
Energy procurement and green tariffs

A guide for SMEs



Preface

Reducing energy use and sourcing cleaner energy makes perfect business sense; it saves money, enhances corporate reputation and helps everyone in the fight against climate change.

The Carbon Trust provides simple, effective advice to help businesses take action to reduce carbon emissions; the easiest ways to do this is to use energy more efficiently.

This guide provides an overview of the changing energy supply markets and types of energy supply contracts available. It addresses the issues facing small and medium sized enterprises (SMEs) when procuring energy supply contracts, considers options for low-carbon renewable energy supplies and how to measure and report the emissions associated with purchased energy.

Contents

Preface	2
Overview of energy supply in the UK	4
Trends in electricity demand and electricity generation sources	4
Trends in gas supplies and sources	6
Procurement of energy	8
The price of energy	8
Types of electricity tariff	9
Approaches to energy procurement	11
Energy use in carbon reporting	14
Introduction to scope 1 and 2 carbon emissions	14
Future of carbon reporting	16
Next Steps	17
Go online for further information	18

Overview of energy supply in the UK

Trends in electricity demand and electricity generation sources

Electricity demand

Total UK electricity generation rose dramatically in the 20th century, peaking in 2005. In 2017, the amount of electricity generated in the UK fell to its lowest level since 2005 to less than 350,000 GWh¹. This equated to a 15% decrease. Drivers for the reduction in electricity generation include the outsourcing of energy intensive industries to countries outside of the UK's borders, after a tightening of environmental regulation and improving energy efficiency. Historic electricity generation in the UK is shown in Figure 1 below. This reduction has taken place whilst the population has risen, resulting in a significant drop in the amount of electricity generated per person. Other developed countries, such as the USA, have experienced a similar transition. Electricity consumption is likely to increase in the coming years as both transport and space heating move away from fossil fuels to electrically powered options.

Electricity sources

The major change to the sources of our electricity generation in recent years has been the dramatic reduction of coal consumption. This was originally

driven by the EU's Large Combustion Plant Directive, designed to tackle air pollutants. It was this Directive that was responsible for the closure of a number of coal plants between 2012 and 2015. Since then, the UK government has made plans to close all coal plants by 2025. Most sources suggest that coal will be removed from the grid mix some time before this given that electricity generated by coal in 2017 was already less than 10% of that generated in 2013. Figure 2 illustrates the recent transition in the sources of electricity generation. Electricity previously generated from coal

is now largely generated from a mix of natural gas and renewable sources, such as solar PV, offshore and onshore wind turbines. The transition has been aided by the reduction in total UK electricity generation and has resulted in the share of generation from low-carbon sources (i.e. renewable plus nuclear) overtaking that of fossil fuels in 2017.

Figure 1: Electricity generation in the UK from 1920 to 2017, BEIS²

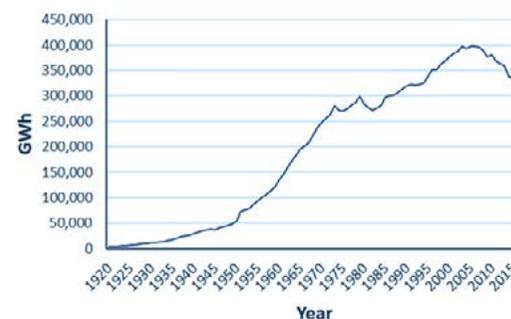
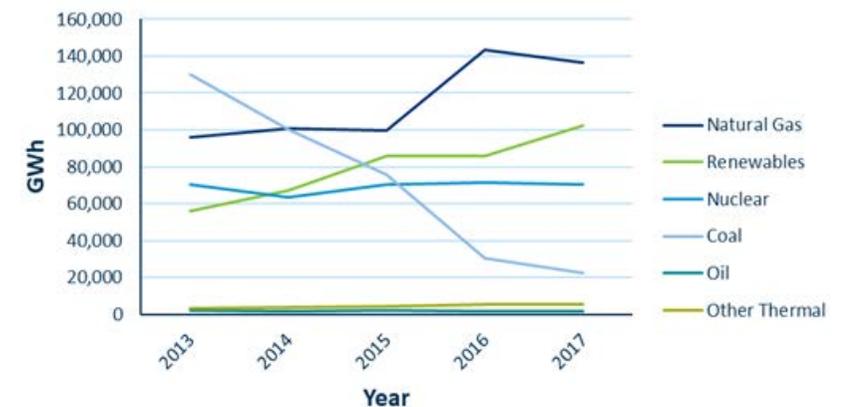


