Last updated: 02/07/2012

1 Implementation of Tracking Systems

1.1 Electricity Disclosure

A disclosure scheme has been in place in Great Britain since 2005 [Statutory Instruments 2005 Nº. 391 Electricity and Gas (Fuel Mix Disclosure) Regulations 2005]. The Regulations implemented Article 3(6) of Directive 2003/54/EC related to the common rules for the Internal Market of Electricity and introduced a new licence condition that obliges electricity suppliers to provide costumers on their bill with details of the mix of fuels used to produce the electricity supplied to them as well as certain environmental information.

In December 2005, Ofgem (Office of the Gas and Electricity Markets) provided the guidelines (Fuel Mix Disclosure by Electricity Suppliers in Great Britain – Guidelines[1]) to help suppliers to present the disclosure information to their consumers, with standardisation of certain aspects of fuel mix disclosure (originally the Standard Licence Condition 30A that has been replaced now by the Standard Licence Condition 21) to aid consumer's comparisons of different suppliers product. These Guidelines provide information on the calculation, presentation, evidence and auditing. In 2010, small changes to the disclosure system have been introduced, namely, timing for suppliers to provide information on their sources for the production of electricity as well as timeline for disclosure (1st October).

The first year in which information was disclosed to consumers was from 1st October 2005 to 30 September 2006, referring to electricity supplied from 1st April 2004 to 31st March 2005.

Ofgem, on behalf of DECC (Department of Energy and Climate Change), is the competent body responsible for disclosure and the issue of Guarantees of Origin for electricity produced from renewable energy sources.

The attributes that have been disclosed are:

- Energy source in the fuel mix (share);
- Environmental information: CO_2 emissions (g/kWh) and radioactive waste (g/kWh);

In terms of energy sources, the following are distinguished within the disclosure statement:

- Coal;
- Natural Gas (gas-CHP);
- Nuclear;
- Renewable (wind, solar, geothermal, wave, tidal, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases);
- Other
- Electricity obtained via an Electricity Exchange of imported from an undertaking outside the Community

Great Britain has various forms of allocation and tracking systems for electricity:

- Renewable Energy Guarantees of Origin (RE-GO, called in Great Britain REGO): used for disclosure purposes
- Renewable Obligation Certificates (ROC): used for support (quota and suppliers) system

[1] Ofgem Website, Fuel Mix Disclosure by Electricity Suppliers in Great Britain: Guidelines, December 2005, extracted at: http://www.ofgem.gov.uk/Sustainability/Environment/Policy/Documents1/12340-282_05.pdf

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- Feed-in-tariff: used for support
- Levy Exemption Certificates (RE & CHP): used for support
- CHP- Guarantees of Origin (CHP-GO, called in Great Britain CHPGO): used for disclosure purposes (in theory)
- Great Britain Residual mix: used for disclosure purposes

The environmental information provided to consumers should be in the form of a single figure specific to the fuel mix of the supplier for each of the two measures (carbon dioxide and radioactive waste).

The obligation to provide fuel mix and environmental information is placed on each supply licensee. Therefore, customers subscribing to a certain product must receive information on the fuel mix of all electricity supplied by the licensee (the person that holds the supply licence) as opposed to the particular product or retail brand. The name of the licensee should be made clear in the information.

If suppliers wish to provide information on the fuel mix of a particular product, they can do so by displaying the total supply by the licence plus by adding a column in its fuel mix disclosure table to display the product fuel mix. This allows the consumer to compare the fuel mix of a certain product with that of licensee's total supply for the disclosure period.

Disclosure is done annually for the financial year period (starting 1st April and ending 31st March each year). Information must be disclosed in the 1st October immediately after the end of the disclosure period.

1.1.1 Disclosure Figures

Table 1 summarises Great Britain's fuel mix disclosure figures since 2005 until 2011 as well as the CO_2 emissions and nuclear waste. **Erreur ! Source du renvoi introuvable.** shows the suppliers' fuel mix by fuel type in 2011 as well as the CO_2 emissions and nuclear waste for the same year for the same year.

Table 1: GB Fuel Mix Disclosure Figures (%), CO2 emissions 2008-2010 (kgCO2/kWh) and nuclear waste (g/kWh) for 2005-2011 (with the exception of 2010)

	Disclosure Year					
Attributes	**2005**	**2006**	**2007**	**2008**	**2009**	**2011**
Coal (%)	33.4	35.2	35.8	33.0	32.9	28.9
Natural Gas (%)	39.3	36.8	38.8	43.5	43.3	44.2
Nuclear (%)	20.6	20.9	18.6	16.1	15.3	17.3
Renewable (%)	3.8	4.2	4.7	5.5	5.9	7.9
Other (%)	2.9	2.9	2.1	1.9	2.5	1.7
CO2 emissions ($kgCO_2$/kWh)	0.460	0.461	0.480	0.480	0.460	0.450
Nuclear Waste (g/kWh)	0.0025	0.0025	0.021	0.014	0.015	0.0017

Source: www.electricityinfo.org

Table 2: Fuel Mix Disclosure Figures of Great Britain Electricity Suppliers for the disclosure year of 2011

