

Halve your CO2 emissions by managing when and where electricity is used

Introduction

Everyone benefits from reductions in Greenhouse gas (GHG) emissions which cause climate change. Businesses are therefore committed to measuring and reducing their GHG emissions. GHG emissions due to electricity consumption (Scope 2 emissions¹) arise from power stations burning fossil fuels.

Electricity

Electricity comes from generators without GHG emissions, such as wind, nuclear, solar and hydro. It also comes from gas, coal and oil generators which cause significant GHG emissions.

Generation Mix

The generation mix is highly variable because of variations in demand for electricity, wind resource, solar intensity, power station availability, generation mix of imported electricity, the amount of electricity imported, fuel price and availability and grid transmission constraints.

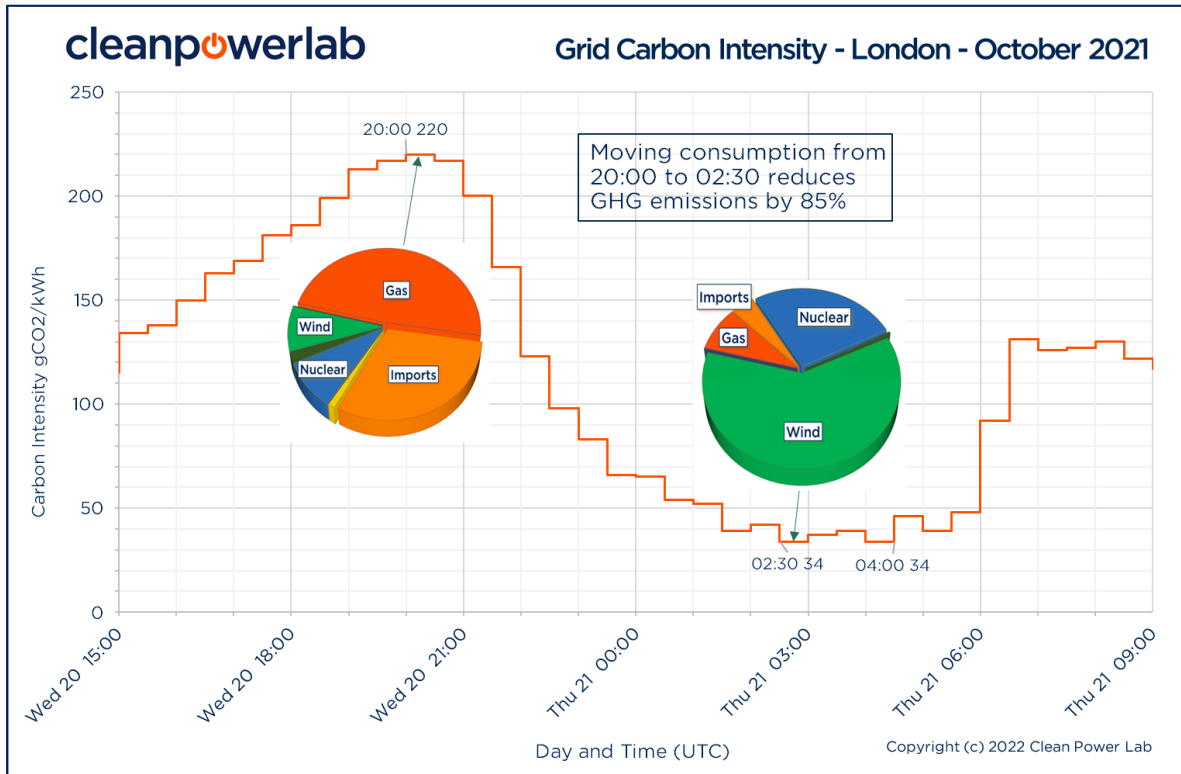
Carbon Intensity

GHG emissions from electricity depend on the generation mix at the time and location of consumption. The emissions impact is called Carbon Intensity, defined numerically as grammes of carbon dioxide emitted per kilowatt-hour (gCO₂/kWh). Carbon Intensity is low when most electricity comes from clean generators and is high when most generation comes from fossil fuels. Carbon Intensity is highly variable and depends on electricity region and time of consumption.

Cutting GHG Emissions

Businesses can cut their GHG emissions by using less electricity, implementing energy efficiency measures, installing renewable generation and reducing the Carbon Intensity of the electricity they consume. Businesses can reduce emissions and Carbon Intensity by managing where and when they consume electricity.

¹ Scope 1 emissions are direct GHG emissions. Scope 3 emissions are indirect emissions not associated with direct electricity purchases



Managing Carbon Intensity

By analysing Carbon Intensity, companies can maximise the effectiveness of investments in energy efficiency measures and on-site renewable generation. Whilst taking action to reduce the Carbon Intensity of their electricity, they need to continue to operate efficiently² and manage costs.

Regional Forecasts

Great Britain has fourteen electricity regions with Carbon Intensity varying significantly because each region's generation mix differs. Forty-eight-hour Carbon Intensity forecasts are available for all regions³.