Figure 2: Sources of electricity generation from 2013 to 2017, BEIS



¹ <https://www.carbonbrief.org/analysis-uk-electricity-generation-2018-falls-to-lowest-since-1994>

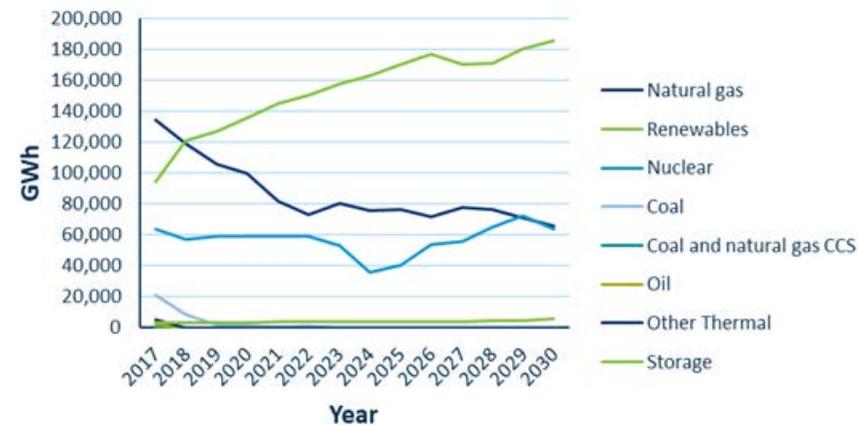
² <https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2018>

Figure 3 looks ahead at the predicted levels of electricity generation by source out to 2030 and is based on BEIS Energy and Emissions Projections. The demand for electricity generation to power electric vehicles and electric heat pumps is set to rise. However, regardless of whether overall electricity generation increases or decreases, renewables will almost certainly continue to increase their contribution to the grid mix.

What is green electricity?

Renewable electricity is electricity that has been generated from renewable non-fossil fuel energy sources, such as wind, solar, hydropower, geothermal or biofuels. In order to guarantee that electricity consumed is generated by renewable sources, it must be supported by Renewable Energy Guarantees of Origin (REGOs). Ofgem issue one REGO certificate per megawatt hour (MWh) of eligible output to generators of renewable electricity, which are passed onto the supplier following the purchase of the 'green' electricity. This certificate proves to the final customer that a given share of energy was produced from renewable sources. If backed by REGOs, you can assume an emission factor of $0\text{gCO}_2\text{e/kWh}$ when calculating the scope 2 market-based carbon emissions arising from your electricity consumption.

Figure 3: Projections of electricity generation, 2018 BEIS Updated Energy and Emissions Projections (EEP), BEIS



Trends in gas supplies and sources

Once a net exporter of natural gas, the UK now obtains more than half of its gas supply from overseas (53.5% in 2017 excluding exports and drawdown of stocks)³. As Figure 4 shows, the UK's indigenous production more than halved between 2000 and 2012 but has remained stable since then. There is an increasing reliance on imports of natural gas and liquified natural gas (LNG). As Figure 5 shows, BEIS predicts that primary energy demand for natural gas will fall by 15% between 2018 and 2030. The predicted fall in primary energy demand for natural gas reflects that natural gas will make up a smaller percentage of electricity generation due to the uptake of renewables and the shift away from gas in domestic heating, signalled by the governments pledge to ensure that all new homes will be built with low-carbon heating systems from 2025.

Primary energy demand includes the consumption by the energy industry, losses during transmission and distribution and final consumption by end users.