Supplier	Coal (%)	Natural Gas (%)	Nuclear (%)	Renewable (%)	Other (%)	CO_2 emissions (kgCO2/kWh)	Nuclear Waste (g/kWh)	Disclosure Year
British Gas	11.4	56.9	22.8	7.7	1.2	0.338	0.0023	2011
e.on	35.7	48.8	5.2	6.6	3.7	0.543	0.0010	2011
Ecotricity	17.5	24.0	2.6	54.1	1.7	0.267	0.003	2011
EDF Energy	27.9	5.7	61.8	3.9	0.7	0.280	0.0062	2011

Supplier	Coal (%)	Natural Gas (%)	Nuclear (%)	Renewable (%)	Other (%)	CO_2 emissions (kgCO2/kWh)	Nuclear Waste (g/kWh)	Disclosure Year
First:Utility	35.7	48.0	5.2	6.5	3.7	0.543	0.0005	2011
Good Energy	0.0	0.0	0.0	100.0	0.0	0.000	0.0000	2011
Green Energy UK	0.0	64.0	0.0	36.0	0.0	0.122	0.0000	2011
LO CO2	0.0	84.0	0.0	16.0	0.0	0.311	0.0000	2011
Npower/RWE	28.0	60.0	1.0	9.0	2.0	0.509	0.0001	2011
OVO Energy	26.0	35.0	4.0	32.0	3.0	0.393	0.0004	2011
Scottish Power	48.9	43.4	0.0	7.6	0.1	0.620	0.0000	2011
SSE	29.0	59.0	1.0	10.0	1.0	0.505	0.0001	2011
UK Average 2011	**28.9**	**44.2**	**17.3**	**7.9**	**1.7**	**0.450**	**0.0017**	**2011**
Utilita	31.1	34.9	29.2	0.8	4.0	0.424	0.0030	2009
UK Average	**28.9**	**44.2**	**17.3**	**7.9**	**1.7**	**0.450**	**0.0017**	**2011**

Note:

- *British Gas (includes Centrica and Scottish Gas)*
- *EDF Energy (includes London Energy, Seeboard Energy, SWEB Energy and Sainsbury's Energy)*
- *e.on (includes Amerada, East Midlands Electricity, Eastern Electricity, Midlands Gas, Norweb Energy, Powergen, Sterling Gas, Tesco Energy and TXU Energi)*
- *npower/RWE (includes Calortex, Daily Telegraph, Independent Energy, MEB, Midlands Electricity, National Power, Npower Limited, Npower Northern Limited, Npower Yorkshire Limited, Npower Direct Limited and York Gas)*
- *SSE (Scottish & Southern Energy) (includes Atlantic Electric and Gas, Scottish Hydro-Electric, Southern Electric, and SWALEC)*
- *ScottishPower (includes AA, Beacon, Ideal and Lloyds Ideal)*

Source: www.electricityinfo.org

1.1.2 Environmental Information

Environmental information in terms of CO_2 emissions (in grams of carbon dioxide per kilowatt hour) and radioactive waste generated (in grams per kilowatt hour) must be prepared and made available by suppliers in the disclosure period.

This information should be in the form of a single figure specific to the fuel mix of the supplier for each of the environmental attributes (carbon dioxide emissions and radioactive waste). The calculation of these figures should be based on the use of the standardised emission factors provided by UK's Department of Energy and Climate Change (DECC) in the Fuel Mix Disclosure Table published on the DECC's website[2]. The basis for the calculation of the radioactive waste factor is to be "fuel burnt in the reactor (to be subsequently discharged as spent fuel". This is to be based on information provided by generators an averaged across all technologies.

This information is updated by suppliers in each subsequent year on the "Disclosure Date" and provided to the consumers at least once a year on a bill or statement in the period and in promotional materials. This may be by means of a reference on the bill, statement or promotional material to a readily accessible source such as a web page.

Moreover, if suppliers want to, they can provide a wider range of environmental information, e.g. emissions of sulphur dioxide or other pollutant.

[2] Fuel Mix Disclosure Table on the DECC's Website:
http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/fuel_mix/fuel_mix.aspx

1.1.3 Suppliers Fuel-Mix Calculations

DECC is the body responsible for calculating the fuel mix figures and to disclose them once a year.

The supplier's fuel-mix information for a given Disclosure Period (starting in the 1st of April and ending on the 31st of March of a given year) is calculated based on the following evidence of the source of energy:

1. RE-GO (called in the UK REGO) should be used as evidence for the identification of supply as renewable. However if they are not available the residual fuel mix percentages in the DECC's Fuel Mix Disclosure Data Table must be used to make the necessary calculations;
2. Generators declarations should be used as evidence for the identification of other sources, i.e. coal, oil, natural gas, nuclear and other. In the case that these are not available, the residual fuel mix percentages in the DECC's Fuel Mix Disclosure Data Table must be used to make the necessary calculations

The evidence of supply from specific generation sources, RE-GO or generator declarations, should be held by the supplier at midday on 1st July immediately following the end of the disclosure period.

