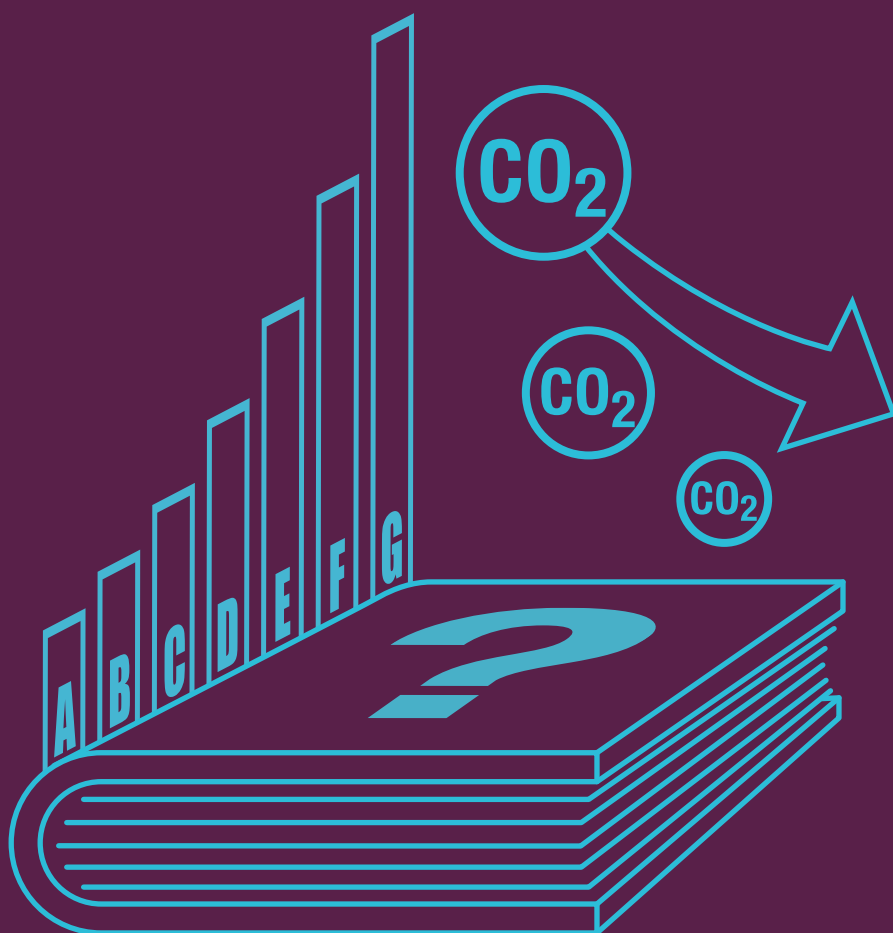


## Enable the Label

# The case for electricity labelling in the UK



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A report commissioned by the Aldersgate Group,  
overseen by a Steering Group who are:



This report was researched and written by Utilyx.  
To read the Summary for Business, visit [www.aldersgategroup.org.uk/reports](http://www.aldersgategroup.org.uk/reports)

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# Aldersgate Group

The Aldersgate Group is an alliance of leaders from business, politics and society that drives action for a sustainable economy.

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While members support this publication and provided extensive input, individual recommendations cannot be attributed to any single member and the Aldersgate Group takes full responsibility for the views expressed.

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# Preface

*If enough customers express preference for renewable energy this could potentially drive a change in the grid fuel mix in the future.*

**Ofgem<sup>1</sup>**

## Why do we need an electricity label?

Energy bills are now front page news. Rising energy prices are a core concern for cash strapped householders and businesses across the country. They are feeding a turbulent political debate, which will run at least until the next election.

The media spotlight has highlighted just how complex and perplexing energy bills have become. Many charges and schemes are barely comprehensible. Consumers simply do not understand what they are paying for and the cost implications of various generation technologies or energy efficiency strategies.

There is yet greater consumer confusion about 'green tariffs' due to suppliers offering a variety of products with wide ranging environmental benefits.

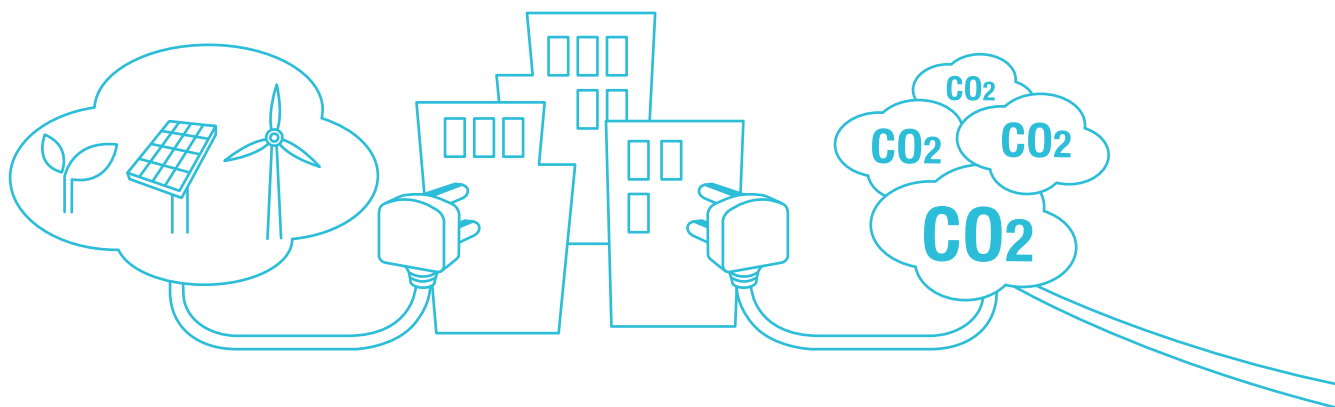
This is most pronounced in the non-domestic sector. Many progressive businesses are leading the way in tackling climate change and are investing in low carbon energy to reduce their carbon footprint. To do so, they frequently pay a premium for 'green tariffs' or on-site renewables.

In a recent consultation, the Government advises these businesses to report this low carbon electricity to their stakeholders in two ways; "location based" which reflects the grid average and "market based" which reflects the purchase of renewables. Despite some positive steps forward, there is a lack of a comprehensive and transparent approach that can be clearly communicated to stakeholders.

Confusion remains. While green electricity is recognised as zero carbon for some regulations (such as the Climate Change Levy), it is not recognised as zero carbon for others (such as the CRC Energy Efficiency Scheme).

These inconsistencies provide relatively weak and complex signals and lead some Boards to retreat from investments in renewable technologies. It also calls into question the validity of green tariffs in terms of providing genuine additionality – representing a growing reputational risk for companies that often rely on their green purchasing power to meet their environmental targets.

This lack of transparency in reporting creates administrative burdens and makes it difficult to have a baseline against which performance can be benchmarked and compared.



# Preface

There is a need for urgent reform. To date, policy has generally focused on only one side of the equation: energy supply. There is strong cross-sector support for more focus on the other side of the market: stimulating demand for low carbon electricity.

The ultimate goal should be a transparent regulatory framework that provides clarity over energy bills and incentivises companies to use their extensive and influential purchasing power to increase demand for lower carbon electricity and reduce demand for higher carbon electricity.

This report explores one potential solution: the introduction of an electricity label that would clearly display the quantity and carbon content of electricity sold on each customer's bill. This would provide accurate information about the carbon emissions for which each customer is responsible, standardise reporting of electricity use and increase transparency. Disclosure of different sources of zero carbon electricity could help to demonstrate where consumers have played a more active role in bringing new capacity to the market.

It would build on the huge success of energy labelling schemes for a large number of appliances and equipment elsewhere. Such labels allow consumers to compare the energy performance of various goods and services. By informing purchasing decisions, they have been instrumental in driving demand for the best performing products and ensuring healthy competition by manufacturers on energy efficiency metrics.

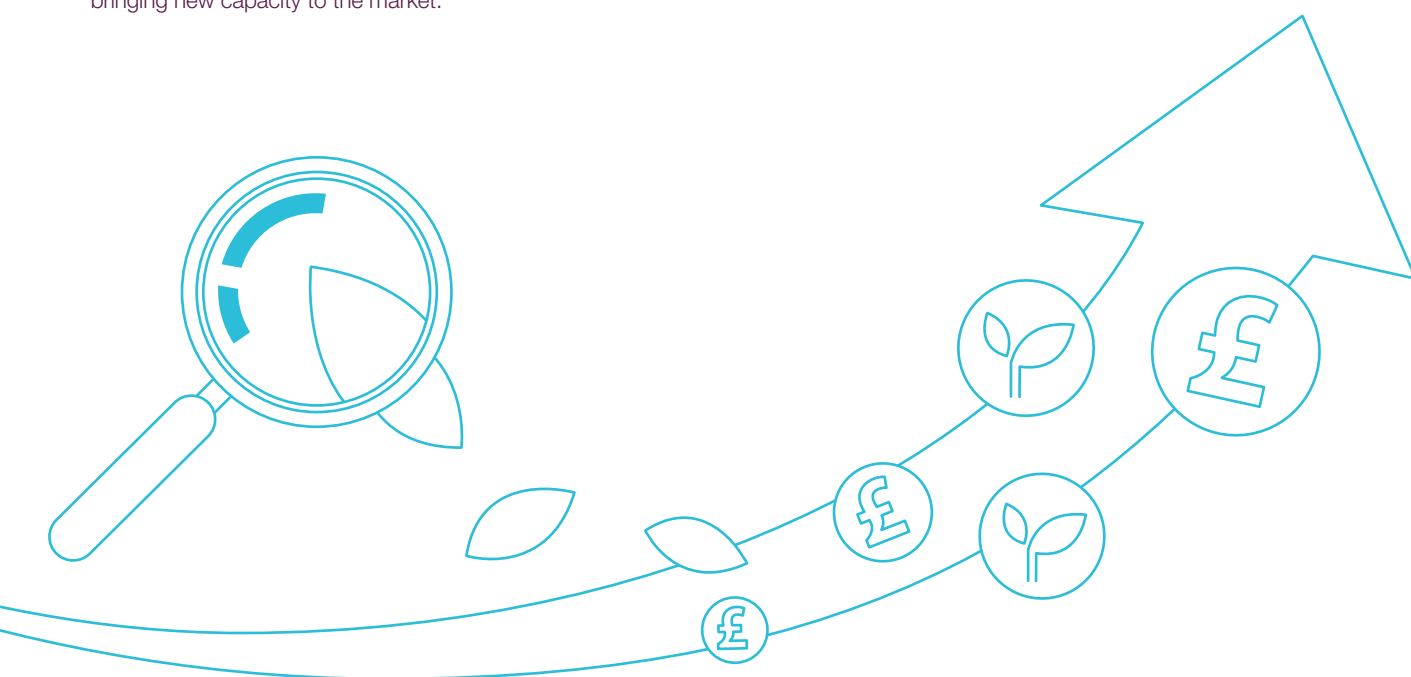
Perhaps the most compelling case study is the European car industry where transparency on energy performance has created a level playing field that promotes strong competition and innovation. What started as regulations mandating energy labelling transformed the sector by spurring legislation, fiscal incentives and consumer awareness.