Figure 4: UK natural gas supply from 1998 to 2018, BEIS⁴

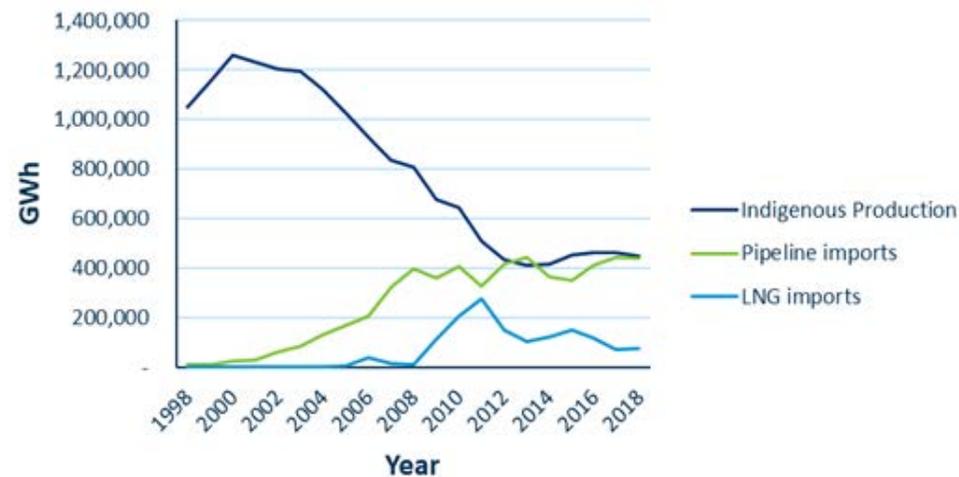
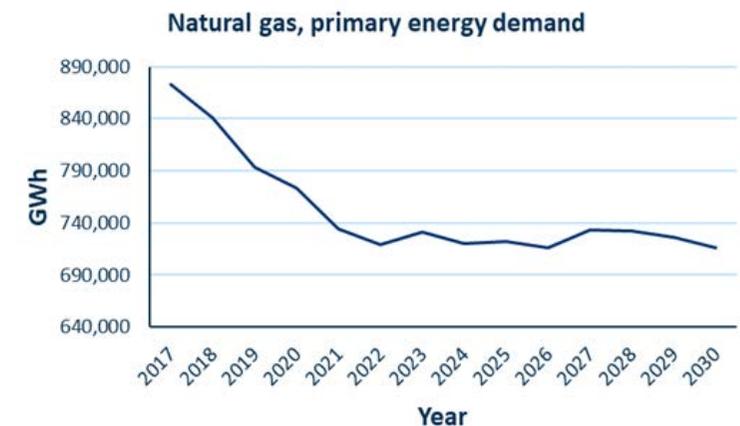


Figure 5: Projections of primary energy demand for natural gas BEIS⁵



³ <https://www.carbonbrief.org/factcheck-less-than-1-per-cent-uk-gas-supplies-come-from-russia>

⁴ <https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2018>

⁵ <https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2018>

Green gas supplies

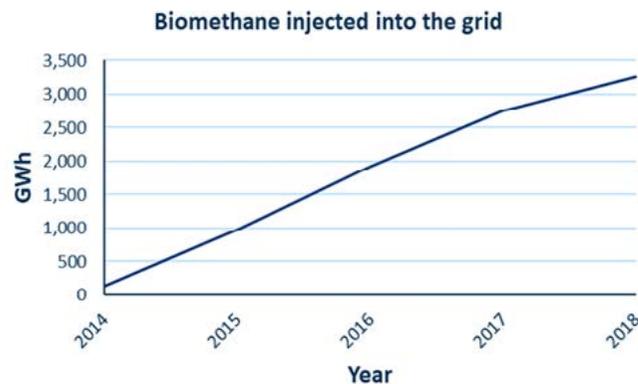
Biomethane (also known as 'green gas') can be produced from a number of sources including biogas from anaerobic digestion, landfill gas and synthetic gas ('syngas') from the gasification of biomass.

In 2018, biomethane (biogas) injections into the gas grid from installations certified under the Renewable Heat Incentive (RHI) accounted for 0.39% of gas available at terminals. Whilst only a small proportion of the total gas available in the UK, the demand for green gas is high, and the amount injected into the grid has been increasing year-on-year (see Figure 6). Various energy suppliers are offering green gas tariffs, though availability of green gas may be dependent on the local gas grid and the quantity of green gas that is required.

Only gas supported by Renewable Gas Guarantees of Origin (RGGOs) can truly be considered 'green'. RGGOs are unique identifiers for each kWh of biomethane injected into the grid and registered with either the Green Gas Certification Scheme (GGCS)⁷ or the Biomethane Certification Scheme (BMCS)⁸. Reporting of carbon

emissions from natural gas supported by RGGOs is an area that is still under development. We recommend seeking advice if you are looking to report these emissions as lower than those of methane.

Figure 6: Quantity of biomethane injected into the grid from installations certified under the Renewable Heat Incentive (RHI), BEIS⁶



