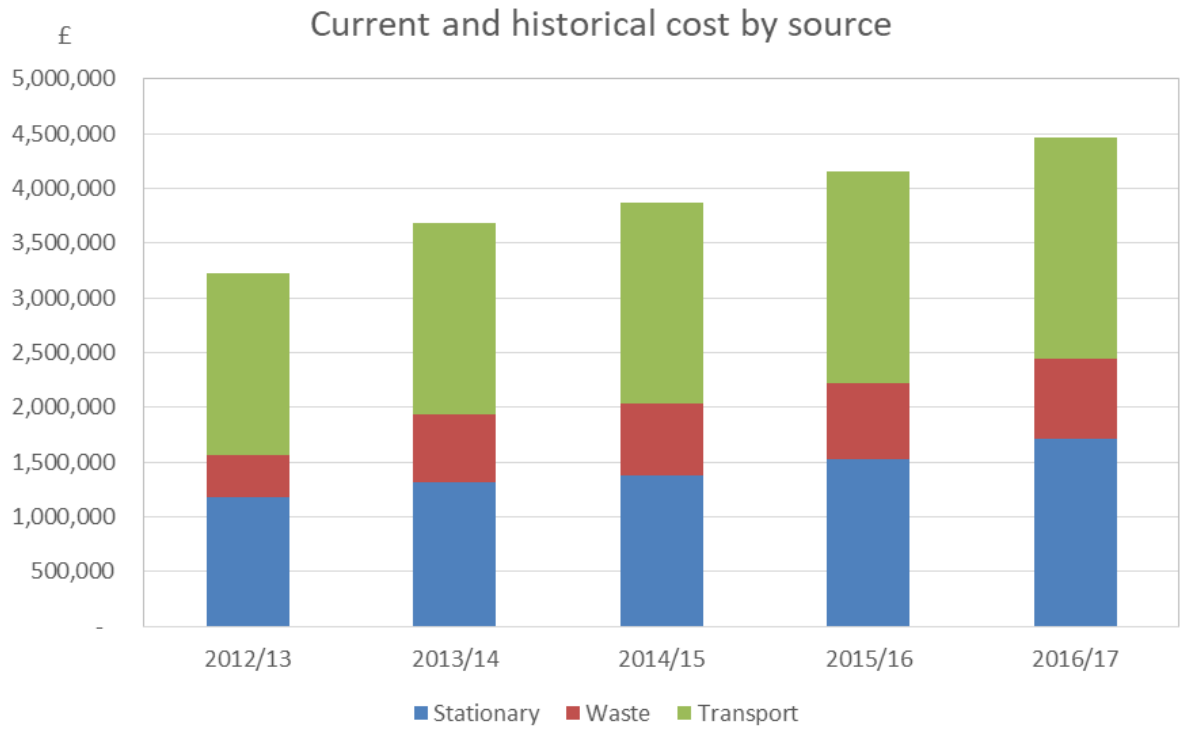
What is the most significant source of emissions for this organisation?

Stationary sources (likely to be grid electricity and natural gas) produces the majority of the carbon footprint of the organisation. This is typical of some but not all public sector organisations. Very small organisations who occupy tenanted offices are likely to have more significant emissions from travel or waste

What is the trend in emissions over time?

The emissions of the organisation are fairly static since the baseline year with relatively unchanged proportions of stationary/waste/transport emissions (the reduction in 2015/16 for waste was due to a temporary decrease in the emission factor for C&I waste to landfill).

Graph 2



What is the most significant source of costs for this organisation?

In the baseline year of 2012/13, transport was the most significant source of costs but the increase in cost of stationary sources has been faster than for transport so they are fairly evenly split in 2016/17. Waste is more significant in terms of cost than carbon.