The question we need to ask is, why should we not use this model for the product with the greatest carbon impact: the electricity we use to power our homes, workplaces and factories?

**Andrew Raingold**



Executive Director, Aldersgate Group  
July 2014



## What is the evidence?

*It is possible that a very significant increase in longterm contracts for the purchase of renewable energy could incentivise new investments in renewables which would not have happened otherwise. The pull of significant extra demand through voluntary support for renewables could make the difference for some schemes, which were not economically viable through government measures alone.<sup>2</sup>*

Defra

This report seeks to explore the costs and benefits of an electricity label. An industry survey shows that existing demand for, and benefits from, a green purchasing policy, is severely hampered by the opacity maintained by current suppliers and the confused reporting systems available to purchasers.

The prudent modelling undertaken as part of this analysis suggests a potential four-fold increase in the demand for low carbon generation of electricity by 2020; but such additionality is a long-term goal, requiring a planned roll out of the label.

Many businesses are asking where does their electricity come from? There are very few answers. That is why purchased electricity must pass what the Steering Group termed, “the horsemeat test<sup>3</sup>”: by buying a product, consumers earn the right to understand the ingredients.

Above all, an electricity label is engaging and easy for all stakeholders to understand, not just professional energy managers. It will allow better informed procurement decisions and better communication of those decisions to stakeholders.

It would not take long for the media and civil society to make comparisons between organisations, raising consumer awareness. It is this reputational driver that has the potential to lead to the most transformative change, by both increasing demand for new investments in renewables (as the quote from Defra testifies) and reducing demand for the dirtiest electricity.

This report does not provide a plain, black and white case for the introduction of an electricity label. There are a large number of difficult issues that must be overcome and the report seeks to outline ways to tackle some of the most significant, such as evidence of supply, additionality, “double counting” and accreditation.

However, we are confident these can be surmounted and that implementation would be relatively straightforward, a core prioritisation of the Steering Group in selecting the best approach.



# What is the evidence?

This would ensure that the UK was on the road to incentivise companies to use their extensive and influential purchasing power to demand low carbon electricity. It happens elsewhere. For example, the Green Power Partnership in the United States helps to spur on the biggest green energy purchasers.

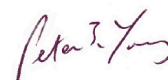
This is in stark contrast to the UK which is being held back by confusing reporting and regulatory requirements. The best place to start to unpack this is better information provision.

Ofgem, the energy regulator, aims for “a future in which consumers will be better able to make informed choices about the green and other renewable energy offers they are buying.”<sup>4</sup> What better way to do this than an electricity label that would shine a light on all energy sources, not just renewables, but also nuclear, gas, unabated coal and everything in between.

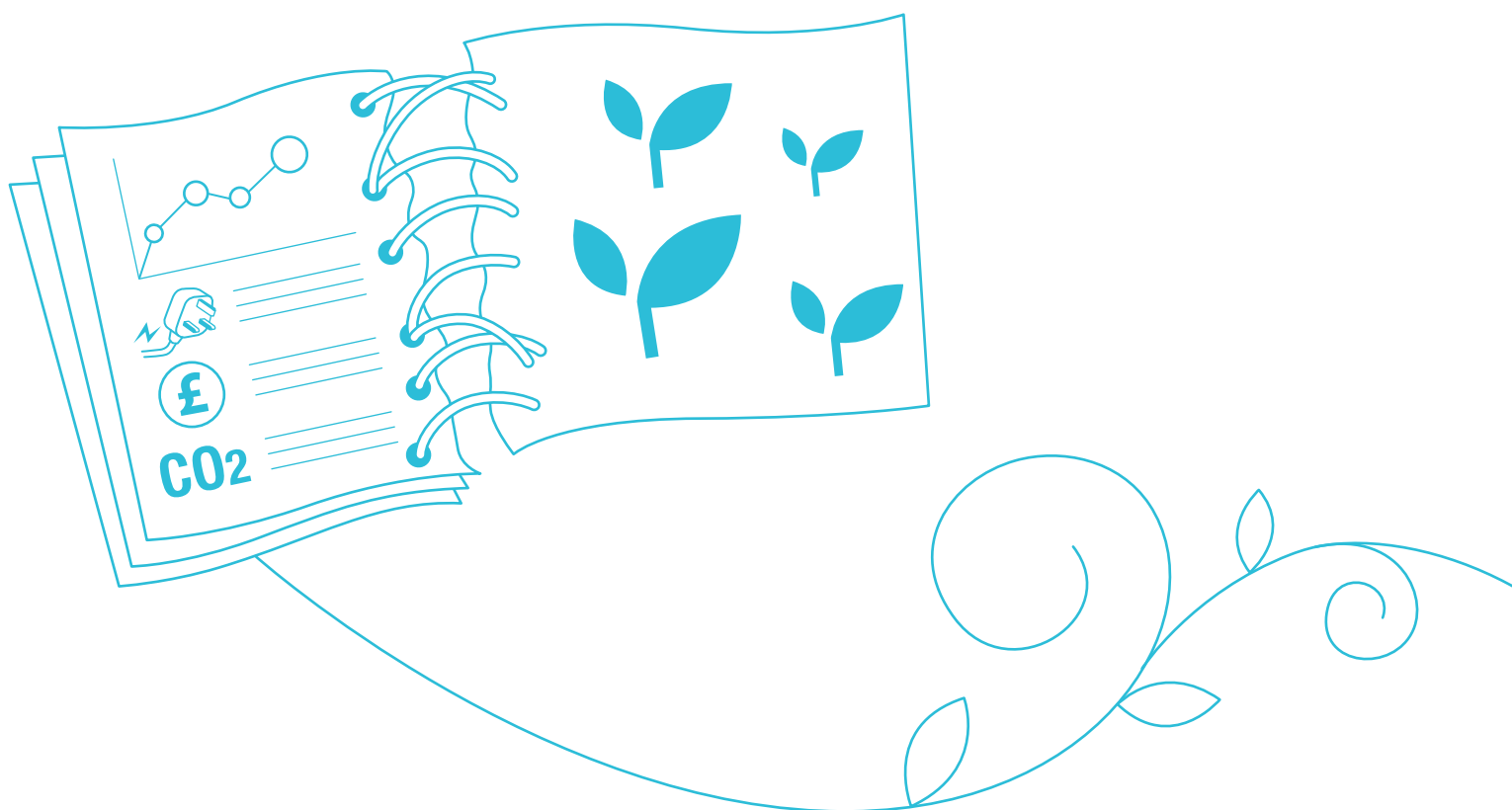
It would also contribute much needed stability to the energy landscape, independent of the changing policy or political environment. This will drive confidence among businesses and investors, which is vital over the next ten years when the UK needs to attract £110 billion of investment to upgrade its electricity infrastructure.

So join the debate and explore what might be possible. We see the next stage as voluntary pilot projects to prove the concept. This is an invitation for everyone to take part in a process towards possible national adoption, for ultimately only a mandatory scheme will reap the full benefits.

**Peter Young**



Chairman, Aldersgate Group  
July 2014



# Executive summary

## Electricity labelling in the UK

This report seeks to outline how the introduction of an electricity label could bring much needed transparency, simplicity, trust and customer awareness to the current debate about energy bills and green tariffs.

Today industrial and commercial (I&C) electricity demand is around 176.6TWh per annum (56.2% of total UK demand). We estimate that 33.1% of I&C customers currently purchase low carbon electricity, but that there is widespread confusion about any associated benefits and how to communicate this to stakeholders.

## Policy context

Mixed messages, poor definitions and multiple reporting rules erode clarity and weaken demand for 'green' energy.

Green tariffs currently require an electricity supplier to make an additional carbon saving (beyond the purchase of renewable technologies), such as through carbon offsets. Defra recognises that many organisations see this approach as excessively onerous; it deters companies from purchasing renewable electricity and thus reduces potential investment in renewables.

In a recent consultation, Defra has proposed to address this by requiring companies to report both the grid<sup>5</sup> average figure (location based), and a reduced emissions figure from any purchased renewable electricity (market based). This is a positive step forward but further reform is required to deliver a more balanced, transparent and comprehensive framework.

## Survey: Green tariffs are "empty"

To understand how and why electricity labelling could incentivise corporate energy users to buy low carbon energy, a survey of purchasers and energy developers was carried out, supported by in-depth interviews.

The research found that corporates are uncertain how to judge the quality of a "green" tariff, citing a lack of clarity in what they are buying. Purchasing such tariffs is most often done for reputational reasons but the impact is diluted and not felt strongly by developers.

## Analysis: Significant potential ramp up of low carbon energy purchases

The report sets out a structure for an electricity labelling scheme for the UK, including a qualitative assessment of how it would work, and identifies challenges that may remain.

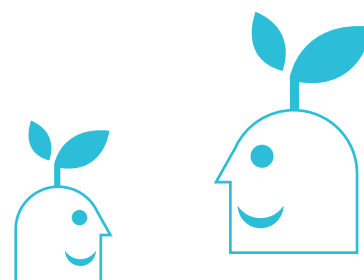
Scenarios of the impact of such a label were developed to 2020 and sense checked against the impact of the Green Power Partnership in the US. Findings suggested that an electricity label could increase purchase of low carbon electricity in the I&C sector from the current rate of 14.4% to 48.3% by 2020, four times the rate without labelling. This would encourage development of new sources of low carbon power, as well as delivering transparency in corporate reporting and clarity in purchasing decisions. Defra, in its consultation to update the GHG reporting guidelines<sup>5</sup>, suggests that a very significant increase in long-term contracts to purchase renewable energy could incentivise new investment in renewables, which would not have happened otherwise.

## Benefits: win-win-win

The label has the potential to deliver a range of benefits to different organisations in the UK, whether businesses, developers or UK plc (including suppliers and policy makers).

### Benefits to business

- Transparent voluntary reporting, by providing the information that businesses need to understand such as where their energy comes from, the carbon content associated with that energy and the type of electricity they have bought.
- Clearer communication of electricity sourcing to stakeholders allowing business to demonstrate its commitment to low carbon generation.
- Reputational benefits from buying low carbon and proving it with the label, including an opportunity to demonstrate competitive advantage, call suppliers to account on accurate disclosure and prove credibility to stakeholders that a business's carbon footprint is correct. It may also reduce demand for G-rated power as this could be exposed as a reputational risk.
- Lower administrative costs by saving time to collate evidence and create an audit trail, as well as compare electricity tenders in a like-for-like way.