⁶ <https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2018>

⁷ <https://www.greengas.org.uk/green-gas>

⁸ <http://greengastrading.co.uk/>

Procurement of energy

The price of energy

A breakdown of energy charges

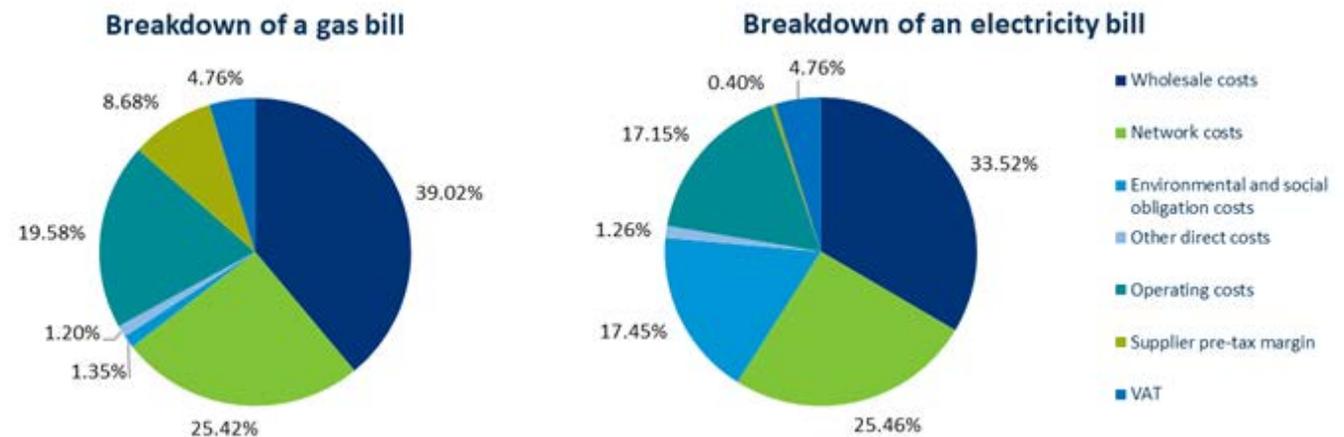
There are a number of different costs that make up our energy bills which are illustrated in Figure 7 and discussed below.

The biggest contributor to our energy bills are **wholesale costs**. These represent 39% and 34% of our gas and electricity bills respectively. Wholesale costs relate to how much your supplier pays to obtain the gas and electricity to supply you with energy. Energy prices are impacted by supply and demand. When availability is high and demand is low, prices are usually lower too. Global availability and demand for energy will affect suppliers who purchase imports.

Network costs are the next biggest contributor to energy costs. Suppliers are charged for the cost of maintaining and using UK gas and electricity networks (i.e. pipes, wires) and the balancing of supply and demand (this takes place second by second for electricity, and daily for gas). These costs are then passed onto the customer.

Environmental and social obligation costs are related to government programmes to save energy, encourage the take up of renewable energy and support customers in vulnerable circumstances.

Figure 7: Breakdown of electricity and gas bills, Ofgem⁹



These costs are significant for electricity (17%), but relatively insignificant with respect to gas (1%). An example of one of the programmes supported by these costs is the Renewable Heat Incentive (RHI) was mentioned previously.

The final significant contributor to the cost of our gas and electricity bills are **operating costs**. These costs relate to the sales, metering and billing costs that suppliers must cover in order to run the business. These costs make up a similar proportion of both our gas and electricity bills.

The other costs that make up our energy bills include the supplier pre-tax margin, VAT and other direct costs (i.e. administrative costs). It is worth noting that whilst suppliers will look to make a profit, supplier pre-tax margin is regulated by Ofgem.

⁹ <https://www.ofgem.gov.uk/consumers/household-gas-and-electricity-guide/understand-your-gas-and-electricity-bills>

Types of electricity tariff

There are a number of different types of tariffs that are available to small and medium sized enterprises (SMEs) in the UK. These include fixed term, variable-rate, time of use and green tariffs. Definitions of these tariffs are explained below.

Fixed term tariffs, also known as fixed price or fixed rate tariffs, set a specific price for the cost (per kWh) of your gas and/or electricity until a defined end-date. This does not mean that you will pay a fixed price for your electricity consumption each month - your electricity bills will vary dependent on your consumption.

Variable-rate tariffs, also known as 'standard tariffs' or 'evergreen tariffs', do not set a specific price for the cost of your energy per kWh. The price you pay per kWh of gas and/or electricity on this tariff will vary depending on market values.

Time of use tariffs alter the price of your gas and/or electricity depending on the time you use them. These tariffs will offer cheaper energy during certain hours of the day when there is lower demand on the national grid, but can also have high prices at peak hours (often in the evening).

Green tariffs operate much like fixed term tariffs, though they also match your consumption with energy generated from renewable sources.

It is advisable to review the options that best suit your business before committing with any suppliers. Outlined

below are some of the positives and negatives to each of these tariff types. The most sustainable green tariff suppliers match all the energy their customers use to renewable generation they either own or buy from other UK renewable energy generators, bundled with the REGO certificates.