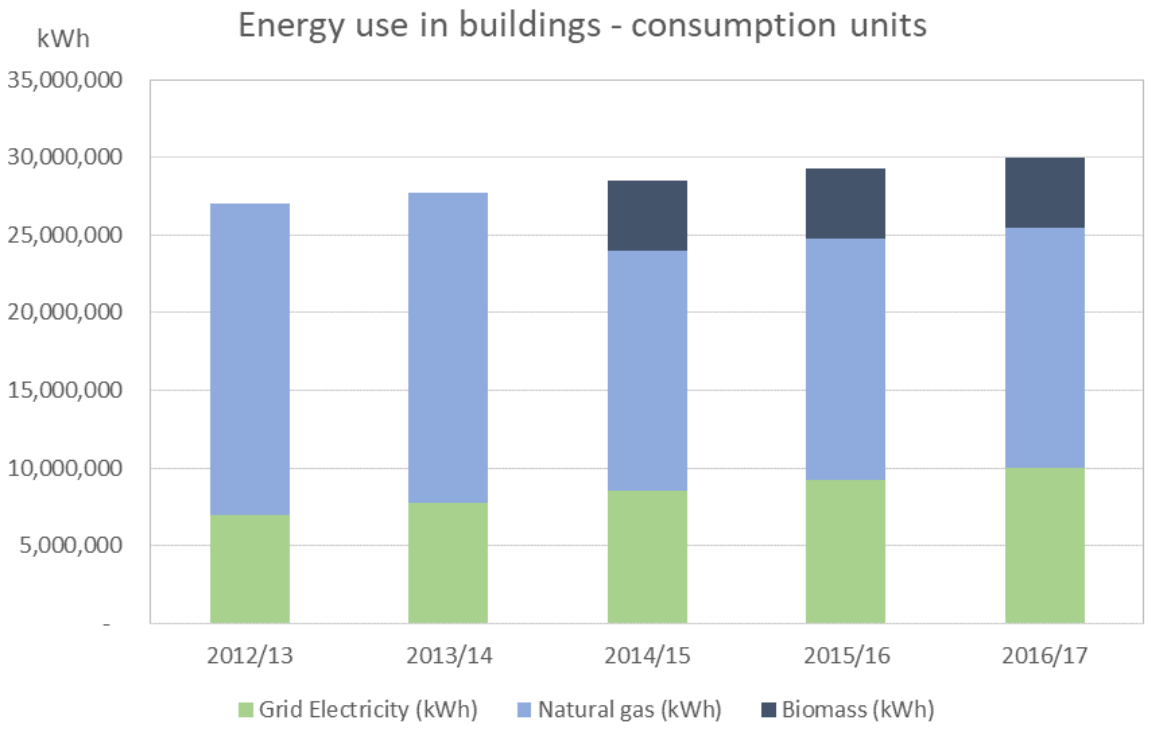
What is the trend in costs over time?

Total costs for all three categories are increasing over time.

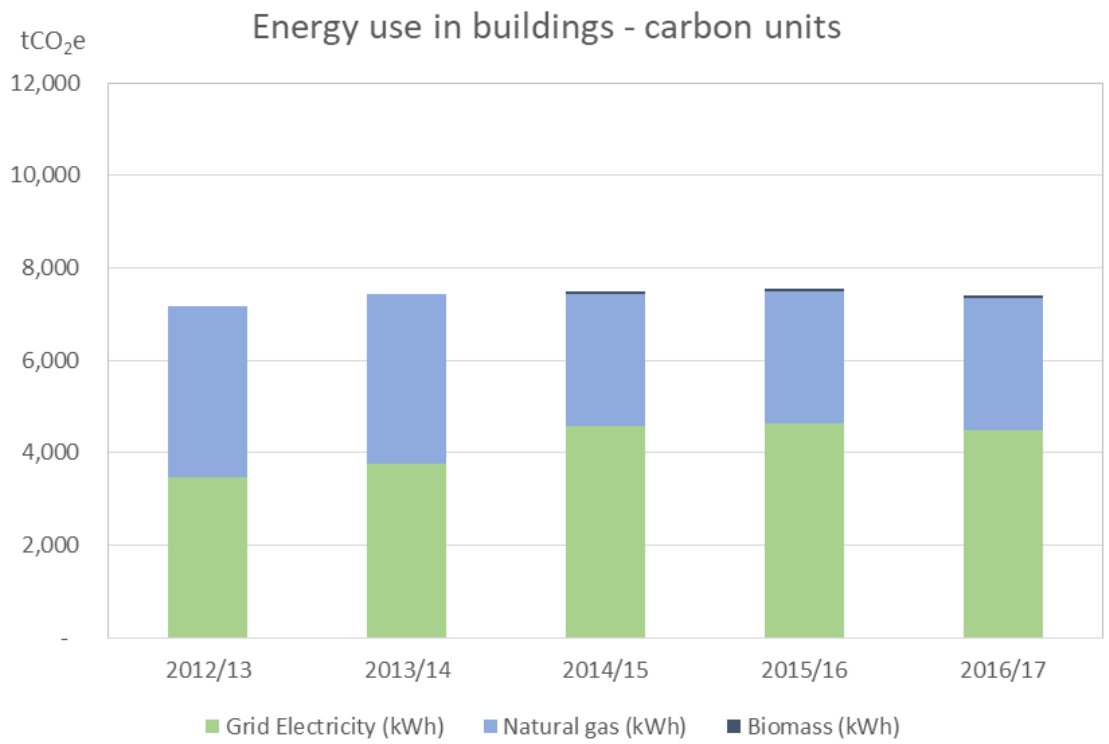
What are the implications of increasing costs?