# Executive summary

## What a electricity label could look like

Electricity Label	kgCO <sub>2</sub> e/ MWh	MWh Supplied	CO <sub>2</sub> Emissions (tonnes)	Example Technology
A	0–20	950,000	0	Hydro, Nuclear, Solar, Wind (on/offshore)
B	20–100	–	–	Biomass, CCGT with CCS
C	101–250	450,000	90,000	ASC with CCS, Gas CHP
D	251–450	1,275,000	510,000	IGCC, CCGT
E	451–600	–	–	Gas OCGT
F	601–800	–	–	ASC
G	801+	–	–	Existing coal
<b>Total Electricity CO<sub>2</sub></b>	<b>225</b>	<b>2,675,000</b>	<b>600,000</b>	

Notes: CCGT (Combined Cycle Gas Turbine); CCS (Carbon Capture and Storage); ASC (Advanced Supercritical Coal); CHP (Combined Heat and Power); IGCC (Integrated Gasification Cycle Turbine); OCGT (Open Cycle Gas Turbine). Source: compiled by UtiLyx®

### Benefits to developers

- Stable, transparent definition of low carbon electricity that also gives investors confidence in the demand for low carbon generation.
- Greater demand pull for low carbon electricity, which will help fund the projects.
- Simplified communication of a project’s benefits and carbon impact to energy buyers.

### Benefits to the UK

- Provide the mechanism for transparency, comparability and levelling the playing field, leading to a much stronger reputational driver for organisations to demand lower carbon electricity.
- Increase in long-term contracts to purchase renewable energy, incentivising new investment in zero carbon electricity generation.
- Build on Defra and WRI’s recommendations for location based and market based reporting of renewable energy to deliver a more balanced, transparent and comprehensive framework.
- Provide a foundation for simplification and harmonisation of UK carbon reporting and carbon pricing.

- Provide an opportunity to test the impact of clear labelling on business decisions and stakeholder engagement.
- Mark the start of the journey to demystify the language around low carbon electricity and what constitutes ‘green’.

### Challenges and next steps

The label cannot solve all the complexities in the current UK energy market and in reporting of carbon and energy, but it could provide the foundation for these to be addressed progressively. Neither can it solve the tension between simplicity and accuracy, nor directly solve the issues of additionality.

An electricity label would be a new tool amongst the myriad of policies and guidelines already in the public domain; however, if it complements the existing mechanisms, it could pave the way for future harmonisation of the reporting landscape. Only radical reforms will ensure the energy market is simplified and streamlined.

Recommended next steps are for voluntary adoption with a supplier champion to pilot with a number of corporate purchasers and then monitor over a year to refine its effectiveness, and measure changes in purchasing behaviour and demand. This would be a precursor to national adoption if feedback continues to be encouraging.



# 1 Introduction

In summer 2013 the Aldersgate Group commissioned Utilyx to work in partnership with the Aldersgate Group project Steering Group to assess the structure and impact of an effective electricity labelling scheme in the UK. The project examined the likely impacts and benefits of electricity labelling for businesses. Utilyx worked in partnership with the Steering Group, a forum of large, UK-based corporate energy users.

Steering Group members are:



## 1.1. Context

The Aldersgate Group was keen to understand the potential for an electricity labelling scheme in the UK as a multi-purpose tool for:

- » Disclosure and transparency of ingredients in purchased electricity including the carbon content or footprint.
- » Creating a platform to harmonise the fractured carbon reporting landscape.
- » Driving investment in and demand for electricity from renewable sources.

## 1.2. Objectives

This project sought to:

- » Understand how and why electricity labelling could incentivise corporate energy users to buy low carbon energy.
- » Set out a structure for an electricity labelling scheme for the UK including a qualitative assessment of how it would work, noting the challenges it would not overcome.
- » Provide a quantitative assessment of what 'good' could look like (in terms of uptake) for an electricity labelling scheme.

## 1.3. Structure of this document

The final project report is structured around the sections listed below. Headlines from the survey analysis<sup>7</sup> are used to provide context for later sections.

## 2 Defining the challenge: where does my electricity come from?

*We looked behind the green tariff and it appears relatively empty – so we are not sure how green it really is.*

**Survey respondent**

Corporate energy users and the supplier community face a wide range of approaches to reporting and calculating carbon emissions from electricity. This section explains that context and the challenges that an electricity label could help to overcome.

### 2.1 Barriers to overcome

#### 2.1.1 Mixed messages

Different suppliers use different terms and phrases to describe the ‘greenness’ of electricity:

- » **‘Green’** – renewable energy plus low carbon sources, e.g. good quality Combined Heat and Power CHP (GQCHP). ‘Green’ may even include less direct environmental benefits such as carbon offsets, tree planting or donations to environmental causes. It is the least strictly defined of all of the terms.
- » **‘Low carbon’** – energy sources that produce or cause significantly lower carbon emissions in operation than conventional fossil fuel technology. Typically includes renewables as well as high efficiency fossil fuel technology (e.g. gas fired Combined Heat and Power (CHP) or tri-generation). Nuclear power is included as low carbon.
- » **‘Renewable’** – energy from a source that is continually or readily replenished, that will not deplete in human time horizons if exploited in a sustainable manner. This includes climatic (sun, wind, hydro, marine),

geological (geothermal) and biological sources (biomass, biogas etc).

- » **‘Zero carbon’** – energy sources that do not create emissions in operation. Typically includes renewable such as solar, wind, hydro and marine. Biomass may be included depending on the source of the fuel. Zero carbon is commonly used in the planning and construction industries, in relation to Zero Carbon Homes<sup>8,9</sup>.
- » **‘Carbon neutral’** – any energy source from which the emissions are subsequently netted off by purchasing carbon credits or ‘offsets’.

There is some disagreement over what constitutes ‘green’<sup>10</sup>. This confusion can affect how end users choose between different types of energy (sourcing). It can also influence how much they buy (purchasing) and whether they make published statements about that purchase (disclosure). By creating a single transparent definition for ‘green’, a label could help organisations understand and disclose where their energy comes from.

#### 2.1.2 Multiple reporting rules

Organisations operating in the UK today disclose and report their carbon emissions in a range of different ways under both mandatory and voluntary schemes. The range of policies results in many organisations reporting more than one carbon emissions figure, which can be difficult to explain to internal and external stakeholders. Suppliers also need to adapt their systems to meet the requirements of different policies<sup>11</sup>.

A standardised electricity label could simplify an organisation’s reporting and ensure that the same assumptions are used everywhere.

#### 2.1.3 Additionality

A common question is whether buying ‘green’ electricity makes any difference. The UK’s renewable targets mean that there are already incentives in place for generators and suppliers.

This issue is addressed in Defra’s 2014 consultation to update their GHG reporting guidelines<sup>12</sup> which states that:

*“Emissions associated with the use of electricity from the grid are generally calculated using the grid average emissions factor. This figure is based on the actual emissions from all the generating sources supplying the electricity to a particular location, which includes a mixture of fossil, nuclear and renewable electricity. If a company decides specifically to purchase renewable electricity from their supplier, that should boost the total UK investment available for renewable energy but will not directly alter the nature of the electricity which is actually used by the organisation. As a result, the current guidance only allows them to report an emissions reduction if their electricity supplier makes an additional carbon saving which would not have happened otherwise. Under the existing guidance, that would require their supplier to demonstrate that they have offset at least 50% of the carbon emissions from the electricity supplied using Kyoto compliant or ‘good quality’ carbon credits.*

*Some organisations see this approach as excessively onerous, claiming it deters companies from purchasing renewable electricity and thus reduces potential investment in renewables. Defra agreed to investigate whether the existing requirements could be relaxed, while still ensuring the fairness, accuracy and transparency of corporate greenhouse gas reports and accounts.*

## 2 Defining the challenge: where does my electricity come from?

*We believe that some revision is possible that would enable companies to report a reduced emissions figure, based on purchased renewable electricity, without the need for the additional carbon offsets. In order to do so, their electricity supplier would need to hold the requisite number of Renewable Energy Guarantees of Origin (REGOs) and take out of use any Levy Exemption Certificates (LECs) associated with the electricity in order to prevent resale and doublecounting. This would be termed a 'contractual' or 'market based' reporting approach and would be a significant change for many reporting entities."*

This is a positive step forward but further reform is required to deliver a more balanced, transparent and comprehensive framework. An electricity label would build on Defra's approach by:

- » Providing a much clearer framework to communicate the market based approach to stakeholders, increasing traction, usability and understanding.
- » Helping to address regulatory inconsistencies which provide relatively weak and complex signals to business.
- » Reporting the carbon content of all electricity purchased and not just renewables.
- » Ensuring that the market based approach covered the whole market (going beyond voluntary guidance) and providing a more robust platform on which to build statements about additionality.
- » Creating stronger reputational drivers for organisations to increase demand for long term contracts to purchase renewable energy, incentivising new investment in zero carbon electricity generation.

"This is tricky. If you intend to use green electricity to reduce your emissions then it can be thought of as a carbon offset purchase. Carbon offset purchases are only credible and indeed only "legitimate" if they are demonstrably additional. My purchase of green electricity would have to result in less brown electricity being generated. This clearly isn't the case, no matter how many REGOs, LECs, CCL exemptions and so forth you buy with the kWhs." Survey respondent

### 2.1.4 Multiple carbon costs

The majority of energy users face multiple costs of carbon via the wholesale electricity price, pass-through ('non-commodity') charges and additional taxes and levies. These multiple costs increase complexity and put a value on the benefits that low carbon energy can bring. Stakeholders also raise concerns around a lack of transparency on energy tariffs and pricing<sup>13</sup>.

If an electricity label became the recognised source of information for the carbon content of electricity in regulation and legislation, it could help streamline these carbon costs. It could also provide transparency into the electricity price charged.

### 2.1.5 Policy uncertainty

Low carbon energy is incentivised through a range of different measures, from renewable support schemes (like the Renewables Obligation and Feed-in Tariffs) to carbon pricing (e.g. the EU Emissions Trading System). End users looking to invest in on-site generation, and generation asset developers, face a changing energy policy environment. This makes long-term investment decisions more uncertain and investment harder to find.

An electricity label could provide certainty outside specific policies, giving investors and energy users confidence in long-term demand for 'green' energy. It could also provide

evidence on which to base future political decision making. Current political debate is hampered by lack of evidence around what corporates buy from their energy supplier and the lack of transparency in the market.