Tariff	Pros	Cons
Fixed term	<ul style="list-style-type: none"> Often cheaper than other tariffs Protects you against any rises in energy prices 	<ul style="list-style-type: none"> You will not feel the benefit if energy prices are cut Exit fees may be applied
Variable-rate	<ul style="list-style-type: none"> Will increase or decrease depending on market value Normally no exit fees 	<ul style="list-style-type: none"> Often more expensive than other tariffs Will increase or decrease depending on market value
Time of use	<ul style="list-style-type: none"> Rewards flexible energy use (e.g. running equipment overnight on lower tariffs) 	<ul style="list-style-type: none"> Higher peak tariffs mean that if you are unable to shift your energy consumption within periods of low energy cost, you may see your energy bills rise
Green	<ul style="list-style-type: none"> Environmental benefits associated with lower carbon emissions from renewable energy sources and biomethane Reputational benefits from choosing a low carbon fuel source for your business 	<ul style="list-style-type: none"> Sometimes more expensive than the cheapest fixed term tariff on the market

As the grid continues to become smarter and increasingly intelligent, more flexible types of tariffs are becoming available to end consumers. Smart metering provides half hourly usage data which with a flexible tariff can encourage consumption outside periods of peak energy demand.

How 'green' is your green tariff?

Choosing a green tariff is a valuable step towards making your business more sustainable. However, some green tariff supplies are greener than others in terms of how much they directly support investment in the UK renewables industry. This comes from the fact that the renewable energy and the REGO certificates are not necessarily sold together as a bundle. A supplier can buy energy from the wholesale market, then sell it as renewable under a green tariff by separately purchasing the REGO certificates to cover it.

To understand more about your supplier's green tariff credentials:

- Check your supplier's annual fuel mix disclosure. Are they only supplying 100% renewable energy?
- Does your energy supply company sell both the renewable electricity and the REGOs bundles together?



Approaches to energy procurement

There are a number of different approaches to energy procurement. This section describes how you can best carry this out in-house, and provides some useful information regarding using an energy broker should you want to consult an expert.

In-house procurement

1. Before starting the process of procurement, it is important that you understand your existing energy consumption and spend, as well as your current contract price and renewal date. This is important as the tariffs that are offered to customers are based on the amount of energy they use, and knowing the current cost of your energy contract will allow you to determine if the energy contracts you are offered are competitive with your current tariff. Don't forget to look for opportunities to reduce your energy use and make efficiency savings. [See our energy efficiency guides](#) for more information. In addition to this, you should consider whether you are planning to make any significant changes to your business over the period of your next energy contract such as sudden growth or a change of premises. You should communicate these changes to your supplier or energy broker, as it may affect the prices of the energy contracts that are offered to you.

2. Call your existing supplier as they may be able to offer you an improved contract. If you are on a default or 'deemed' contract, energy suppliers are obligated to inform you about all available energy contracts.

3. Following speaking with your existing supplier, reviewing average business energy prices online would allow you to determine if your quoted energy tariff is reasonable. Unfortunately, business customers cannot compare the prices of ready-made gas and electricity tariffs online like domestic customers, due to the specificity of business tariffs with regards to levels of consumption, location etc.

4. Once you have completed the previous actions, it is advised that you speak to other energy suppliers who may be able to provide you with a better quote. Comparing gas & electricity prices from as many different suppliers as possible will give you the best opportunity of finding an attractive contract.

Working with energy brokers

Energy brokers are third party intermediaries who provide business assistance through the energy procurement process. Gathering and comparing business energy quotes can be a time intensive process and an energy broker can do this for you.

Using an energy broker can bring time and cost savings to your business. Brokers can conduct extensive searches across the market to establish comparable costs between suppliers and tariff options. They may also take care of the administrative burden associated with buying and switching energy contracts, and some brokers offer additional energy management services to improve energy efficiency and reduce costs.¹⁰



¹⁰ https://www.ofgem.gov.uk/sites/default/files/docs/2015/06/bmg_research_ofgem_depth_interviews_report_d3.pdf

When selecting and working with an energy broker, it is worth considering the following questions to ensure that you are receiving best value for money for their services:

Question	Factors to consider
Can the broker ensure that they are constantly monitoring the market?	<ul style="list-style-type: none"> • This is important to ensure that a broker is exploring the full range of options, otherwise you may miss better deals.
Is your broker providing you with a fair comparison between energy tariffs?	<ul style="list-style-type: none"> • Ensure that pricing comparisons provided by the broker are transparent, not favouring some suppliers or excluding others. Ask them how this process works to ensure brokers are considering the widest range of options possible.
How is the broker generating profit from the provision of their services, and is the broker tied to any specific energy suppliers?	<ul style="list-style-type: none"> • Some brokers charge an up-front fee or a continual service fee per kWh; others earn commission through an agreement with the energy supplier. • If earning a commission, rates paid by suppliers can vary significantly, and may be passed on to the customer. • Any reputable broker should be transparent in disclosing their fee structure or commission rates and whether these costs are passed onto you. • Brokers may also be tied to certain suppliers. This is not necessarily a problem if they still provide a good deal, but check public information and contact the broker if you are unsure.
Does the broker provide services beyond those relating to energy procurement?	<ul style="list-style-type: none"> • Some brokers offer energy management services, helping you to better understand your energy use, which can lead to reduced consumption and costs. • Other service options may include: <ul style="list-style-type: none"> • Market intelligence reports to help you find the best deal. • Renewal reminders to ensure you are always on a cheap contract. • Compliance support, helping to notify you of any energy related legislation that may impact your business, and providing support in complying with that legislation.