A generators declaration should include the following specific information[3]:

- The name and location of the generating station;
- The name of the licence to which the information in the generator declaration relates;
- The disclosure period to which the generator declaration relates;
- The fuel used in the generating station, and where the generating station uses more than one fuel the proportion of each fuel used according to the calorific value of the fuel used;
- The amount of electricity subject to the declaration, expressed in MWh;
- A statement that the generator has not issued generator declarations or transferred RE-GO in relation to an amount of electricity that exceeds the total output of the generating station in the disclosure period;
- The signature of the director of the generation company or person of similar standing where the generation licensee is not a company to verify the above facts.

The generators declarations must be hold by the suppliers for electricity produced from coal, natural gas, nuclear and other and supplied in each disclosure period.

When the electricity supplied came from outside Great Britain, suppliers must provide evidence of the origin of that electricity:

- Generators declaration from a generator outside Great Britain – evidence must be held by the supplier showing that the electricity referred in the generators declaration was supplied in Great Britain. In this case, this generator declaration must not be used as evidence of fuel mix in a country outside Great Britain.
- RE-GO from other Member Countries – in addition to the RE-GOs suppliers must hold evidence that the electricity referred to in the RE-GO was supplied in Great Britain. The RE-GO used in this case must not ne used as evidence of fuel mix by a supplier in another Member State.
- Figures from an electricity exchange or an undertaking outside the Community – suppliers may use this figures if the figures clearly identify the production from a particular energy source.

If a supplier of electricity does not hold evidence (generator declarations, a RE-GO or figures on an electricity exchange) to use as evidence of the energy sources for the purpose of fuel mix disclosure, it should apportion the amount of electricity for which evidence is not held in accordance with the residual fuel mix percentages in the DECC's Fuel Mix Disclosure Data Table.

The competent body that compiles and updated the Fuel Mix Disclosure Data Table is DECC. DECC is also responsible for publishing on its website this table by the 1st of August each year. This Fuel Mix Disclosure Data Table includes:

[3] Guidelines for fuel mix disclosure by suppliers in Great Britain, December 2005, extracted at: http://www.ofgem.gov.uk/Sustainability/Environment/Policy/Documents1/12340-282_05.pdf

- table for residual fuel mix – which is compiled by DECC using the best available information on the actual mix of electricity not subject to generators declarations or RE-GOs after consulting with major suppliers;
- emission rates to be used in calculating environmental impact of total electricity supplied by the licensee – including carbon emission rates for each energy source and the amount of radioactive waste for nuclear generation
- losses factor – this factor is to be used to adjust the total amount of electricity purchased for supply to be used in calculations by the licensee, accounting in this way for losses on the transmission and distribution systems.

Residual fuel mix calculation methodology

For the calculation of the residual fuel mix for GB the following steps are taken[4]:

- DECC request all major suppliers the following information regarding the supply for which RE-GOs or Generators Declarations held:
  - Coal (MWh)
  - Natural Gas (MWh)
  - Nuclear (MWh)
  - Renewable (MWh)
  - Other (MWh)
  - Total for which RE-GOs or Generator Declarations are held (MWh)
  - Residual (supply for which RE-GOs or Generator Declarations are not Held (MWh)
  - Total supplied (MWh)
- DECC then aggregates the data to give the total amount of electricity supplied by fuel source for which RE-GOs of Generator Declarations are held:
  - The total purchased for supply (incl. loss factor) (MWh) is calculated by DECC for each major energy supplier and aggregated as a total for all major energy suppliers:

- The total UK fuel mix is calculated on a financial year basis using DECC's published statistics. Data for the UK is published on table 5.1 on DECC's quarterly publication: Energy Trends[5]
- The UK data is then converted by DECC to cover Great Britain only by deducting data from Northern Ireland (Northern Ireland Fuel Mix data from monthly returns sent in by electricity companies based in Northern Ireland)
- Imported electricity is also allocated to a fuel type using fuel mix data for France which is available from Eurostat;
- The data are expressed as a percentage of total supply in Great Britain. Each percentage is multiplied by the "*Total purchased for supply (incl. loss factor) (MWh)*" to give the total electricity supplied for each fuel source. The difference between this and the actual figures reported by the

[4] DECC's UK Fuel Mix Methodology, extracted from: http://www.decc.gov.uk/assets/decc/11/stats/energy/fuel-mix-disclosure/2354-uk-fuel-mix-methodology-2011.pdf

[5] DECC's Energy Trends available at: http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/source/electricity/electricity.aspx

major electricity suppliers gives GB residual fuel mix, which is then expressed in percentage terms.

Carbon dioxide emissions

The methodology followed by DECC for the calculation of the carbon dioxide emissions is the following[6]:

- The carbon dioxide emissions by fuel type are obtained by DECC from the UK greenhouse gas inventory. The total emissions for generation by fuel are then divided by the electricity supplied for each fuel type to give the CO2 emissions per kWh.
- The emissions are rounded up to the nearest 10 to reflect the uncertainty around the data. Emission data are generally available 12 months in arrears (and on a calendar year basis) so are adjusted to take into account changes in electricity supply over the last year. Data is also adjusted to convert emission from the UK to GB.

1.2 Guarantees of Origin for Electricity from Renewable Energy Sources and High-Efficient Cogeneration

Great Britain as both RE-GO and CHP-GO legislation and schemes in place.