### 2.1.6 The playing field

There are already a range of certificates and activities that relate to the source of electricity in the UK:

- » **UK Fuel Mix Disclosure (FMD).** The Electricity Fuel Mix Disclosure Regulations were introduced in 2005. They require all electricity suppliers in Great Britain to provide generator declarations that disclose the mix of fuels used to generate the electricity supplied annually to their customers, provided electricity is supplied for a full disclosure period. Fuel mix information must be provided to customers and should be presented in percentage terms. The FMD covers: coal; natural gas; nuclear; renewable; and, other (this is classed as whatever cannot be said to be one of the previously mentioned fuels).
- » **Renewable Energy Guarantee of Origin (REGO).** This is a certificate issued by Ofgem to prove that the electricity it accompanies was generated by renewable sources. The primary use of REGOs in the UK is for the supplier through the FMD. Unlike a Renewable Obligation Certificate (ROC) or Levy Exemption Certificate (LEC), a REGO has no traded value.
- » **Renewable Obligation Certificate (ROC).** An annual obligation is placed on suppliers through the Renewables Obligation (RO) to source an increasing percentage of electricity from renewable sources. To comply, suppliers present ROCs to Ofgem or pay into a buy-out fund. ROCs are bought from renewable generators, can be traded separately from the power and carry a market value.

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## 2 Defining the challenge: where does my electricity come from?

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» **Levy Exemption Certificate (LEC).** Electricity produced from designated renewable sources is exempt from the Climate Change Levy (CCL) and is entitled to earn LECs. The LEC is bundled with the power when sold to a supplier and cannot be separated from it. LECs are one of the commonly used quality labels that suppliers use to define 'green tariffs' to end users.

» **Guarantee of Origin (GoO).** Guarantees of Origin (GoOs) are certificates that prove that one MWh of electricity was produced from renewables. GoOs are exclusively issued for disclosure and transparency purposes. In order to use GoOs for disclosure purposes a valid certificate must be cancelled<sup>14</sup>.

None of these schemes presents a simple A–G rating i.e. they are not 'electricity labels'. An electricity label should build on the information and activity that is already available and also simplify the layers of reporting where possible.

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### 2.2 Lessons from around the world

Different countries and organisations have already tried to tackle the challenges of:

- » providing information to end users on electricity sourcing; and
- » stimulating demand for renewable, low carbon and 'green' electricity.

The headline lessons from global labelling experiences are <sup>15,16</sup>:

- » The **purpose of certification** varies by scheme: the most common aims include information provision and increasing low carbon generation. It is essential for the UK electricity label to have a clear purpose, because this will drive its design.
- » Different schemes allow **accreditation of different types of 'green'** or low carbon energy. Since there is no default, to ensure transparency the UK label will need a clear carbon content grading or calculation method.
- » The importance of **the way that the label is graded and presented** to customers should not be underestimated. An electricity label needs a simple and transparent grading system that will avoid unintended consequences.<sup>17</sup>
- » **Additionality** is one of the key purposes of existing energy labels i.e. driving renewable and low carbon supply over and above that which is required by legislation. The majority of labels refer to additionality as: the building, or expansion of, generation plant over and above what would have been built in accordance with legislation in the host country.

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» Existing schemes avoid **double counting** of low carbon electricity sales in a range of ways. To be cost effective, the UK will need to build on existing data sources and tracking mechanisms wherever possible.

» Existing electricity labelling schemes are **set up and managed** by a range of different organisations including national governments, industry players, environmental groups, and certifying bodies. The appropriate body in the UK will need to be trusted and independent. This is currently a live debate in the UK.

» There are a variety of approaches to commissioning auditing (the supplier, the recipient, the end user, or the labelling organisation). Where external auditors are used, it is to ensure that the rigorous criteria set by the labelling schemes are enforced. The method of enforcement will be key to the credibility of a UK scheme.

# 3 The Aldersgate Group proposal

The Aldersgate Group has put forward a proposal for an electricity label.

## 3.1 Aims for the label and how it will be used

### 3.1.1 Transparent disclosure

The label’s primary aim is to enable the transparent disclosure of the source of a business’s electricity. The label will allow businesses to make more informed procurement decisions, communicate this to their stakeholders and develop reputational benefits associated with buying low carbon

electricity. This could mean that the label stimulates competition within the sector and generates a reputational driver such that competing businesses change their buying behaviour to avoid buying the carbon intensive electricity sources.

Of survey respondents that buy ‘green’, reputation is the main driver

By providing a single, simple statement of carbon content specific to a customer<sup>18</sup>, the label will help decision makers compare different sources of electricity available to them. As a result, transparent disclosure will facilitate business decisions on:

- » the best source of electricity
- » how much low carbon electricity to buy
- » developing the reputational advantage to their business of buying ‘green’

### 3.1.2 Simplified carbon reporting

The label will provide a simple statement of the carbon intensity of the electricity businesses have bought. The label should be retrospective in its early years, reflecting the carbon content of the previous year’s electricity. This will enable robust communication with stakeholders.

Figure 1. Overview of the electricity label

Feature	Proposal
Primary aim	Enable the transparent disclosure of where a business’s electricity was generated and of the carbon emissions associated with that generation
How the label will be used	Communicating where a business’s electricity has come from Declaring the carbon content of the electricity a business has bought i.e. customer specific label Explaining the carbon content of the electricity a supplier has provided to a business
Fuel coverage	All types of generation, including: <ul style="list-style-type: none"> <li>– Low carbon: renewable, nuclear and fossil fuel with carbon capture and storage (CCS)</li> <li>– Fossil fuels: including oil, coal, gas</li> </ul>
Label format	An A to G rating presented like an appliance energy performance label with the relevant kgCO <sub>2</sub> e/MWh band
Basis for grading	The operational carbon content of electricity in carbon dioxide equivalent per unit of electricity purchased (kgCO <sub>2</sub> e/MWh)
Calculation methodology	Calculation and methodology: <ul style="list-style-type: none"> <li>– must be clear and transparent</li> <li>– must be simple, even when this is at the expense of accuracy</li> <li>– should be based on data already collected</li> </ul>
Delivery organisation	Label should be maintained by an independent and trusted organisation That organisation should ensure there is no double counting Third party auditing is essential to ensure the label is considered robust and is trusted

Source: Input from Aldersgate Group Steering Group collated by Utilyx

## 3 The Aldersgate Group proposal

As visual recognition and use of the label increases businesses may start to ask for, and suppliers may choose to provide, a label that is also forward looking, ie based on the carbon intensity of forthcoming electricity.

*"I think it would definitely be a clearer way of reporting."* Survey respondent

In the short term, the label will only be used for voluntary reporting. In the longer term, it has the potential to become the recognised way for reporting electricity in the UK. In principle, a standardised electricity label could simplify an organisation's reporting and ensure that the same assumptions are used everywhere. This would require harmonisation of carbon reporting rules across government policies but a proven electricity labelling scheme would provide the foundation on which to build a simplified reporting landscape.

### 3.1.3 Demand for renewable electricity

The label will recognise the role of buying low carbon electricity. It will allow organisations to communicate their buying choices with confidence.

Defra recognises that:

*"It is possible that a very significant increase in longterm contracts for the purchase of renewable energy could incentivise new investments in renewables which would not have happened otherwise. The pull of significant extra demand through voluntary support for renewables could make the difference for some schemes, which were not economically viable through government measures alone."*<sup>19</sup>

By recognising the role of low carbon electricity outside policy-specific carbon reporting rules, the label will provide a stable statement of demand for low carbon electricity. This will help provide more certain demand signals to developers of low carbon generation, including renewables.

A mandatory scheme for electricity labelling would significantly increase the transparency of electricity purchasing decisions. In a similar way to the initial stages of the CRC energy efficiency scheme before it was reformed, the result of increased transparency is likely to change behaviour in order to outperform competitors or avoid reputational damage. This would provide a much stronger reputational driver for organisations to increase demand for lower carbon (A rated) electricity and reduce demand for higher carbon (G rated) electricity.

### 3.2 Fuel coverage

The label will need to include and compare all the electricity that a company in the UK might buy from the grid. This means that it needs to compare:

- » renewables with other low carbon sources (e.g. nuclear and Carbon Capture and Storage (CCS)).
- » low carbon options with fossil fuelled electricity (e.g. from oil or coal).
- » all sources of electricity whether they are generated in the UK or imported e.g. from France.

The sources of electricity should be clearly and transparently defined to facilitate clear messaging that is not open to ambiguity. The definitions should be aligned with existing best practice guidance to ensure a consistent approach. Nuclear power may need to be differentiated from other low carbon power to ensure transparency and

trust in the label. A recent survey confirmed that nuclear is viewed as distinct from 'green' energy, which is commonly understood to refer to renewables.<sup>20</sup>

### 3.3 Label format and supporting information

The label should build on the recognised format for electricity labelling (see Figure 2 for an example of how this might be constructed). It should present the carbon impact of different sources of electricity in a clear and transparent way. This would show an A to G rating presented like an appliance energy performance label with the relevant kgCO<sub>2</sub>e/MWh band. In the example (Figure 2) we have included a column for examples of technologies corresponding to the kgCO<sub>2</sub>e/MWh A to G bandings. Each band is defined by the emissions intensity of the electricity (rather than by technology). The label is designed to reflect the full range of potential carbon intensities, so that it is stable over time.

In order to allow companies to explain how they have achieved a grade, supporting information on the composition of energy sources for each band should also be provided alongside the label. The label will require this information for band A, using the format set out in Figure 3 below. Companies should state the contribution of A rated electricity from each source in order to demonstrate the action they have taken, as well as its carbon content. This would allow stakeholders to distinguish clearly between different sources of A rated electricity (which are generally perceived to differ in "quality") and help to reflect the purchase of renewables that have played a more active role in bringing new capacity to the market.



# 3 The Aldersgate Group proposal

Figure 2. Example electricity label for Company A

Electricity Label	kgCO <sub>2</sub> e/MWh	MWh Supplied	CO <sub>2</sub> Emissions (tonnes)	Example Technology
A	0–20	950,000	0	Hydro, Nuclear, Solar, Wind (on/offshore)
B	20–100	–	–	Biomass, CCGT with CCS
C	101–250	450,000	90,000	ASC with CCS, Gas CHP
D	251–450	1,275,000	510,000	IGCC, CCGT
E	451–600	–	–	Gas OCGT
F	601–800	–	–	ASC
G	801+	–	–	Existing coal
Total Electricity CO <sub>2</sub>	225	2,675,000	600,000	

Notes: CCGT (Combined Cycle Gas Turbine); CCS (Carbon Capture and Storage); ASC (Advanced Supercritical Coal); CHP (Combined Heat and Power); IGCC (Integrated Gasification Cycle Turbine); OCGT (Open Cycle Gas Turbine). Source: compiled by UtiLyx<sup>6</sup>

The right hand column will only sum to 100% if all of an organisation’s electricity is A rated; if not, the total will reflect the proportion of the total electricity volume that is A rated.

### 3.4 Basis for grading

To provide a direct link with the electricity a business has bought, the label should state the carbon content of the electricity that a company has purchased. It should not just show the average carbon content of a supplier’s portfolio<sup>21</sup>.