Contract renewal timelines

The price of energy can vary greatly depending on when a customer renews a contract. Failing to renew in a timely manner may force businesses onto out-of-contract energy tariffs or 'deemed' contracts, which can cost up to 80% more¹¹. This can be easily avoided, as customers can setup a new contract up to 12 months before the end of their current contract and until the end of the notice period. Under Ofgem regulations, the maximum notice period is 30 days, with suppliers being obligated to send details on a customer's yearly energy use, current prices and new prices around 60 days before the contract ends¹².

It can be beneficial for customers to begin looking for new contracts around 6-months before the end of the current contract, to have time to examine contracts and wait to find the cheapest possible option due to market shifts. If using a broker, they will often ask for 6 months' notice to guarantee low prices. It is also important to examine the wholesale market, to see how it could affect a future contract (Ofgem provide a number of interactive wholesale market indicators which would allow you to do this). For example, if prices look set to rise until the contract end date, it is best to buy as quickly as possible, or vice-versa¹³.

Your existing supplier may object to you switching if you are in debt with your supplier or if you try to complete the switch before a fixed-term contract has ended. Despite this, suppliers cannot object if you are not signed onto a fixed contract or if the contract has expired. If the supplier objects for another reason they are obligated to tell you the reason for their objection and to describe to you how it can be resolved¹⁴.



¹¹ <https://www.uswitchforbusiness.com/business-energy/deemed-tariff-rates>

¹² <https://www.ofgem.gov.uk/consumers/business-gas-and-electricity-guide/understand-energy-contracts-businesses>

¹³ <https://www.makeitcheaper.com/business-energy/contracts-and-tariffs-guide>

¹⁴ <https://www.ofgem.gov.uk/publications-and-updates/micro-business-factsheet-it-s-now-easier-micro-businesses-review-their-options-end-contract>

Energy use and carbon reporting

Introduction to carbon emissions reporting

As of 1st April 2019, quoted and large unquoted companies and Limited Liability Partnerships (LLPs) have additional energy and greenhouse gas emissions reporting obligations to meet the requirements of the Streamlined Energy and Carbon Reporting (SECR) framework¹⁵. Whilst SMEs are not yet covered by SECR, there are several benefits from quantifying carbon emissions, as it allows you to:

- Understand what your key energy and emissions sources are
- Determine how your organisation contributes to global emissions
- Identify and prioritise areas for reducing energy consumption and carbon emissions, which will result in cost savings
- Report your carbon footprint accurately to third parties such as customers or regulatory authorities

The Greenhouse Gas Protocol (GHG Protocol) is the most widely used greenhouse gas emissions reporting standard. The GHG Protocol divides emissions sources into three categories: scope 1, scope 2 and scope 3:

- **Scope 1** emissions refer to direct emissions from the activities of an organisation, or those under their

control. Scope 1 emissions include those that are released as a result of fuel combustion on site (i.e. natural gas consumption or the use of transport fuel in fleet vehicles) or refrigerant leaks.

- **Scope 2** emissions are primarily indirect emissions from the electricity, heat or steam purchased and consumed by the reporting organisation. Scope 2 emissions are released during the generation of the electricity, they are not released by the reporting organisation directly.
- **Scope 3** emissions reflect all the indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions. The GHG Protocol scope 3 categories are illustrated in Figure 8, these include the manufacturing of a company's inputs and the use of their products by customers.

The GHG Protocol launched additional Scope 2 Guidance in 2015. These guidelines outline two different approaches to allocating scope 2 emissions to end-users, the 'location-based' method and the 'market-based' method. Where possible companies should report against both methodologies, but can choose which method to use for their goal setting.

