



## Carbon Emissions – Unmetered Assets

### 1. Carbon

This document captures the salient points relating to Carbon Emissions associated with the electrical generation and supply to unmetered assets.

Using fossil fuels to generate electricity is the biggest source of CO<sub>2</sub> emissions in the UK, that is why it is vital that we understand and measure our Carbon Emissions.



Many organisations are measuring and monitoring their Carbon Emissions relating to the electricity they consume. The measurement of carbon emissions can be and are used by organisations to show how well they are investing in their infrastructure to reduce their carbon footprint.

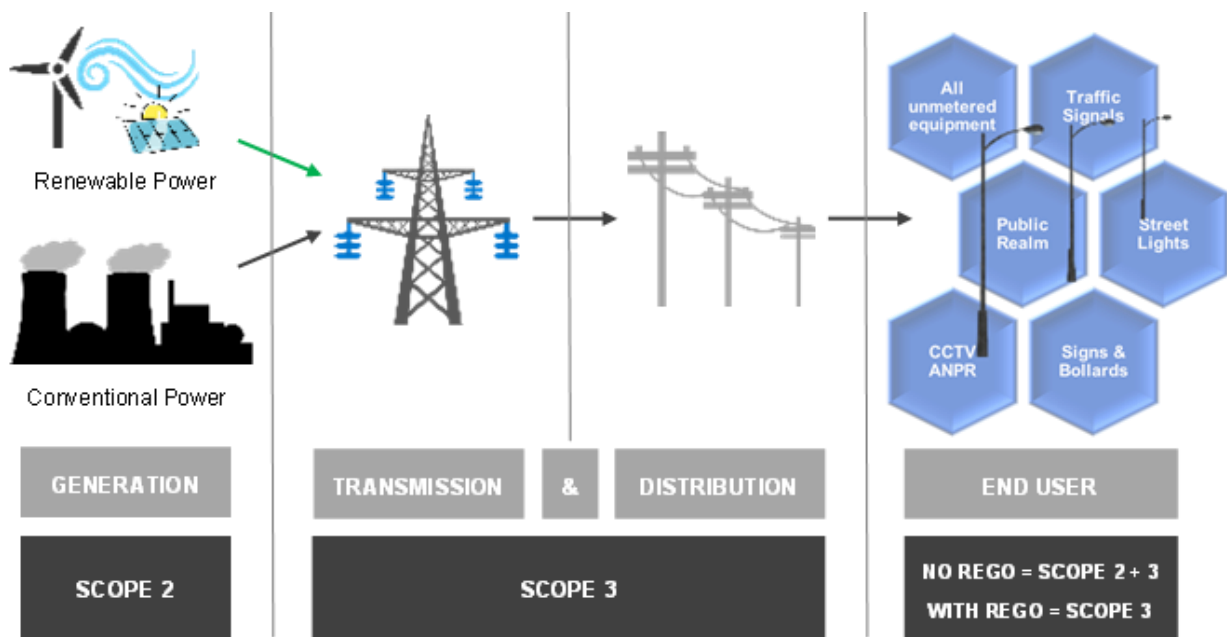
### 2. Carbon Emissions

For an organisation to measure and monitor its Carbon Emissions, they need to calculate the tonnes of CO<sub>2</sub>. To enable this, the Department for Business, Energy & Industrial Strategy (BEIS) continue to update and provide the conversion factors<sup>1</sup> that enable the calculation of CO<sub>2</sub>e of CO<sub>2</sub> per unit (unit being kWh) and Greenhouse gas (GHG).

The calculation of Carbon Emissions relating to electricity consumed starts with the total kilowatt hours (kWh) calculated by Power Data Associates (shown in your Monthly Report) and identified in your electricity bills. This kWh figure is then multiplied by a factor to convert to tonnes and by the applicable Carbon Emission Factor (combination of relevant emission factors), as follows:

$$\text{Tonnes of CO}_{2e} = \text{kWh consumed} \times 0.001 \text{ (converts to tonnes)} \times \text{applicable Emission Factor}$$

The Carbon Emission Factor is the consequence of Electricity Generation and Transmission & Distribution factors. These relevant emissions fall within Scope 2<sup>2</sup> electricity and Scope 3<sup>3</sup> losses respectively as defined by the Greenhouse Gas Protocol (GHGP)<sup>4</sup>.



<sup>1</sup> [www.gov.uk/government/collections/government-conversion-factors-for-company-reporting](http://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting)

<sup>2</sup> [https://ghgprotocol.org/scope\\_2\\_guidance](https://ghgprotocol.org/scope_2_guidance)

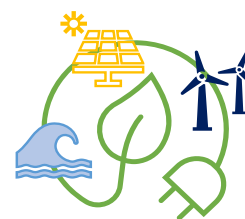
<sup>3</sup> <https://ghgprotocol.org/standards/scope-3-standard>

<sup>4</sup> <https://ghgprotocol.org/>

### 3. 100% Renewable Energy?

100% Renewable Energy Supply contract doesn't necessarily mean Zero Carbon – but it could affect your total applicable Carbon Emission Factor. Does your energy contract have REGO credentials?