It should focus on operational (or point of source) carbon emissions for simplicity and feasibility of implementation (rather than location specific, lifecycle or time of use emissions). The label should be expressed in carbon dioxide equivalent per unit of electricity purchased (kgCO<sub>2</sub>e/MWh).

### 3.5 Calculation methodology

The calculation methodology must be published in order that it is trusted. It must be simple enough to explain to senior stakeholders so that it may inform electricity buying decisions.

It should align with best practice guidance in order to ensure consistency with existing carbon reporting rules to the extent possible. The calculation methodology will need to remain stable over time in order to provide a firm foundation to demonstrate trends in low carbon electricity demand.

To be cost effective, the label will need to build on existing data collection activity and information sources. This is important for both corporate end users and suppliers.

### 3.6 Delivery organisation

The label will need appropriate management, accreditation and enforcement. The body(s) responsible for this will need to be trusted and independent.

In order to avoid double counting, the label will need a robust tracking mechanism. The method of enforcement will be key to the credibility of the UK label.

To ensure the label is fit for purpose and effective, it will need to be reviewed on a regular basis. Review milestones should fit in with the UK energy policy framework review milestones.

Figure 3. Supporting information for A rated electricity

Source of A rated electricity:	Contribution of A rated electricity (% of total electricity consumption)
Nuclear	
Renewable: self generation	
Renewable: third party via power purchase agreement (PPA)	
Renewable: third party via green tariff	

The right hand column will only sum to 100% if all of an organisation’s electricity is A rated; if not, the total will reflect the proportion of the total electricity volume that is A rated.



## 4 Where my electricity comes from: how the mechanism would work

The majority of stakeholders we spoke to during this project like the idea of electricity labelling in principle. Their views only diverged over how it would work in practice. This section sets out one way that the Aldersgate Group's proposal could be implemented and discusses some of the challenges with this approach.

### 4.1 Aims for the label and how it will be used

Views on label aims were mixed<sup>22</sup>, but there was a clear call for transparent disclosure of where a business's electricity comes from. There was some concern about the complexity that multiple aims and the need for accuracy could bring to the label, particularly when it was first launched. This feedback has driven the view that the label will focus on electricity only. It will also focus on a business's average carbon emissions from electricity consumption over the year past<sup>23</sup>.

The ability of an electricity label to stimulate increased renewable generation was also questioned. Concerns related to the fact that there is currently no benefit to corporate reporting or carbon costs from buying green in the UK today and so it may not encourage additional green power purchasing. This feedback leads to a label that, in the short term at least, focuses on enabling transparent disclosure of where a business's electricity comes from (rather than explicitly encouraging the uptake of renewable generation).

### 4.2 Fuel coverage

#### 4.2.1 Types of generation

In order for an organisation to be able to use the label to report its carbon emissions from electricity consumption, all types of generation will need to be covered. This supports the aim for transparency over where a business's electricity comes from. It also means that a business is

able to declare the carbon content of all the electricity it has bought rather than a proportion of its total volumes.

As a result, the label will include renewables and 'low carbon sources' like nuclear and fossil fuels (see Section 4.5 for how the grading might be applied).

#### 4.2.2 Method of procurement

In line with the aim of keeping things simple, when it is first launched the label banding will focus on the source of the electricity rather than how it is bought. There is potential to add additional elements to the label over time. Some stakeholders suggested a 'star' approach to show whether the activity was additional, for instance. For the time being, companies should provide supporting information to the label, and must provide information regarding the source of A banded power particularly (see Section 3.3). In future, to be in line with Defra guidance, it may also be useful to distinguish between grades depending on which renewable certificates have been surrendered.

### 4.3 Label format

The project highlighted that using a recognised format of the kind shown in Figure 2 would be a good idea. Presenting the source of electricity using the A to G rating is easy to understand given its use elsewhere e.g. for energy performance labels on appliances.

Stakeholders also asked for the label to carry sufficient information for clarity (i.e. information on the value of carbon per unit used to calculate the grading). The label needs to balance the requirement from business for detail against the need for simplicity (for example, Section 4.2.2). To this end the A to G rating is presented like an appliance energy performance label with the relevant kgCO<sub>2</sub>e/MWh band. We have provided

examples of technologies that could be in each band (Figure 2). We suggest that for the pilot scheme (Section 8), renewable and low carbon energy sit in the same band.

### 4.4 Basis for grading

The basis for the grading of the label is operational (or point of source) carbon emissions, which should be expressed in carbon dioxide equivalent per unit of electricity purchased (kgCO<sub>2</sub>e/MWh).

The label should reflect the carbon impact of specific businesses' energy consumption, i.e. should not simply show the average emissions for the electricity supplier's portfolio. This requires an extra step in the calculation of the label, over and above what is currently provided by the majority of suppliers, to identify all generation sources and then to allocate them to a particular customer. The REGOs and LECs relating to the electricity reported for a particular customer must be ring-fenced by the supplier to avoid double counting.

In future, use of the label may develop to indicate what a business will buy in future, rather than accrediting what it has bought in the past. This brings challenges for its calculation and should be considered a second step for the scheme.

### 4.5 Calculation methodology

The principles that stakeholders typically put forward for the label's calculation were that it must be:

- » clear and transparent.
- » simple, even where this is at the expense of accuracy.
- » based on data already collected.

## 4 Where my electricity comes from: how the mechanism would work

### 4.5.1 Data sources

Ofgem's Fuel Mix Disclosure (FMD)<sup>24</sup> initially offered the preferred platform on which to build the proposed label because:

- » It covers all fuel types: coal; natural gas; nuclear; renewable; and, other (this is classed as whatever cannot be said to be one of the previously mentioned fuels). Other mechanisms do not cover the full range of fuel types.
- » Suppliers are familiar with the requirements of the FMD.
- » Suppliers' systems are already set up to use and generate a certain amount of fuel mix data. Using these would reduce implementation costs, compared with establishing an electricity label requiring new data and new systems and processes.
- » It requires the same tracking for UK power as it does for imported power through an interconnector.

### 4.5.2 Headline challenges using FMD

However, there are also a number of shortcomings to using this information.

- » **Product specific disclosure** – Ofgem voluntary guidance provided to suppliers<sup>25</sup> outlines three disclosure options for suppliers, including on product fuel mix. A brief review of suppliers' use of the guidance highlights that for the most recent year (2012–13) suppliers have tended not to provide details of the tariff product fuel mix. This could be:
  - for simplicity or to save costs (time, systems and processes), or
  - because not all electricity provided by suppliers to business has tracking information to support where the electricity comes from<sup>26</sup>
- » **Ofgem internal review of FMD** – over the coming weeks and months, Ofgem will continue to monitor the effectiveness of the FMD. Next steps may be defined if appropriate. It is thought that current Fuel Mix Disclosure arrangements may not be delivering the intended transparency for consumers<sup>27</sup>. This flags both an opportunity for the Aldersgate Group to input into that review and a challenge for using the FMD to underpin the proposed electricity label.
- » **Ofgem consultation 'Improving Consumer Protection in the Green and Renewable Energy Offers Market'**<sup>28</sup> – Ofgem recently consulted on proposals to review the guidelines under which the Green Energy Supply Certification Scheme (GESCS) operates. This is in line with the objectives of the RMR<sup>29</sup>. The effectiveness of the FMD could impact on the Green Energy Supply Certification Scheme (GESCS) and tariffs certified for compliance. While the GESCS is specific to the domestic electricity market, the consultation considered whether the principles of the GESCS should be extended to cover large non-domestic consumers. The outcome of the consultation may influence the future of the FMD.
- » **Carbon calculation method** – the approach used by the FMD is different to the carbon calculation method with which businesses reporting their carbon footprints would be most familiar<sup>30</sup>. This will create a communication challenge for businesses wishing to use the label to report the carbon associated with the electricity they have bought compared to the carbon associated with the electricity their operations have consumed and hence need to report.

- » **Carbon content of past electricity bought vs. future electricity to be bought** – the FMD provides transparency for the fuel mix bought historically by a business. It is more difficult and less accurate to provide the required information for the electricity a business is buying in the future but with which it has not yet been supplied. It is difficult to project the fuel mix and carbon impact of electricity traded on the in-day or day-ahead spot market. It is also difficult to project the actual generation mix for a supplier given the merit order<sup>31</sup> of generation is influenced by commodity market prices and generation availability on a half-hourly basis. For these reasons the label should be applied to and provide information for electricity that has been bought rather than what will be bought. In the future, businesses may start to ask for, and suppliers may choose to provide, a label that is also forward looking.

- » **Basis for carbon grading** – the Aldersgate Group's proposed grading (Figure 2) is not matched by that of the FMD. For the most robust and transparent approach the grading should be based on carbon intensity bandings and existing data.

In light of the above, it is also worth considering how the Defra environmental reporting guidelines may be revised in line with the forthcoming revised guidance from the WRI GHG Protocol on Scope 2 carbon emissions reporting (Annex 2). Once the WRI guidance and Defra guidance have been published (in summer 2014), there will be an opportunity to review this proposal to ensure alignment.

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## 4 Where my electricity comes from: how the mechanism would work

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### 4.6 Delivery organisation

The label should be established, maintained and enforced by an independent and trusted organisation that must ensure there is no double counting. Learning the lessons from global electricity labelling experiences, we recommend third party auditing of the proposed electricity label be enforced. This will help to ensure robustness and integrity of the label.

The best delivery organisation will depend on the data used; if it is the FMD, then it could be most efficient for this to be Ofgem, since it already holds the data and has the supplier relationships<sup>32</sup>. It would also mean that the method by which the FMD avoids double counting<sup>33</sup> could be employed to avoid the same for the Aldersgate Group electricity label. However, for the same reasons, Ofgem may not be seen as sufficiently 'independent' by all stakeholders.

"There would have to be a consistent, clear form of registry so that electricity suppliers can demonstrate that the amount of "green" electricity they buy is the amount that they sell. And that they only "sell" it once." Survey respondent

Alternative options exist; for instance, Green Energy Supply Certification Scheme (GESCS) could offer an appropriate alternative. Managed by an independent panel of energy and sustainability experts for domestic tariffs, used for a modified label GESCS could provide alignment and tie-in with the domestic market.

The label's effectiveness should be reviewed on an annual basis and the design updated as necessary. Ideally its launch would be timed to fall ahead of the majority of corporate end users' financial year and suppliers' reporting year.

## 5 What good could look like

This section puts a range of values to the impact that electricity labelling could have. We have used published data, aggregate information from Utiylx's procurement activity and information from the survey for this project to quantify what good could look like for the uptake of the label between today and 2020.

### 5.1 Context

#### 5.1.1 Demand for electricity

Today industrial and commercial (I&C)<sup>34</sup> electricity demand is around 176.6TWh per annum (or 56.2% of total UK demand<sup>35</sup>). This is expected to remain relatively constant between today and 2020 i.e. 176.8TWh (Figure 4).