Location-based methodology

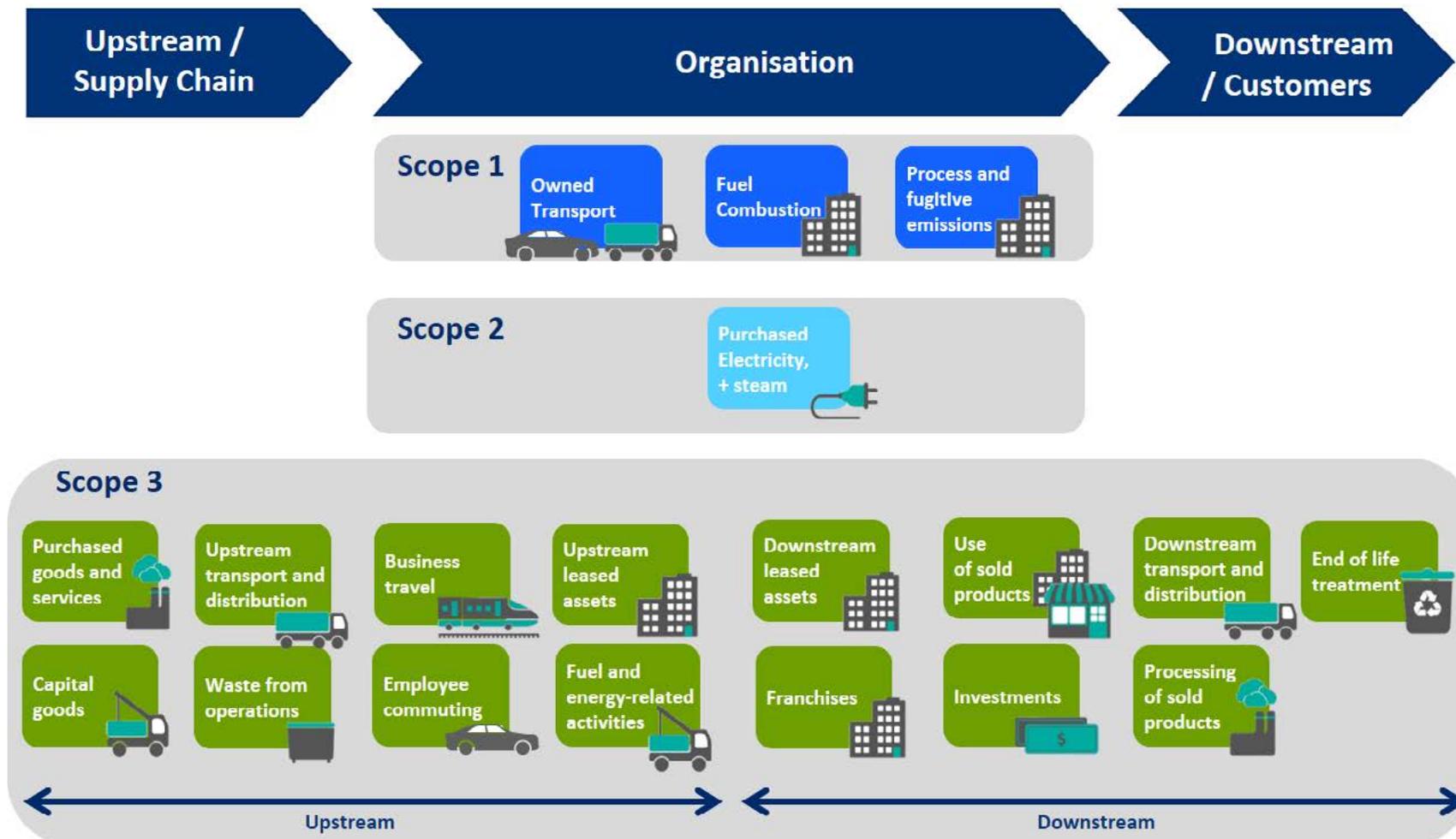
This method mostly uses a country level grid-average emission factor to reflect the average emissions intensity of grids on which energy consumption occurs. For calculating UK based emissions, a UK grid-average emission factor is published annually by the UK government (see <https://www.gov.uk/government/publications/greenhouse-gasreporting-conversion-factors-2019>). A company's scope 2 location-based emissions do not reflect the electricity generation sources of their chosen energy supplier or product.

Market-based methodology

The market-based method involves using an emission factor that is specific to the electricity supply that is purchased by the reporting company, reflecting the mix of power generation sources used. This approach enables electricity from renewables or low carbon electricity to be reported with lower emissions, but it is important to be aware of the quality criteria outlined in the GHG Protocol Scope 2 Guidance and ensure that energy claims are supported by Renewable Energy Guarantees of Origin (REGOs).

¹⁵ <https://www.carbontrust.com/news/2019/04/secr-uk-business-streamlined-energy-carbon-reporting-framework/>

Figure 8: Figure 8 illustrates the emissions sources within each of the scopes, aligned with the GHG Protocol.¹⁷



For more information [see our carbon footprinting guide](#).