The implication of increasing costs is often that carbon managers need to think about a business case of avoided cost increase rather than a saving on the current expenditure. Therefore, finance managers might need to be prepared for static cost profile rather than a reduction in expenditure; this is just as valuable but needs to be clearly explained.

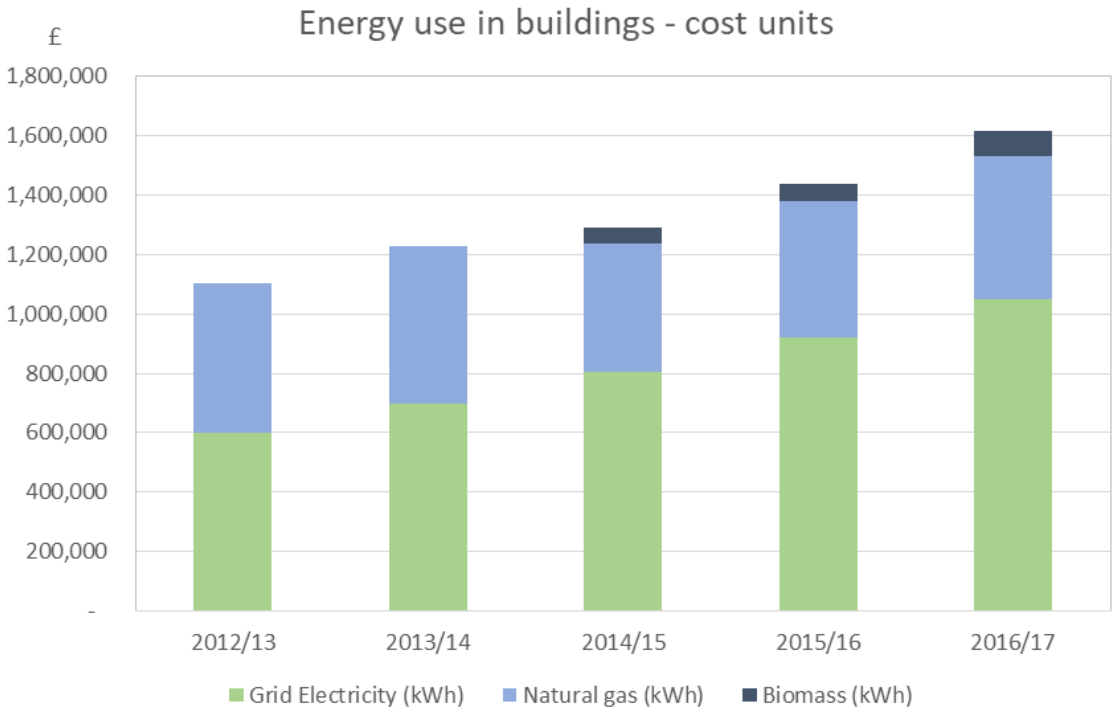
Graph 3



Graph 4



Graph 5



What is the pattern of electricity consumption over time?