#### 5.1.2 Availability of low carbon electricity

In comparison, the UK currently generates around 111.7TWh per annum of low carbon

electricity. This equates to around 63.2% of electricity demand from the I&C sector.

Current low carbon generation predominantly comes from nuclear (16.8% of total generation), with a growing proportion from renewables (15.4%)<sup>36</sup>. By 2020, carbon capture and storage (CCS) is only expected to play a small role (4.7TWh or 1.4% of forecast 2020 generation capacity). Energy users looking to buy A rated power will still have to rely primarily on renewables and nuclear (Figure 5).

### 5.2 Potential uptake of the label

#### 5.2.1 Starting point

We have estimated the current volume of low carbon electricity currently bought by UK I&C customers (Figure 6). The estimate is based on published data, aggregate information from Utiylx's procurement activity and information from the survey

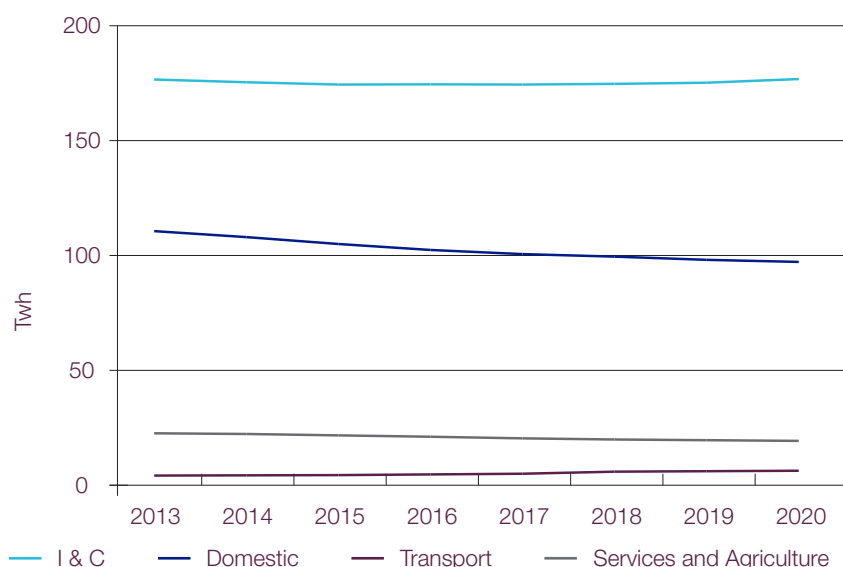
for this project. Based on the assumptions below, we estimate that around 25.5TWh of low carbon energy (14.4% of total I&C demand) are purchased at the moment through 'green' contracts.

#### 5.2.2 Future demand

To see the impact a label could have on I&C green energy demand i.e. the range of possibilities<sup>37</sup>, we have made a series of assumptions to calculate a base case, low uptake and enhanced uptake scenarios. We have assumed that:

- » Customers already buying green continue to buy green.
- » Green contract uptake increases year on year even without the label, calculated using the current growth rate of green energy procurement contracts (taken from Utiylx data)<sup>38</sup>.
- » **Low level of uptake** – calculated assuming that half of organisations that do not buy green but indicated they 'definitely' would if a label were introduced, start to buy green (a 1.2% year-on-year increase in addition to uptake without the label).
- » **Base case level of uptake** – calculated assuming that those organisations that do not buy green but indicated they 'definitely' would if a label were introduced, start to buy green but indicated they 'definitely' would if an electricity label were introduced, start to buy green (a 2.4% year-on-year increase in addition to uptake without the label).
- » **Enhanced level of uptake** – calculated assuming that those organisations that do not buy green but indicated they 'definitely' or 'maybe' would if a label were introduced, start to buy green (a 9.8% year-on-year increase in addition to uptake without the label).

Figure 4. Total electricity demand to 2020 by sector



Source: DECC Updated energy and emissions projections 2013 (September 2013), Annex C – final energy demand.

## 5 What good could look like

Based on our assumptions (Figure 7), the volume of low carbon energy bought in the I&C sector based on uptake seen by Utiyix would be 22.6% by 2020 (or 40TWh). Based on the survey responses, the introduction of the label could increase green consumption to 48.3% of demand (or 47TWh).

### 5.3 Caveats

The main challenges for this analysis have been the absence of a published data set that provides:

- » Energy use by organisation in the UK<sup>41</sup>;
- » Uptake of renewable tariffs and low carbon electricity in the UK by organisation.

As a result, the analysis is based on the points stated in Figure 6 and the following simplifying assumptions:

**Figure 6. 2013 baseline assumptions**

Baseline Information	Value	Source
Total I&C demand for power in the UK	176.6 TWh	DECC September 2013 Annex C - final energy demand
Percentage of UK I&C with a green contract	33.1%	Utiyix contract data <sup>39</sup>
Percentage of green energy within the green contract	43.6%	Bloomberg's Global Corporate Renewable Energy Index (CREX) 2012 customer data <sup>40</sup>
Total percentage of I&C green energy demand	14.4%	Calculated (43.6% of the 33.1% of customers with a green contract)
2013 volume of green energy being used in I&C supplier contracts within the UK	25.5 TWh	Calculated (14.4% of 176.6 TWh)

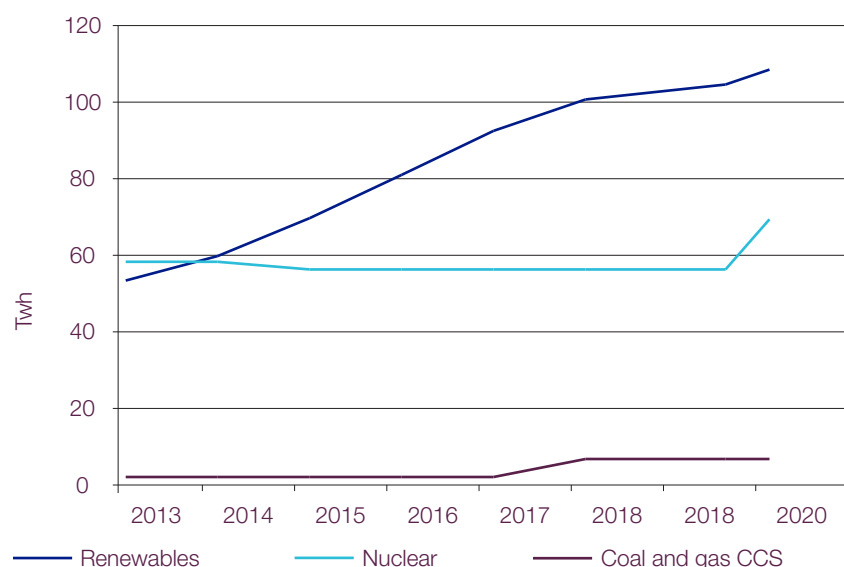
Source: compiled by Utiyix

- » Recent trends in electricity buying shown in Utiyix data continue into the future;

- » Survey respondents are a representative sample of the I&C customer base;

- » Each organisation consumes the same volume of electricity and so the proportion of survey respondents answering a question equates to a proportion of energy demand.

**Figure 5. 2013 baseline assumptions**



Source: DECC Updated energy and emissions projections Annex E – total electricity generation by source.

2013 (September 2013),

### 5.4 Sense checking the results

In order to confirm that this scenario is reasonable, we have compared it to the increase in uptake of the Green Power Partnership (GPP) scheme in the US from 2001 to 2013<sup>42</sup>. This scenario results in a higher level of uptake, validating the view that the base case is a relatively conservative 'what if' scenario (Figure 8).

### 5.5 Bandings

As well as a move towards A graded electricity generated by low carbon technology, we might expect an electricity label to encourage end users to shift their energy consumption up the scale, say from F rated to B rated. This move is

## 5 What good could look like

seen in the change in buying behaviour of appliances with an energy efficient label. Figure 9 shows our extrapolation of current DECC numbers from 2012 in the shift in bandings. By 2020 D–F and worse are no longer produced. This suggests that at some point in the future the proposed electricity label could have a similar effect.

### 5.6 Policy context

This section outlines what would need to happen to deliver the enhanced uptake (or high) scenario.

» **Simplified carbon reporting** – harmonisation of different reporting requirements for businesses in the UK will help drive uptake. A single set of reporting rules for policies like Mandatory GHG Reporting and the CRC Energy Efficiency Scheme is essential.

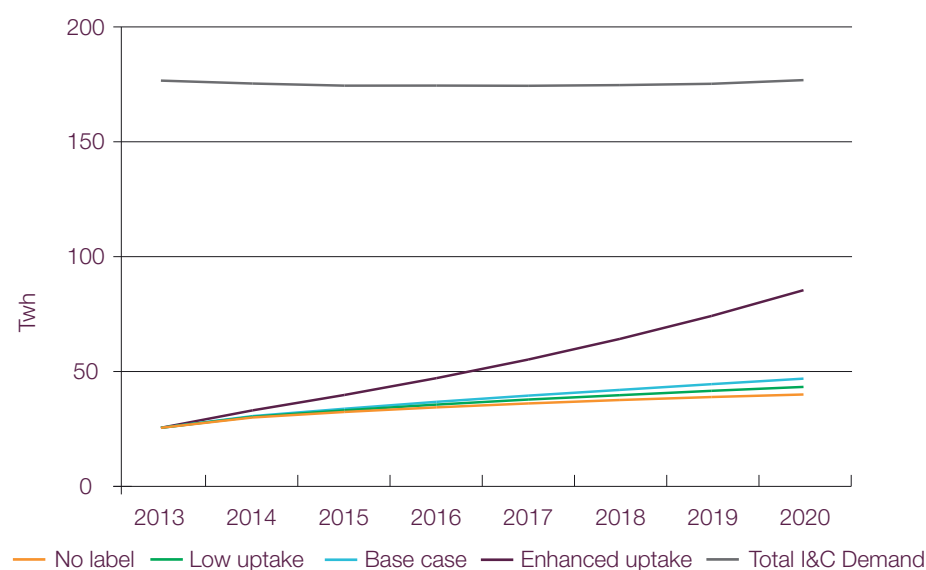
» **International harmonisation of carbon reporting rules** – UK reporting guidelines should be aligned with international reporting standards such as the WRI GHG Protocol. This will ensure that businesses apply consistent reporting rules inside and outside the UK.

» **Single carbon price** – electricity labelling has the potential to influence behaviour further if it is linked to financial mechanisms. For this to be most effective, businesses should face a single, transparent carbon price. This would not only require consistent carbon pricing across policies (e.g. EU ETS, CCAs and CRC), but also simplification of carbon pricing into a single, explicit tariff.