¹⁶<http://ghgprotocol.org/companies-and-organizations>

Future of carbon reporting

Current trends suggest that carbon reporting is likely to become a necessity for all organisations in the near future, irrespective of size. The impact of larger businesses looking to report on the emissions arising from the organisations up and down their value chain is likely to accelerate the uptake of carbon reporting practices by small and medium sized businesses. The CDP supply chain programme has been a strong driver for corporates to both calculate and reduce their indirect greenhouse gas emissions.

By beginning to calculate their carbon emissions now, SMEs can benefit from understanding carbon accounting practices ahead of time. An added benefit to carbon accounting is that it gives you a direct oversight of where in the business you are using most energy, and the costs associated with your consumption. This can enable a business to implement targeted energy reduction initiatives which typically result in significant cost savings.



Your next steps

Be proactive in managing your energy supply contracts and energy usage to help save money and carbon emissions

Step 1: Understand your current energy use and costs

Look at your site or organisation's energy bills and supplier contracts to understand the current tariff type and rates, sources of energy and contract renewal dates. How much energy is your site using and what are the trends?

Step 2: Identify your future energy needs

Consider whether your site's energy usage is likely to change in future. Look for opportunities to make energy savings and improve energy efficiency through a managed energy action programme. Use our energy management guides to help you get started.

Step 3: Engage with energy suppliers or an energy broker

Speak to your supplier or energy broker early to understand your options well ahead of renewing your contract. Compare offerings with other suppliers to ensure that you are getting the best deal. Consider whether a 100% renewable energy supply is important for your organisation.

Step 4: Monitor your energy use

Throughout the year, monitor your energy bills and energy usage to ensure that you are on track with your plans for energy savings. Ensure that equipment is switched off when not in use and well maintained.

Step 5: Calculate your carbon footprint

Use your energy usage and other activity information to calculate your carbon emissions. Understand what your key emissions sources are and prioritise areas for reducing your impacts. Report your carbon footprint to employees and customers to share your progress.

Step 6: Continue to manage your energy use

Continue to be proactive in managing energy usage and regularly review your supplier contracts to ensure that your business operates efficiently and that savings are maintained.

Go online for more information

The Carbon Trust provides a range of tools, services and information to help you implement energy and carbon saving measures, no matter what your level of experience.

Website – Visit us at www.carbontrust.com for our full range of advice and services.

➤ www.carbontrust.com

Tools, guides and reports – We have a library of publications detailing energy saving techniques for a range of sectors and technologies.

➤ www.carbontrust.com/resources

Events and workshops – We offer a variety of events, workshops and webinars ranging from a high level introductions to our services through, to technical energy efficiency training.

➤ www.carbontrust.com/events

Our client case studies – Our case studies show that it's often easier and less expensive than you might think to bring about real change.

➤ www.carbontrust.com/our-clients

The Carbon Trust Green Business Fund – is an energy efficiency support service for small and medium-sized companies in England, Wales and Scotland. It provides support through free training workshops, webinars, and online resources.

➤ www.carbontrust.com/greenbusinessfund

The Carbon Trust is an independent company with a mission to accelerate the move to a sustainable, low-carbon economy. The Carbon Trust:

- advises businesses, governments and the public sector on opportunities in a sustainable, low-carbon world;
- measures and certifies the environmental footprint of organisations, products and services;
- helps develop and deploy low-carbon technologies and solutions, from energy efficiency to renewable power

www.carbontrust.com

+44 (0) 20 7170 7000

The development of this publication has been funded through the Carbon Trust **Green Business Fund**, an energy efficiency support service for small and medium-sized companies in England, Wales and Scotland.

Whilst reasonable steps have been taken to ensure that the information contained within this publication is correct, the authors, the Carbon Trust, its agents, contractors and sub-contractors give no warranty and make no representation as to its accuracy and accept no liability for any errors or omissions.

Any trademarks, service marks or logos used in this publication, and copyright in it, are the property of the Carbon Trust. Nothing in this publication shall be construed as granting any licence or right to use or reproduce any of the trademarks, service marks, logos, copyright or any proprietary information in any way without the Carbon Trust's prior written permission. The Carbon Trust enforces infringements of its intellectual property rights to the full extent permitted by law.

The Carbon Trust is a company limited by guarantee and registered in England and Wales under Company number 4190230 with its Registered Office at: 4th Floor, Dorset House, 27-45 Stamford Street, London SE1 9NT.

Published in the UK: October 2019. CTV077

© The Carbon Trust 2019. All rights reserved.