RE-GO scheme came into force in Great Britain in October 2003 through The Electricity (Guarantees of Origin of Electricity Produced from Renewable Energy S.I. 2003/2562) Regulations 2003. This legislation has been amended by The Electricity (Guarantees of Origin of Electricity Produced from Renewable Energy S.I 2010/2715) Regulations 2010. Both Regulation 2003 and Regulations 2010 implement Article 15 of the Directive 2009/28/EC of the European Parliament and the Council of 23 April 2009 on the promotion of the use of energy from renewable sources

CHP-GOs scheme came into force in February 2007 through the Guarantees of Origin of Electricity Produced from High-efficiency Cogeneration 2007 (S.I.2007/292). These regulations implement Article 5 (article for the issuance of guarantees of origin of electricity from high-efficiency cogeneration) of Directive 2004/8/EC of the European Parliament and of the Council on the promotion of cogeneration based on a useful heat demand in the internal energy market.

Renewable electricity produced the Great Britain can receive both RE-GO (in electronic form) and CHP-GO (paper form).

RE-GO scheme in place in GB

As referred, The Electricity Regulations 2003 (S.I. 2003/2562) with the amendments from Regulations 2010 (S.I 2010/2715) transpose article 15 of the Renewables Directive, in reference to RE-GOs. These regulations appoint Ofgem (Gas and Electricity Markets Authority) as the competent body to issue, register, transfer, revoke and cancel GOs for electricity from renewable energy sources.

Under this scheme a RE-GO:

- Is issued by Ofgem to certify that the electricity in respect to which it was issued was produced from eligible renewable energy sources;
- Is as an electronic document which has the sole function of providing proof to a final customer/potential costumer that a given share or quantity of energy was produced from renewable sources;
- Is issued to accredited generating stations located in Great Britain and Northern Ireland;
- Is issued in response to a request from a producer of electricity from renewable energy sources;
- Is issued for each megawatt hour (MWh) of eligible renewable output generated[7];

[6] DECC's UK Fuel Mix Methodology, extracted from: http://www.decc.gov.uk/assets/decc/11/stats/energy/fuel-mix-disclosure/2354-uk-fuel-mix-methodology-2011.pdf

- Has a unique number (the "guarantee sequence number") which is allocated to each RE-GO sequentially in ascending numerical order;
- Has a 16-month lifetime.

Schedule I of Regulation 2010 state the Information to be provided in a request for a RE-GO.

The primary use of RE-GOs in Great Britain is for Fuel Mix Disclosure. As already referred above, Fuel Mix Disclosure requires licensed electricity suppliers to disclose to their consumers and potential costumers, the mix of fuels (coal, gas, nuclear, renewable and other) used to generate electricity supplied annually.

Ofgem is responsible for establishing and maintaining the electronic register and is responsible for publishing that information on its website or by such means as it considers appropriate. Schedule 2 of Regulation 2010 describes the information contained on the electronic register.

Moreover the Regulations state that Ofgem:

- Shall revoke a RE-GO where:
    - It is satisfied that the information provided for the issuing of the RE-GO is incorrect or that the RE-GO was issued on the basis of any fraudulent behaviour, statement or undertaking;
    - It is satisfied that the RE-GO should not have been issued (it inaccurate or was issued to the wrong person)
- Shall cancel a RE-GO where:
    - A RE-GO is issued in respect of electricity generated during a period of one month, the RE-GO should be cancelled not more than 16 months after the end of that month; or
    - when a GO is issued for more than one month, the RE-GO shall be cancelled not more than 16 months after the end of the first month which the electricity to which it related was generated;

RE-GOs cancelled or revoked shall no longer qualify as proof that the electricity for which it relates was produced from renewable energy sources.

In terms recognising RE-GOs from Ofgem may refuse to recognise a GO issued by another Member State where there are doubts about the accuracy, reliability or veracity accordingly to the supra-referred Regulations.

CHP-GO scheme in place in GB

The CHP-GO (called CHPGO in Great Britain) scheme came into force in February 2007 through the Guarantees of Origin of Electricity Produced from High-efficiency Cogeneration 2007 (S.I.2007/292). Within this scheme the Secretary of State for Environment, Food and Rural Affairs (DEFRA) is the designated competent body. DEFRA nominated CHPQA Administrator (AEA Technology) as the body for the assessment of high efficient CHP electricity generation for the purposes of Guarantees of Origin.

Under this scheme the one CHP-GO is issued for each unit (MWh) of electricity produced that qualify as high efficient CHP and it is only used for disclosure to increase transparency and aid consumer choice between CHP electricity and that produced by other technique. At the moment there is no electronic register for CHP-GOs and these GOs are planned to be paper issued. The Regulatory Impact Assessment (RIA) concluded that using a physical certificate, where it is the responsibility of the producer to store and transfer the certificate as necessary, was the most appropriate option for the UK. There is a risk that an appropriate authority cannot adequately track the CHP-GO certificate, however while the certificate has little monetary value in the UK, RIA believes this risk would be small. The scheme, by being linked to the CHPQA assessment programme, will match the safeguards of fraud-resistance, accuracy and reliability that are provided by the Commission model. Thus the UK does not plan to adopt the model developed by the Commission and the European Association of Issuing Bodies at this time.