Electricity consumption is increasing over time from 7,500,000 kWh in 2012/13 to around 10,000,000 kWh in 2016/17 – a 25% increase. There might be a number of reasons for this increase including more electrical equipment, longer opening hours, more staff etc.

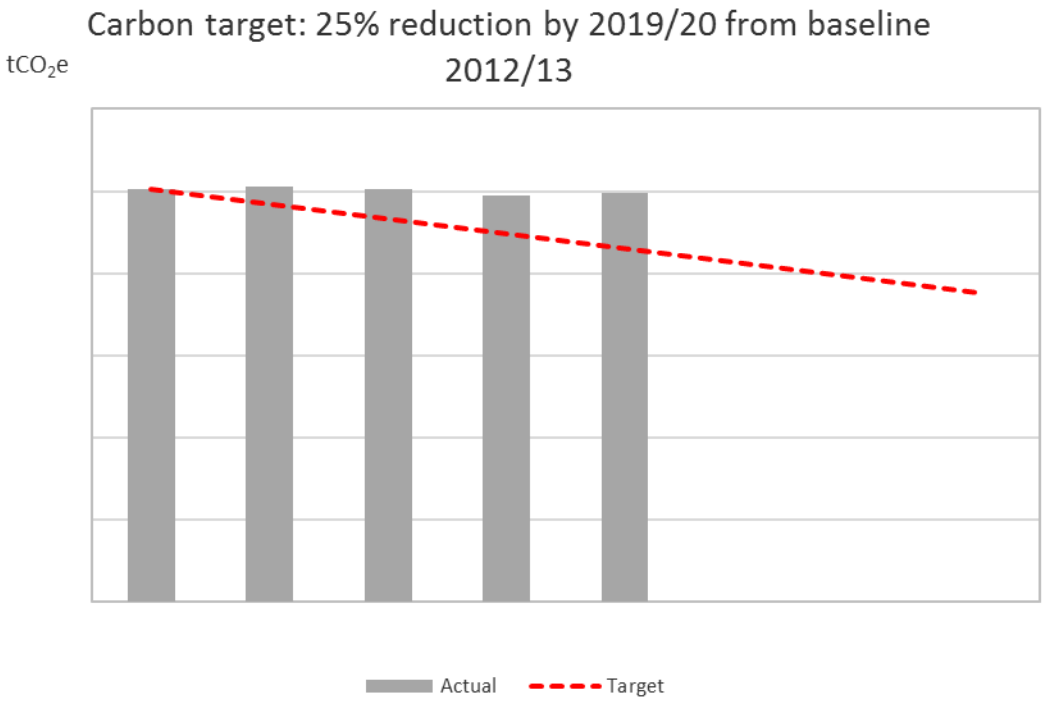
Why are carbon emissions from electricity not increasing after 2014/15?

The carbon emissions are the product of the units multiplied by an emission factor – the emission factor for the national grid is an annual average of emissions from generation and T&D losses for the UK and since 2014/15 it has decreased by about 10% per year.

What was the benefit of the biomass project installed in 2014/15?

The biomass project had the impact of reducing the consumption of natural gas and therefore reduced the overall emissions (the emission factor for biomass does not include the CO2 emissions from combustion as these are considered to be out of scope and therefore the emission factor for natural gas is much higher per kWh than biomass). It also reduces the overall cost as, although the unit cost per kWh is similar to natural gas, there is also revenue from RHI.

Graph 6



Is the organisation going to meet their target?

It is impossible to tell without knowing what the organisation has planned to reduce their footprint (carbon reduction projects) and also what is the future underlying growth of the organisation (which can be positive or negative) (this is the BAU).

However, it does not look positive and the organisation will need to make significant reduction effort in the remaining years in order to meet the target. It is important to acknowledge this state of affairs in their PBCCD reporting.