» **Trusted source of emissions data** – one of the challenges identified in this report is the absence of a single data set that is presented consistently by all energy suppliers. To be successful, it will be essential that the data the label is built on is considered robust and consistent from supplier to supplier. This requires a level of audit as well as clarity on the source of the information (and any shortcomings).

» **Commitment to renewables and climate change targets** – in the UK, when combined with policy certainty, long-term targets have the potential to provide investors with confidence to invest in renewable generation. It will be important that such targets are in place to drive a step change in the uptake of low carbon energy.

Figure 7. Results of ‘what if’ analysis



Source: DECC Updated energy and emissions projections 2013 (September 2013), Annex C – final energy demand.

Figure 8. Green energy uptake to 2020 as % of projected I&C demand<sup>43</sup>

Scenario	2013	2020
Green power uptake without label (%)	14.4%	22.6%
Green power low uptake with label (%)	14.4%	24.5%
Green power base case uptake with label (%)	14.4%	26.5%
Green power enhanced uptake with label (%)	14.4%	48.3%
Green power uptake based on GPP (%)	14.4%	34.9%

Source: Utilyx

## 5 What good could look like

Uncertainty in government support and a lengthy planning process is preventing some developers from developing low carbon or 'green' generation in the UK.<sup>44</sup>

» Simpler, shorter and more certain planning process – as time progresses, there is potential to refine the low carbon generation planning process, so that it is no longer perceived to be a barrier to renewable projects. Like long-term targets, this will help drive uptake of low carbon energy.

**Figure 9. Shift in rating uptake as a % of total**

Branding	2012	2020
A and better	49%	73%
B	15%	15%
C	11%	12%
D	1%	0%
E	0%	0%
F and worse (incl. other)	24%	0%

Source: DECC Energy Consumption in the UK (2013)<sup>45</sup>

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## 6 Benefits of the proposal

The label has the potential to deliver a range of benefits to different organisations in the UK, whether businesses, developers or UK plc (including suppliers and policy makers).

### 6.1 Benefits to business

Implementation of the proposed label could bring:

- » Transparent voluntary reporting, by providing the information that businesses need to understand:
  - where their energy comes from.
  - the carbon content associated with that energy and
  - the type of electricity they have bought.
  - simplification of carbon charging into a single methodology.
- » Clearer communication of electricity sourcing to stakeholders allowing business to demonstrate its commitment to low carbon generation.
- » Reputational benefits from buying low carbon and proving it with the label, including:
  - an opportunity to demonstrate competitive advantage.
  - an opportunity to call suppliers to account on accurate disclosure.
  - an opportunity to prove credibility to stakeholders that a business's carbon footprint is correct.
  - creating a notion that it is embarrassing to use G-rated power and therefore reducing demand for G-rated power.

» Lower administrative costs by saving time:

- collating evidence and creating an audit trail.
- comparing electricity tenders in a like-for-like way.

### 6.2 Benefits to developers

Implementation of the proposed label could bring:

- » Stable, transparent definition of low carbon electricity that also gives investors confidence in the demand for low carbon generation.
- » Greater demand pull for low carbon electricity, which will help fund the projects.
- » Simplified communication of a project's benefits and carbon impact to energy buyers.

### 6.3 Benefits to UK plc

Implementation of the proposed label could:

- » Mark the start of the journey to demystifying the language around low carbon electricity and what constitutes 'green'.
- » Provide the mechanism for transparency, comparability and levelling the playing field, leading to a much stronger reputational driver for organisations to demand lower carbon electricity.
- » Increase in long term contracts to purchase renewable energy, incentivising new investment in zero carbon electricity generation.
- » Build on Defra's and WRI's recommendations for location based and market based reporting of

renewable technologies to deliver a more balanced, transparent and comprehensive framework.

- » Provide a foundation for simplification and harmonisation of UK carbon reporting and carbon pricing.
- » Provide an opportunity to test the impact of clear labelling on business decisions and stakeholder engagement.
- » Provide a foundation for simplification and harmonisation of UK carbon reporting and carbon pricing.



# 7 Challenges to the proposal

Views raised in response to this project have been mixed, both in terms of whether carbon labelling is a good idea at all, and how it should work. This section sets out some of the most common concerns raised<sup>46</sup>.

## 7.1 Does it go far enough?

There are different views on whether it is sufficient for the proposed label to cover only operational carbon emissions. From an environmental integrity perspective it would make sense to target the label at lifecycle emissions. This would help to make clear the carbon impact associated with the construction and decommissioning of low carbon technologies. However, the focus of the label in its early stages is to promote a simple method, and a lifecycle approach quickly becomes complex.

The proposal balances simplicity with transparency and ease of communication in other ways too. Initially it:

- » Focuses on electricity (not other fuel sources or heat)
- » Does not include reflection of time of use
- » Is aimed at organisations not individuals

A key component of the label's implementation would be regular review, so it will be possible to revisit the scope and design to ensure it is fit for purpose.

## 7.2 But it's not yet part of Mandatory GHG Reporting...

Defra is updating its guidelines for reporting renewable energy specifically purchased from the electricity suppliers (scope 2). They surveyed two options in March 2014, and will publish their guidelines by summer 2014 (see section 4.5). If the label can be made consistent with them (see section 4.5.2), then it could be used for voluntary and

mandatory GHG reporting. This could also help multinational businesses looking for international standardisation. However it is a big 'if'.

It is recognised that reducing the complexity of carbon reporting would greatly help to engage and encourage buy in from business, suppliers and Government. Without this consistency, effort will be needed to overcome inertia and raise interest in something that could be perceived as 'a nice to have'.

This is a particular challenge given the requirement for consistent data and additional data calculations by suppliers (see Section 4.4). Getting suppliers involved will take time and the changes they need to make could be costly. The Aldersgate Group recognises all of this.

## 7.1 An extra layer of complexity?

The Aldersgate Group recognises this is a new tool amongst the myriad of policies and guidelines already in the public domain. It complements existing mechanisms and could pave the way for future harmonisation of the reporting landscape. If the proposal is adopted in line with potential updates of the Defra environmental reporting guidelines, the label could facilitate the information provision that would be necessary to meet Defra best practice.

## 7.2 Will it make a difference?

There are mixed views on whether it is appropriate for the label to be aimed at creating additional generation. Defra has acknowledged that significant increase in long-term contracts to purchase renewable energy could incentivise new renewable generation, which would not have happened otherwise; and will be updating their guidelines to GHG reporting to include transparent reporting of renewable energy measures adopted by the end users.

It is also questionable whether it is even possible for additional generation to be created in the UK given the stretch of existing renewables and carbon policies and the available incentives to drive low carbon generation.

The proposed label is not currently designed to tackle additional generation (see Section 4.4) but to support it indirectly. By providing confidence in the source of electricity, an electricity label could offer a firm platform on which to build future statements about additionality.

Additionality is a key future development for the label. In its early years, corporate use of the label could be accompanied by narrative on the nature of renewable electricity bought by the user and how the user supports the concept of additional carbon reduction and generation.

## 7.3 Will it be trusted?

Earning trust for the label might be difficult initially, given the current range of views of what matters and the new calculations that may need to be performed. This supports the recommendation to create a simple approach and one that promotes transparency. It is also the reason for independent third party operation and audit. The carbon banding on which to base the A to G grading would need to be part of an audit.

## 7.4 What about including a cost of carbon?

Incorporating a cost of carbon into the electricity label is considered best avoided in the early stages of label implementation<sup>47</sup>. This is to ensure the label is as simple as possible and meets the primary aim of improving disclosure and transparency about the electricity bought by business. To incorporate a cost of carbon into the future electricity label, further investigation into what different sectors are currently paying would be needed<sup>48</sup>.

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## 8 Next steps

Electricity labelling must now be piloted, with a view to becoming government policy after the next General Election<sup>49</sup>. Business should have one year's warning to allow end users and suppliers to make the necessary provisions to adopt the label and for end users to signal their procurement choices in line with contract renewals. May 2016 would therefore be the proposed implementation date.

### 8.1 Planning

- » Engage with a supplier 'champion' on how the labelling will work, how the outputs will be produced and presented.
- » Get a clear idea of the realistic timescales for implementation, focussing on a core group of end users for a pilot to test the idea.
- » Check the timetable against key milestones for government policy in order to build off and feed into the relevant policy debates.

### 8.2 Test it

- » Pilot the approach.
- » Put in place the systems to monitor and measure the amount of work required and also the impacts.
- » Engage with Defra/DECC/Ofgem to:
  - push for better (published, aggregate) data on volumes of green tariffs purchased, by whom and spread across sectors;
  - test reaction to the pilot approach with government audiences;
  - push for the label to be explicit evidence in carbon reporting guidance.

### 8.3 Gauge impact

- » Record the impact of the pilot, using feedback on the time/ costs and savings, plus other benefits.
- » Gather feedback from stakeholders (internal and external).
- » Consider re-engaging e.g. via The Crowd (formerly known as Green Mondays) to promote the approach and crowd source further feedback amongst external stakeholders.

### 8.4 Finalise recommendations

- » Make any amendments to the proposal in light of the pilot and stakeholder feedback.
- » Determine the implementation roll out timetable and milestones for a national scheme building on the experience of pilots.
- » Determine how success will be judged and measured. Any targets will need to be specific, measurable, attainable, realistic and timely.

### 8.5 Goals for year 1 of the label

These are:

- » To compare, understand and summarise year 1 experience with that of the pilot.
- » For the label to have been adopted and used by a significant number of large energy users and their suppliers to understand better the barriers to use of the label.
- » To understand how introduction of the label is changing end user purchasing behaviour.

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# Annex 1.

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## Annex 2.

# Potential changes to Defra Reporting Guidelines

We use this section to outline how the Defra Environmental Reporting Guidelines could change in line with the WRI GHG Protocol draft guidelines for Scope 2<sup>50</sup>.

### Overview of how the Defra guidelines could change

Defra surveyed views regarding two options for reporting renewable energy specifically purchased by end users from their electricity suppliers in March 2014. The two options are:

» **Option 1** – companies can use a location based approach to report their gross emissions figures; and a market based approach to calculate the net emissions figure. While the location based approach is based on grid average emission factors, under the market based approach all the emission reduction activities (including purchase of carbon offsets, sale of renewable electricity to the grid, purchases of biogas and biomethane) are included. To be eligible under market based reporting, the supplier should be able to retire associated REGOs and LECs to avoid resale.

» **Option 2** – companies can report two gross emission figures; one location based and the other market based. For each of these gross figures, users can report net emission figures to include their carbon reduction activities and label 'net location based emission figure' and 'net market based emission figure' respectively. While purchase of carbon offsets can be deducted from both gross figures; purchase of biogas and biomethane (with certification) can be reported only under gross market based emission figures.

Both options will allow organisations to account and report renewable energy purchased without the need for additional carbon offsets.