[7] This was one of the changes made by Regulations 2010 to Regulations 2003, and it was with effect from 5th December 2010. Prior to 5th December 2010 one RE-GO was issued for each quilowatt hour (kWh) of eligible renewable output generated.

However the CHP-GO scheme will be similar enough to allow a transition to this model (i.e. an electronic registration system) if required and the situation will be kept under review.

The CHP-GO has a minimum lifetime of 3 months and maximum lifetime of 12 months.

The issuance of CHP-GOs is linked with the existing CHPQA assessment system. The assessment process involves:

(i) determining the quantity of CHP electricity, heat and energy inputs (fuel) in accordance with Annexe II of the EU Cogeneration Directive; and

(ii) the calculation of Primary Energy Savings (PES) to determine the quantity of high efficiency CDP electricity in accordance with Annexe III of the EU Cogeneration Directive.

An operator that wants to require a CHP-GO needs to apply to the CHPQA Administrator, as the nominated body for assessing the application. For that it should follow the guidance notes for CHP-GO and the applications guidelines[8].

In Great Britain the CHP GO includes information on:

- Lower CV of fuel source for electricity;
- Use o heat and electricity generated
- Dates and places of production
- Quantity of electricity from high efficient CHP
- Primary Energy Savings (PES) based on harmonised efficiency reference values.

Schedule 1 of the Statutory Instrument 2007 n.292 Energy Conservation specifies the information that a producer needs to supply when requesting for a CHP-GO and Schedule 2 of the same instrument the full information contained in a CHP-GO.

For applying to a CHP-GO, the produced shall fill out and sign the application entitled Form CHPGO – Provision of Data for the Assessment of High Efficiency CHP Power Generation for the purpose of Guarantee of Origin. Upon the reception of this information, the CHPQA Administrator calculates the information required to issue the CHP-GO using as referred above Annexes II and III methodology required by the Cogeneration Directive. As the data provided to the CHPQA will be the basis for the calculating the information on the CHP-GO, this information should be demonstrably accurate and reliable.

At the moment the CHP-GO does not carry any monetary value and so it is not envisioned that any system to fine producers that attempt to abuse the system is required. However, in case those CHP-GOs were obtained on the basis of incorrect information, they can be revoked.

The Government charges the request for CHP-GO, which is not mandatory and does not imply public support. This charge aims at recovering costs and depends on the complexity of the scheme: it charges significantly less to small CHP producers than to large complex CHP producers (see Table 3)

Table 3: Costs to be borne by the applicants to CHP-GO

Type of Scheme	Costs per application
Scheme ≤2MWe	**£**1000 (plus VAT at prevailing rate)
Scheme >2 and ≤25MWe	£2000 (plus VAT at prevailing rate)
Scheme >25 and ≤50MWe	£3000 (plus VAT at prevailing rate)
≥ 50 MWe	£4000 (plus VAT at prevailing rate)

The applicant should do payment for these costs by cheque when submitting the application form.

[8] DECC Website, Application Guidelines for CHP-GOs extracted at: http://chpqa.decc.gov.uk/assets/go/ApplicationGuidelines.pdf

Where a CHP-GO has been requested, there may be additional costs to the producer associated with the installation of additional metering (fuel, electricity and heat), as the definition in the Directive of CHP electricity to be applied in the Guarantee of Origin, unlike the UK's CHPQA standard, does not allow heat produced by supplementary firing or in auxiliary boilers or electricity produced by a condensing turbine to be counted (an thus additional metering may be required). However, the issuance of a CHP-GO is at the request of the producer and any additional costs will form part of the commercial decision to request for this certificate.

Within this scheme CHP-GO can be:

- Replaced: through a request from the CHP-GO holder to the competent body if the holder believes that the CHP-GO us inaccurate);
- Transferred: when the CHP-GO holder does not operate the plant to which the CHP-GO has been issued for); and/or
- Revoked: if the competent body decided that (i) the CHP-GO is inaccurate; or (ii) it is satisfied that the information provided on the CHP-GO request in not accurate; or (iii) it is otherwise satisfied that the CHP-GO should not have been issues).

The Statutory Instrument 2007 Cogeneration also makes provisions for the recognition of CHP-GOs:

- CHP-GOs issued by the competent body shall be recognised by public authorities (any Minister, Government Department, public body or any description or any person holding public office) as a proof of electricity produced from high-efficiency CHP;
- CHP-GOs issued outside Great Britain shall be recognised provided that it has not been requested to refuse or withdraw such recognition by the authority that has issued or supervised the issue of the CHP-GO and that there are no doubts about the accuracy, reliability or veracity accordingly to the supra-referred Regulations.

Up until this moment no CHP-GOs have been issued in Great Britain.

1.2.1 EECS

Great Britain is no longer a member of EECS. According to AIB statistics from November 2011, Great Britain has only issued RECS in 2002 (90,158). Thus RECS have been not issued transferred or cancelled since 2002.

1.2.2 GO Statistics

The following table shows the GOs statistics 2009-2011. The statistics are taken from the Ofgem Renewables and CHP Register.