An organisation will buy unmetered electricity from a Supplier. Carbon emissions linked to the consumption of purchased electricity are the outcome of the Supplier's activities during generation (regardless of the source or generation method) that the purchasing organisation does not own or have control over. Also contributing to the carbon emissions is the transmission and distribution of the purchased electricity.



### 4. What is the REGO scheme?

As Ofgem explains<sup>5</sup> *“The Renewable Energy Guarantees of Origin (REGO) scheme provides transparency to consumers about the proportion of electricity that suppliers source from renewable generation.”*



In Great Britain, the REGO scheme is administered by Ofgem on behalf of the Department for Business, Energy & Industrial Strategy (BEIS).

Ofgem issues REGO certificates per MWh of eligible renewable electricity.

If an organisation holds an exclusive REGO certificate relating to and covering the annual kWh consumption of all the unmetered electricity, then the Carbon Emissions relating to Scope 2 (electricity generation) can be omitted from the total applicable Carbon Emissions Factor. All generated electricity utilises the grid network to deliver the energy. Organisations, with or without a REGO, must use the grid emission factors (Scope 3) as these factors consider the efficiencies in the national grid infrastructure.

Unless the energy Supplier can provide an organisation with a dedicated REGO, then the emission factor is the combination of Scope 2 and 3 factors. Only those organisations with the correct number of REGOs provided by their Electricity Supplier, to support the volume of renewable energy in the contract, can exclude the associated Scope 2 factor.

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<sup>5</sup> <https://www.ofgem.gov.uk/environmental-and-social-schemes/renewable-energy-guarantees-origin-rego>

## 5. Carbon Reporting & Emission Factor

Carbon monitoring is still an essential part of energy management and reporting. An up to date and accurate detailed inventory is essential for unmetered energy settlement and carbon management.



UK government emission factors relate to calendar years, if an organisation is reporting an April to March year, the factors from the calendar year in which the greatest portion of the data falls should be applied. PDA provides the kg CO<sub>2e</sub> of CO<sub>2</sub> per unit factors in relevant April to March years as most customers report April to March.

The emission factors are prone to fluctuation from year to year due to the change in the fuel mix consumed in UK power stations (and auto-generators) and the proportion of net imported electricity.

Current and historical electricity emission factors relating to kg CO<sub>2e</sub> of CO<sub>2</sub> per unit are shown in the following table.

Financial Year	Electricity Emission Factor - kg CO <sub>2e</sub> of CO <sub>2</sub> per unit			% Annual Total Change
	Scope 2 Emission Factor	Scope 3 Emission Factor	Total Emission Factor	
2026/27	not yet published	not yet published	not yet published	?%
2025/26	0.17489	0.01834	0.19323	-13.37%
2024/25	0.20493	0.01811	0.22304	0.16%
2023/24	0.20496	0.01773	0.22269	6.70%
2022/23	0.19121	0.01750	0.20871	-8.76%
2021/22	0.21016	0.01860	0.22876	-8.83%
2020/21	0.23104	0.01987	0.25091	-8.80%
2019/20	0.25358	0.02153	0.27511	-9.75%
2018/19	0.28088	0.02394	0.30482	-20.09%
2017/18	0.34885	0.03261	0.38146	-14.59%
2016/17	0.40957	0.03705	0.44662	-10.02%
2015/16	0.45850	0.03786	0.49636	-6.89%
2014/15	0.49023	0.04287	0.53310	11.01%
2013/14	0.44238	0.03783	0.48021	n/a

*Tonnes of CO<sub>2e</sub> = kWh consumed x 0.001 (converts to tonnes) x applicable Emission Factor*

### Greenhouse gas (GHG) reporting.

The Kyoto Protocol details that the seven main GHG's that contribute to climate change are; carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF<sub>6</sub>) and nitrogen trifluoride (NF<sub>3</sub>). Different activities emit different gases.



The GHG relating to Scope 2 (electricity generated) and Scope 3 (transmission & distribution) consists of; kg CO<sub>2e</sub> of CO<sub>2</sub> per unit, kg CO<sub>2e</sub> of CH<sub>4</sub> per unit and kg CO<sub>2e</sub> of N<sub>2</sub>O per unit. Collectively they are kg CO<sub>2e</sub>. Please note the unit is kWh.

Activity - (Scope 2) Electricity generated	kg CO <sub>2e</sub> =	kg CO <sub>2e</sub> of CO <sub>2</sub> per unit	+	kg CO <sub>2e</sub> of CH <sub>4</sub> per unit	+	kg CO <sub>2e</sub> of N <sub>2</sub> O per unit
Activity - (Scope 3) T&D – UK electricity	kg CO <sub>2e</sub> =	kg CO <sub>2e</sub> of CO <sub>2</sub> per unit	+	kg CO <sub>2e</sub> of CH <sub>4</sub> per unit	+	kg CO <sub>2e</sub> of N <sub>2</sub> O per unit

## 6. Fall of CRC and the Rise of CCL

The UK government levies charges based on an organisation's CO<sub>2</sub> emissions.