1 » Ofgem (December 2013) "Improving Consumer Protection in the Green and Renewable Energy Offers Market". Consultation document.

2 » Defra (March 2014) "GHG Reporting Guidelines – 2014 update". Consultation.

3 » In January 2013 leading supermarkets were found to be selling food products that contained horsemeat in place of beef. The scandal raised questions around the transparency of how food is produced and what confidence consumers can place on the ingredients label. The Steering Group applied this metaphor to the energy market: if you are buying energy, you want to know what is in it.

4 » Ofgem (February 2014) "Consultation on Improving Consumer Protection in the Green and Renewable Energy Offers Market."

5 » Defra (March 2014) "GHG Reporting Guidelines – 2014 update". Consultation.

6 » Using information from: DECC (2012); IPCC (2011), World Nuclear Association (July 2011).

7 » The number of respondents is not statistically significant (72 in total, 44 complete responses). The headlines are useful indications of end user views on this subject.

8 » Zero Carbon Homes create no net carbon emissions over the course of the year though a number of offsite solutions are allowed within this definition. [www.zerocarbonhub.org](http://www.zerocarbonhub.org)

9 » For example, in Building Regulations, Low and Zero Carbon (LZC) technologies include: biomass, CHP, ground source heat and cooling, photovoltaics, solar thermal, wind energy. Building Regulations, Low or Zero Carbon Energy Sources: Strategic Guide (2006)

10 » E.g. whether nuclear generated electricity could truly be thought of as 'green' or whether certain biomass fuels would be considered lower carbon than others.

11 » For instance there are specific reporting rules for the CRC Energy Efficiency Scheme.

12 » Defra (March 2014) "GHG reporting guidelines – 2014 update". Consultation.

13 » Commons Select Committee (29 July 2013).

14 » All European GoOs have a twelve-month lifetime, i.e. they are no longer valid later than twelve months after their production. If a GoO is not cancelled during its twelve-month lifetime, it can no longer be used for disclosure purposes or be transferred.

15 » Schemes reviewed: EEX GoO (Germany), EUGENE (European), GreenPower (Australia), Green-e (US & Canada), Green Energy Scheme (UK), Green Power Partnership (US), Grüner

Strom (Germany), Milieukeur Groene Elektriciteit (Netherlands), Naturemade (Switzerland), Power Scorecard (US), Öko-Strom (Germany), OK Power (Germany), Umweltzeichen (Austria), WindMade (Global).

16 » Information sources are listed in Annex 1, with a reference in the main report text only for the first instance the reference is used.

17 » Experience from energy labelling shows that, on a scale from A–G, most would pick A, however, when it changed to A+++ to D, A+ was the most common choice as A is already a good grade, so the need for A+++ was less compelling (Navigant and Clasp, 2013).

18 » Tariff average could provide an adequate second best for smaller customers, without the need to quantify the *de minimis*.

19 » Defra (March 2014) "GHG reporting guidelines – 2014 update". Consultation.

20 » Insight Exchange, report for Ofgem (May 2013) *Perceptions of Green Tariffs. Full Report*.

21 » Recognising that, today the label faces challenges associated with confirming and verifying the source of the electricity that is being labelled. While certificates (REGOs and LECs) can confirm the origin of band A and CHP electricity respectively, the source of other electricity is not tracked by certificates. For the label's pilot, where better data is not available, it may be necessary to use supplier averages for energy outside these two categories.

22 » Gathered through the end user survey, interviews with a range of organisations and a discussion at the November Crowd event with roundtable attendees. The interviewees asked not to be named. The types of organisations contributing through interviews included suppliers, academics, trade associations, central government departments, corporate end users and non-governmental organisations.

23 » Rather than location specific, lifecycle or time of use emissions.

24 » The Electricity Fuel Mix Disclosure Regulations were introduced in 2005. They require all electricity suppliers in Great Britain to provide generator declarations that disclose the mix of fuels used to generate the electricity supplied annually to their customers, providing electricity is supplied for a full disclosure period. Fuel mix information must be provided to customers and should be presented in percentage terms.

25 » This guidance supports and is designed to provide clarity to suppliers on how to fulfil their obligations under the licence conditions (Ofgem, 2005).

26 » Residual mix of electricity is that which is not subject to generator declarations or REGOs (Ofgem, 2005).

27 » Green Energy Supply Certification Scheme (GESCS) (2013)

28 » Ofgem (February 2014) "Improving Consumer Protection in the Green and Renewable Energy Offers Market." Consultation.

29 » The independent panel that controls the GESCS rejected the proposals in Ofgem's Retail Market Review as it may lead to consumers being unable to opt for Green Tariffs. The panel believes that, as currently formulated, the proposals will inevitably result in the withdrawal of many tariffs certified for compliance with Ofgem's own Guidelines GESCS (2013). In January 2014, Ofgem introduced reforms to the retail energy market, by limiting the number of tariffs each supplier can offer (Ofgem factsheet 124). This has also reduced the number of green tariffs available to users.

30 » The differences are as follows. Conversion factors for company reporting available from DECC/ Defra are based on the calendar year whereas for the FMD this is the fiscal year. DECC/ Defra factors are for the UK whereas the FMD cover Great Britain and crown dependencies only. DECC/ Defra factors cover all GHGs but are available disaggregated whereas the FMD covers CO<sub>2</sub> only. (DECC, 2013).

31 » The merit order ranks available power generation sources in ascending order of their short-run marginal costs of production. As a result, those sources with the lowest marginal costs (e.g. wind, run-of-river, old nuclear power), are the first ones to deliver electricity to the grid to meet demand. The plants with the highest marginal costs (e.g. gas turbines, oil-fired power plants), are the last to run. In a competitive market, marginal costs of the last plant that is run to meet demand defines the market price. The ranking might change according to changes in generation availability and fuel costs (e.g. oil, gas and coal) and other cost affecting factors.

32 » Ofgem enforcement of the FMD is implemented through the licence conditions which are a legal requirement placed on the supplier. Ofgem has an option to audit the information provided by the supplier.

33 » As a protection against double counting, the total electricity covered by all REGOs and/or generator declarations from a particular generator used for fuel mix disclosure must not be greater than the total output of the station.

34 » DECC categories: Iron & Steel, Other Industry Sectors and Commercial (excluding Transport, Domestic, Public Administration and Agricultural)

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## Footnotes

35 » DECC Updated energy and emissions projections 2013 (September 2013, Annex C)

36 » The DECC projection is based on the aim to reach 30% of total supply from renewables by 2020.

37 » The original objectives also included projecting the proportion/ number of I&C users that might use the label and the proportion/ number of I&C users that might buy more low carbon electricity than they buy today. This has not been possible, see 5.3.

38 » Green contract uptake based on that seen by Utiylix, then calculated to 2020 using exponential extrapolation of Utiylix green contract uptake.

39 » 33.1% of Utiylix customers with green contracts.

40 » Where we say 'for the percentage of green energy within the green contract' we are using 'green' to mean renewable according to the CREX data. We have calculated the average percentage of renewable energy procured by UK companies (31) using data for 2011 in Appendix D (CREX, 2012).

41 » CRC data looks at carbon emissions for a subset of organisations and does not distinguish by fuel type.

42 » This tells us the number of organisations that signed up to the Green Power Partnership (GPP) year on year. It is subject to the caveat that each organisation consumes the same volume of electricity and so the proportion of survey respondents answering a question equates to a proportion of energy demand. Growth is calculated by exponential extrapolation of GPP uptake between 2001 and 2013.

43 » Applied the growth rate (fixed annual rate for low, base, enhanced scenarios; exponential growth for without label and GPP to 2020) to 2013 I&C renewable demand (calculation shown in Figure 6). Renewable volume is then shown as percentage of total I&C demand in Figure 9.

44 » Respondent to developer survey.

45 » Summed across wet, cold and cooking goods where data is available. Assumes categories are comparable.

46 » In addition to the challenges of basing the proposal on the FMD (section 4.5.2).

47 » Organisations operating in the UK today face a cost of carbon via: the wholesale electricity price (the European Emissions Trading System (EU ETS) and carbon price floor), through pass-through ('non-

commodity') charges (like the CCL and renewables support) and additional taxes and levies (like the Carbon Reduction Commitment Energy Efficiency Scheme (CRC)).

48 » IFS Report 84 (2013).

49 » To be held 7 May 2015.

50 » Draft guidelines from the WRI state that "companies with facilities in market based claims systems that meet Quality Criteria must report two figures: a "market-inclusive" scope 2 figure reflecting data derived from contractual instruments [such as PPAs, green tariffs backed by traceable certificates], and a location only figure reflecting data on production trends in the facility's grid. Companies can choose whether these figures are reported side by side in scope 2, or whether the location only figure is disclosed separately. Companies with no facilities in market based claims systems will only report a single scope 2 figure based on the location based method. Companies should also report their electricity consumption and key features about their procurement (WRI, Autumn 2013).

# List of acronyms

Acronym	Meaning	Acronym	Meaning
<b>ASC</b>	Advanced Supercritical Coal	<b>GESCS</b>	Green Energy Supply Certification Scheme
<b>CCA</b>	Climate Change Agreement	<b>GQCHP</b>	Good Quality Combined Heat and Power
<b>CCGT</b>	Combined Cycle Gas Turbine	<b>I&amp;C</b>	Industrial & Commercial
<b>CCL</b>	Climate Change Levy	<b>IGCC</b>	Integrated Gasification Cycle Turbine
<b>CCS</b>	Carbon Capture and Storage	<b>LEC</b>	Levy Exemption Certificate
<b>CHP</b>	Combined Heat and Power	<b>LZC</b>	Low and Zero Carbon
<b>COP</b>	Conference of the Parties	<b>Ofgem</b>	Office for Gas and Electricity Markets
<b>CRC</b>	Carbon Reduction Commitment Energy Efficiency Scheme	<b>OCGT</b>	Open Cycle Gas Turbine
<b>CREX</b>	Corporate Renewable Energy Index	<b>PPA</b>	Power Purchase Agreement
<b>DECC</b>	Department of Energy & Climate Change	<b>REC</b>	Renewable Energy Certificate
<b>Defra</b>	Department for Environment, Food & Rural Affairs	<b>REGO</b>	Renewable Energy Guarantee of Origin
<b>EU ETS</b>	European Emissions Trading System	<b>RO</b>	Renewables Obligation
<b>EMR</b>	Electricity Market Reform	<b>ROC</b>	Renewable Obligation Certificate
<b>FIT</b>	Feed-in Tariff	<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>FIT CFD</b>	Feed-in Tariff Contract for Difference	<b>WRI</b>	World Resources Institute
<b>FMD</b>	Fuel Mix Disclosure	<b>WTP</b>	Willingness-To-Pay
<b>GoO</b>	Guarantee of Origin		

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