Table 4: GOs statistics 2009-2011

Year	Issued	Cancelled (Redeemed + Retired)	Revoked	Held
2009	23,445,002	40,360	97,471	23,307,171
2010	16,730,189	5,009,923	161,020	11,559,245
2011	23,410,586	6,952,046	-	16,458,540

1.3 Other RES-E Relevant Support Schemes

Renewables Obligation

The Renewables Obligation (RO), introduced in 2002 is UK's main financial mechanism by which the Government encourages the deployment of large-scale renewable electricity generation. This mechanism provided support for 20 years, which balances the need to provide investors with long-term certainty with the need to keep costs to consumers to a minimum, and requires licensed electricity suppliers in the UK to source a specific and annually increasing percentage of their sales from eligible renewable sources or they pay a penalty. Since it was introduced it has been very successful in supporting the deployment of renewables generation from 3.1GW in 2002 to 8GW in 2009 and more than tripling the level of renewable

electricity in the UK from 1.8% in 2002 to 6.6% in 2010. It is currently worth around £1.3 billion a year in support to the renewable electricity industry[9].

This scheme was introduced by the Department of Trade and Industry (now the Department of Energy and Climate Change) and its administrated by Ofgem who issue Renewables Obligation Certificates (ROCs) to renewable electricity generators for every megawatt hour (MWh) of eligible renewable electricity they generate. The issue of a ROC is optional and is available for each eligible MWh of generation rounded up to the nearest MWh. The RO is a closed UK-only system.

The obligation level is set each year by the Department of Energy and Climate Change (DECC) using a fixed target or a headroom calculation. In 2010-11 the headroom calculation was applied to take account of the prediction of a large amount of new renewable generation coming online. The Obligation level for suppliers to customers in England and Wales for the period from 1 April 2012 to 31 March 2013 will be 0.158 ROCs/MWh[10].

Suppliers can meet their obligation by either presenting Renewable Obligation Certificates (ROCs); paying a buyout price (GBP 38.69 per MWh for 2011/2012 and GBP 40.71 per MWh in 2012/2013[11] rising each year with inflation); or a combination of the two. ROCs are issued to generators for every generated MWh of eligible renewable electricity. These ROCs can then be sold to suppliers or traders to receive a premium on top of the wholesale price of their electricity. ROCs can be sold with or without the electricity they represent.

At the end of an obligation period the money in the buyout fund is recycled to those suppliers who presented ROCs on a pro rata basis. Suppliers that do not present ROCs pay into the buy-out fund at the buy-out price, but do not receive any portion of the recycled fund.

The scheme has been subjected to various amendments over the years, the most significant being in April 2009 through the introduction of 'banding' where different levels of financial support was awarded to generators based on their generation technology. Further changes in April 2010 included extending the scheme, from 31 March 2027, in England and Wales and Scotland until 31 March 2037.

Several legislative amendments were implemented during the 2010-11 and 2011-12 obligation periods. These included the transfer of support for photovoltaic (PV), hydro and wind micro generation (with capacity less than 50kW) in Great Britain (GB) from the RO to the new Feed-in Tariff (FIT) scheme, with effect from 1 April 2010, and the introduction of sustainability requirements for bioliquids in April 2011.

The RO will close to new generation on 31 March 2017. Generation which is accredited under the RO will continue to receive its full lifetime of support in the "vintaged" scheme after 2017. The scheme will close in 2037.

Feed-in-Tariff

The Feed-in-Tariff (FIT) scheme was introduced on 1st April 2010, though the Energy Act 2008, to encourage the deployment of additional small-scale (up to 5 MW) low-carbon electricity generation, particularly by organisations, businesses, communities and individuals that have not traditionally engaged in the electricity market. It is expected that by 2020 the scheme will support over 750,000 small-scale low carbon electricity installations and will have saved 7 million tonnes of carbon dioxide.

This scheme, introduced by DECC and administrated by Ofgem, is voluntary for generators and small suppliers (<50,000 domestic customers). For large electricity suppliers who will make the payments directly to generators it is an obligatory scheme. This is then recovered equitably across all electricity suppliers

This scheme requires Licensed Electricity Suppliers (FIT Licensees) to pay a generation tariff to small-scale low-carbon generators for electricity generated. An export tariff is also payable where electricity is exported to the national grid. The FIT provides support for a set period of time (10, 20 or 25 years

[9] DECC Website: www.decc.gov.uk

[10] Ibid

[11] Ofgem Information Note: The Renewables Obligation Buy-out Price and Mutualisation Ceiling 2012-2013, consulted at: http://www.ofgem.gov.uk/Sustainability/Environment/RenewablObl/Documents1/Buy-out%20price%20and%20mututalisation%20ceiling%202012_13.pdf

depending on technology) at a determined level of support dependent on the technology installed. This scheme replaces the Low Carbon Buildings Programme (LCBP) grants, which have since been discontinued.