Participants in the Carbon Reduction Commitment (CRC) Energy Efficiency Scheme were given notice by the BEIS and the Environment Agency that the scheme was closing at the end of the 2018 to 2019 compliance year.

The defunct CRC scheme was replaced with an increase in the Climate Change Levy (CCL). CCL was first introduced in 2001 and is a UK-wide tax on electricity, gas, LPG and solid fuels supplied to businesses and public sector consumers. The main rates on these commodities are paid to HMRC by energy suppliers who pass on the costs, through billing to their non-domestic customers.

Further information can be found in the Government's response to the Consultation: Reforming the Business Energy Efficiency Tax Landscape<sup>6</sup>.

## 7. Does this mean no charge for carbon emissions?

CRC and the associated charges ceased to exist at the end of the 2018/19 financial year. To account for the end of CRC, the corresponding electricity CCL charges increased by 45% for the financial year 2019/20.

The changes to the electricity main rates for 2022 to 2023, 2023 to 2024 and 2024 to 2025 are in line with the government's commitment<sup>7</sup> to rebalance the electricity to gas ratio, the electricity rates are frozen.

The main rates of CCL are published<sup>8 9</sup> by the government and the rates for electricity are shown in the table below.

Taxable commodity	CCL rate from							
	1 <sup>st</sup> April 2019	1 <sup>st</sup> April 2020	1 <sup>st</sup> April 2021	1 <sup>st</sup> April 2022	1 <sup>st</sup> April 2023	1 <sup>st</sup> April 2024	1 <sup>st</sup> April 2025	1 <sup>st</sup> April 2026
Electricity (£ per kWh)	0.00847	0.00811	0.00775	0.00775	0.00775	0.00775	0.00775	0.00801

*Cost of CCL rates = annual kWh consumption x CCL rate*

### 7.1. How much will this cost my Authority?

The cost of CCL is already charged within an organisation's energy bills. Some energy suppliers identify CCL as a separate line on the energy bill, whilst others show a combined pence per unit rate.

For an organisation consuming 1,000,000 kWh/year, the annual cost of CCL is shown in the following table.

Annual kWh consumption	CCL annual cost							
	1 <sup>st</sup> April 2019	1 <sup>st</sup> April 2020	1 <sup>st</sup> April 2021	1 <sup>st</sup> April 2022	1 <sup>st</sup> April 2023	1 <sup>st</sup> April 2024	1 <sup>st</sup> April 2025	1 <sup>st</sup> April 2026
1,000,000 kWh	£8,470	£8,110	£7,750	£7,750	£7,750	£7,750	£7,750	£8,010
% annual change		-4.4%	-4.6%	0.0%	0.0%	0.0%	0.0%	3.2%

<sup>6</sup> [www.gov.uk/government/consultations/consultation-reforming-the-business-energy-efficiency-tax-landscape](https://www.gov.uk/government/consultations/consultation-reforming-the-business-energy-efficiency-tax-landscape)

<sup>7</sup> [www.gov.uk/government/publications/changes-to-rates-for-the-climate-change-levy-for-2022-to-2023-and-2023-to-2024/changes-to-rates-for-the-climate-change-levy-for-2022-to-2023-and-2023-to-2024](https://www.gov.uk/government/publications/changes-to-rates-for-the-climate-change-levy-for-2022-to-2023-and-2023-to-2024/changes-to-rates-for-the-climate-change-levy-for-2022-to-2023-and-2023-to-2024)

<sup>8</sup> [www.gov.uk/government/publications/rates-and-allowances-climate-change-levy/climate-change-levy-rates](https://www.gov.uk/government/publications/rates-and-allowances-climate-change-levy/climate-change-levy-rates)

<sup>9</sup> [www.gov.uk/government/publications/changes-to-rates-for-the-climate-change-levy-for-2022-to-2023-and-2023-to-2024](https://www.gov.uk/government/publications/changes-to-rates-for-the-climate-change-levy-for-2022-to-2023-and-2023-to-2024)

## **8. Disclaimer**

This document has been prepared in good faith and free of charge. It is based on the current form of the government's CRC Energy Efficiency Scheme Regulations, Climate Change Levy and REGO. Whilst reasonable steps have been taken to ensure the information is correct, when any local authority, organisation or other person is considering the specific implications of the CRC and/or CCL and/or REGO and/or carbon emission factors and/or GHG or what action they should consider in respect of any guidance, they should take specific legal, financial, technical and/or other relevant professional advice, as appropriate.

*Power Data Associates will continue to monitor changes relating to Carbon and Carbon Emissions and update this guidance as appropriate. For the latest position please contact us.*

*Last update: 25<sup>th</sup> June 2025*