Renewable Electricity Contracts

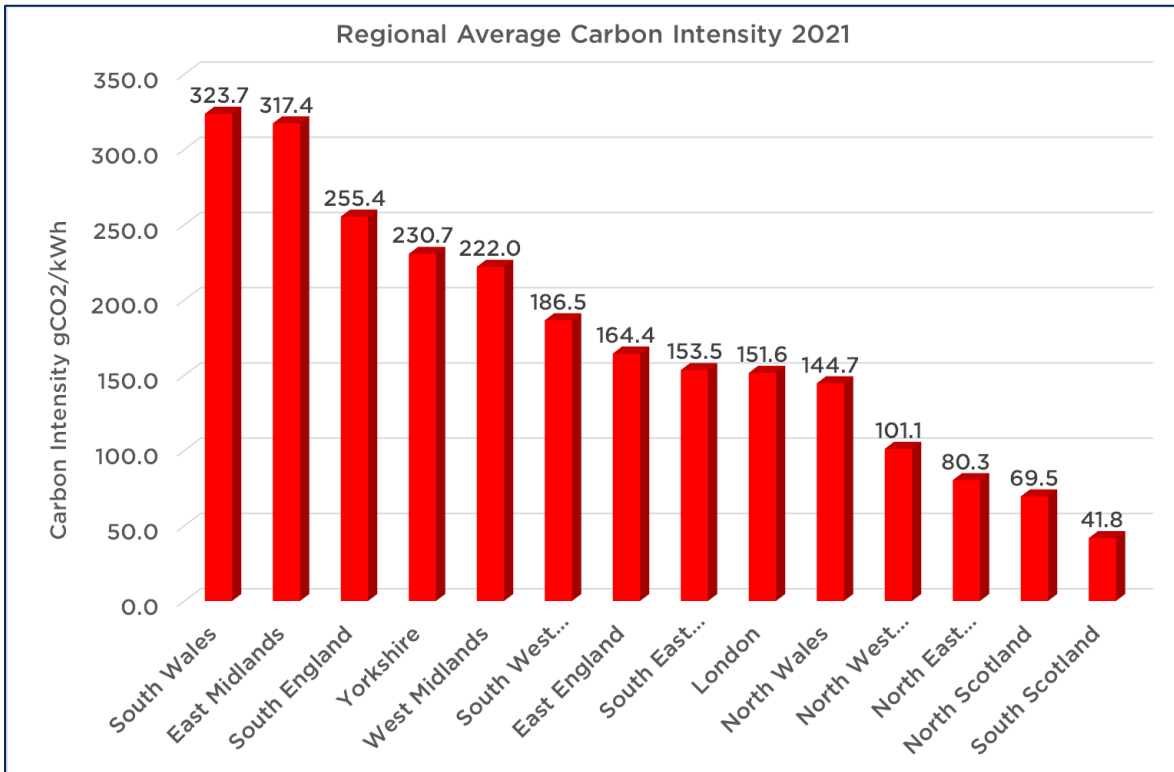
Businesses often have renewable electricity contracts which do not affect Scope 2 emissions. This is because the contract does not directly impact the electricity generation mix, Carbon Intensity or GHG emissions.

If everyone had a renewable electricity contract, Scope 2 GHG emissions would be reduced. In practice, the volume of electricity sold through renewable electricity contracts matches the volume of renewable electricity generated.

Buying electricity through a renewable energy contract encourages renewable energy and allows consumers to demonstrate their commitment to combating climate change. Still, it has a limited impact on reducing GHG emissions.

² Delivering good customer service, maintaining flexibility, providing reliability and security

³ Data also available at country (England, Scotland and Wales) and nationally (Great Britain)



Reducing Carbon Intensity

Businesses that can reduce Carbon Intensity most effectively are large electricity consumers, have multiple national sites, have batch processes, or have automated processes. Typically they are investing in efficiency improvements, are investing in on-site generation, have backup battery systems or have battery storage systems.

Electric Vehicles

Electric Vehicles operators can reduce GHG emissions by focusing investment in regions where Carbon Intensity is low and charging vehicles when Carbon Intensity is low.

Large Buildings

Large building owners can focus energy efficiency and renewable energy investments in regions with high carbon intensity. They can also install battery storage systems and optimise heating and cooling systems to use electricity when Carbon Intensity is low.

Distribution Centres

Distribution Centre owners can build new centres in regions where Carbon Intensity is Low whilst focusing energy efficiency and renewable energy investments in regions where Carbon Intensity is high. They can also optimise energy-intensive processes to use electricity when Carbon Intensity is Low.


Data Centres

Data Centre Owners can build new centres in regions where Carbon Intensity is Low whilst focusing energy efficiency and renewable energy investments in regions where Carbon Intensity is high. They can run energy-intensive indexing and archiving processes when Carbon Intensity is low and dynamically run processes in locations where Carbon Intensity is low.

Clean Power Lab

Clean Power Lab helps businesses reduce their GHG emissions and offers assessment and certification, location evaluation, automated load switching as well as analysis and consultancy.

Greenhouse Gas Emissions Certificate

<p>Certificate Scope 1 January to 31 December 2022 ABC Limited Distribution Centre 1, London</p>	<p>Notes 1. Scope 2 greenhouse gas emissions arising from electricity consumption 2. Assessed using half hourly consumption and regional carbon intensity data 3. Electricity consumption 2,702,345 kWh 4. Average carbon intensity 147 gCO₂e/kWh 5. More information in supporting Clean Power Lab assessment</p>										
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Certification</td> <td></td> </tr> <tr> <td>Issue Date</td> <td>1 February 2023</td> </tr> <tr> <td>Certificate Number</td> <td>ABC2</td> </tr> <tr> <td>Certifying Organisation</td> <td>Clean Power Lab Limited</td> </tr> <tr> <td>Assessor</td> <td>Michael Watson</td> </tr> </table>	Certification		Issue Date	1 February 2023	Certificate Number	ABC2	Certifying Organisation	Clean Power Lab Limited	Assessor	Michael Watson	<p>Clean Power Lab Limited Orbis Energy Wilde Street Lowestoft Suffolk England certify@cleanpowerlab.com</p>
Certification											
Issue Date	1 February 2023										
Certificate Number	ABC2										
Certifying Organisation	Clean Power Lab Limited										
Assessor	Michael Watson										
<p>Scope 2 Greenhouse Gas Emissions</p> <h1 style="font-size: 2em; margin: 0;">397.2 tonnes CO₂</h1>											
											

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