Installations using solar photovoltaic (PV), wind, hydro, anaerobic digestion (AD) technologies up to 5MW and fossil fuel derived Combined Heat and Power (CHP) up to 2kW (up to a maximum of 30,000 eligible installations) can receive FIT payments, providing all eligibility requirements are met. This scheme replaces the Renewables Obligation (RO) as the main mechanism of support for PV, wind and hydro installations with a declared net capacity (DNC) of 50kW or less ('micro installations'). The scheme also provides eligible small-scale generators with a capacity over 50kW to 5MW ('small installations') the one-off choice of applying under the FIT or the RO.

In order to be eligible for the FIT, customers ("Generators") must ensure that the Product they are installing is certified by the Microgeneration Certification Scheme (MCS), and that the Installer is also MCS certified.

Since it was introduced the FIT scheme has undergone a number of changes, being the latest one the 2011 Amendment Order, which makes a series of modifications to the Feed-In Tariffs (Specified Maximum Capacity and Functions Order 2010 , intended to ensure this policy intent is fully reflected in the operation of the FITs scheme, particularly in light of the additional clarification provided following the European Commission's consideration of the FITs scheme in relation to state aid (decision N94/2010).

Levy Exemption Certificates

The Climate Change Levy (CCL) was introduced on 1st April 2001 by the Government under the Finance Act 2000. It is a charge on non-domestic supply of electricity in the UK. Electricity is currently (with effect from 1st April 2012) subject to a levy at a rate of GBP 5.09/MWh.

The Renewable Levy Exemption Certificates (Renewable LECs) are electronic certificates issued by Ofgem, which issue these certificates monthly to accredited generating stations for each Megawatt hour (MWh) of renewable source electricity generated. In the case of NFFO/SRO (Non Fossil Fuel Obligation and the Scottish Renewables Obligation) generating stations Ofgem issues LECs directly to the electricity suppliers entitled to receive them. LECs identify renewable source electricity produced by accredited renewable generating stations

As LECs are only issued to accredited generating status, before they can receive LECs, the generating station must apply for accredited status.

Renewables LECs are part of the evidence required by HM Revenue & Customs to demonstrate the amount of renewable source electricity supplied to non-domestic customers in Great Britain. They are used by electricity suppliers to claim the CCL Exemption on non-domestic supply. Suppliers allocate Renewables LECs to a supply pursuant to a renewable source contract.

Ofgem Renewables and CHP Register is used to manage the renewable and CHP schemes that Ofgem administers on behalf of government, namely the Renewables Obligation (RO), the Climate Change Levy (CCL) and the Renewable Electricity Guarantees of Origin (REGOs). Details on the LECs can be found at Ofgem website.

Renewable Heat Incentive

The Renewable Heat Incentive (RHI) encourages individuals, communities and others who are not professionals in the energy business, to play their part in bringing forward renewable energy, by providing a financial incentive to switch from using fossil fuels for electricity and heat, to renewable technologies and sources. The Energy Act 2008 provides the statutory basis for a Renewable Heat Incentive scheme to be introduced across England, Wales and Scotland. The first phase of the scheme came into force in 2011

This scheme is similar to the FIT scheme. However there are some important differences:

- will be paid for by the Treasury not by energy users.
- there is no 'National Grid for Heat' and so importing and exporting heat is not relevant.
- will be introduced in phases, with residential schemes not eligible until Phase 2.

The renewable energy technologies eligible for the scheme are: heat pumps (excluding air source heat pumps), solar thermal (below 200kW), biomass boilers (below 200kW), CHP and technologies such as biogas, biomethane and bioliquids. The incentive is technology dependent and varies according to the scale of the system installed.

Payments made as part of the RHI Scheme will be claimed by, and paid to, the Owner of the equipment. For small and medium sized installations, both the Product (equipment) and Installer will need to be certified under the Microgeneration Certification Scheme (MCS), in order to ensure quality assurance and consumer protection.

Payments will be paid over a number of years; annually for installations below 45 kW and quarterly for those above this level. Payments are calculated based on the annual amount of heat output, expressed in kilowatt hours (kWh):

- for Small and Medium Installations, the amount of heat generated by the equipment will be estimated (or "Deemed"). This will allow the beneficiary of the Incentive to receive a set amount based on the deemed output, while discouraging any excess production or energy waste.
- for Large installations and process-heating, the heat output will be metered, and the total annual support calculated from the actual energy generated, multiplied by the tariff level.

This Scheme is administered by Ofgem, including making Incentive payments to recipients and taking responsibility for auditing and enforcing the Scheme.

2 Proposals for Improvement of the Tracking System

2.1 Proposals regarding general regulation on tracking systems

There are several tracking systems in place in GB. These tracking systems are clearly regulated. The following are recommendations to align the tracking systems with RE-DISS BPR:

1. In the medium to longer term, GO should be the only "tracking certificate" used. Any other tracking systems of a similar purpose and function as GO should be closely coordinated with GO and eventually converted to GO (BPR [16]).
2. Besides GO, only Reliable Tracking Systems (such as ROCs) and the Residual Mix should be available for usage for disclosure. No other tracking mechanisms should be accepted (BPR [17]).
3. Green power quality labels should use GO as the unique tracking mechanism. The use of GO should be required by all labels (BPR [18)].

2.2 Proposals regarding Disclosure

In terms of disclosure, the GO system in place for GB is not fully in line with the RE-DISS BPR. The following are recommendations to align the existent disclosure system with RE-DISS BPR:

4. Disclosure should be made based on calendar year – disclosure in GB is done on fiscal year based (1st April- 31st of March). GB is one of the few countries in the EU that does not disclose information based on calendar year (BPR [5,6]);
5. The disclosure system should be only based on GOs (BPR [3]) – at the moment the disclosure system is based on GOs and ROCs. GOs are used as evidence for the identification of supply as renewable and ROCs are used as evidence for the identification of the supply from other sources.
6. GO lifetime should be 12 months counted from the date of production, instead of the 16 months considered in the current system. After the 12 months GOs that have not been cancelled yet should expire and be collected in the Residual Mix (BPR [3]);
7. In terms of timing for disclosure (BPR [33-35]),
    - The deadline for cancelling GO for purposes of disclosure of a given year should be the 31st of March of the following year (instead of the 1st of June);

- The timing for the calculation of Residual Mixes should be coordinated across Europe:
  - By 30 April X+1 GB should have determined its preliminary domestic residual mix and whether they have a surplus or deficit of attributes.
  - By 15 May X+1, the European Attribute Mix should be determined and should be used by DECC for the calculation of the residual mix (instead of the GB residual mix).
  - By 31 May X+1, the final domain residual mixes should be published.
  - As of 1 July X+1 the disclosure figures relating to year X should be published by DECC.

8. In terms of the residual mix calculations, the calculations make use of the GB residual mix for the excess of lack of attributes. The European Attribute Mix calculated under the RE-DISS project should replace this **(**BPR [25-28]**)**;
9. GB should clarify the relation between their support schemes for RES & CHP on the one side and GO and disclosure schemes on the other side (BPR [36]);
10. All electricity products offered by suppliers with claims regarding the origin of the energy (e.g. green or low-carbon power) should be based exclusively on cancelled GO. No other tracking systems should be allowed, with the exception of mechanisms defined by law, e.g. a pro-rata allocation of generation attributes to all consumers which is related to a support scheme (BPR [38])
11. Suppliers offering two or more products which are differentiated regarding the origin of the energy should be required to give product-related disclosure information to all their customers, including those which are buying the "default" product of the supplier (BPR [39]).
12. There should be clear rules for the claims which suppliers of e.g. green power can make towards their consumers. There should be rules how the "additionality" of such products can be measured (the effect which the product has on actually reducing the environmental impact of power generation), and suppliers should be required to provide to consumers the rating of each product based on these rules (BPR [40]).
13. Claims made by suppliers and consumers of green or other low-carbon energy relating to carbon emissions or carbon reductions should also be regulated clearly. These regulations should avoid double counting of low-carbon energy in such claims. A decision needs to be taken whether such claims should adequately reflect whether the energy purchased was "additional" or not (BPR [41]).

2.3 Proposals regarding RE-GO and CHP-GO

The RE-GO and CHP-GO system in place for GB is not fully in line with the RE-DISS BPR recommendations. To improve the RE-GO system in place for GB, the following RE-DISS recommendations should be followed:

14. The GOs for GB should only have a 12 month lifetime – instead of the 16 months lifetime (BPR [3]).
15. Also the RE-GO system should be based on EECS operated by AIB. GB At the moment GB is not an EECS members. The implementation of a GO system based on EECS will help harmonise the system for European GO transfers, especially between EECS members (BPR [7]).
16. In the case that a GO system is not implemented based on EECS, it should follow EECS requirements to facilitate making connections between EECs systems and non-EECS systems. If this is not undertaken, an adequate level of ambition as in the EECS system should be achieved and procedures for recognition and electronic transfer of GO to EECS members and other non-EECS member countries should be established (BPR [8]).
17. So-called ex-domain cancellations of GO, where a GO is cancelled in one registry and a proof of cancellation is then transferred to another country in order to be used there for disclosure purposes, should only be used if there is no possibility for a secure electronic transfer and if there is an agreement on such ex-domain cancellations between the competent bodies involved. Statistical information on all ex-domain cancellations should be made available in order to support Residual Mix calculations (BPR [9)].

2.4 Further proposals regarding GOs

The following are proposals for improvement of the GO system:

- Although EU directives require member states to establish GO for electricity from renewable energy sources and from high-efficiency cogeneration and in order to support differentiation also between other forms of electricity generation, it is advisable:

  18. to extend the system of GO to other forms of electricity generation (BPR [11)] – in this way ROCs would cease to be used as a tracking mechanism for other sources of energy apart from RE for disclosure purposes and GOs can be the only tracking mechanism used ;

  19. all types of GO should be handled in one comprehensive registry system (BPR [12)].;

2.5 Matrix of disclosure related problems and country-specific proposals

Problem	Country-specific proposal
Possible double counting in different explicit tracking instruments	1, 2, 3, 9, 10, 15, 16, 17, 18, 19
Double counting of attributes in explicit and implicit tracking mechanisms	4, 8, 17
Double counting within individual supplier's portfolio	11
Loss of disclosure information	12, 13, 18
Intransparency for consumers	12, 13, 18
Leakage of attributes and/or arbitrage	4, 5, 6, 7, 8, 14, 15, 16, 17
Unintended market barriers	15, 16, 17