



Commission for Energy Regulation  
An Coimisiún um Rialáil Fuinnimh

# Fuel Mix Disclosure and CO<sub>2</sub> Emissions 2015

## Information Paper

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# Executive Summary

This document sets out the 2015 fuel mix and CO<sub>2</sub> emissions factors for suppliers licensed in Ireland and operating in the Single Electricity Market (SEM). The figures are calculated in accordance with [SEM-11-095](#) Fuel Mix Disclosure in the Single Electricity Market: Calculation Methodology Decision Paper. The disclosures are based on the 2015 calendar year data and suppliers must publish the fuel mix disclosure and CO<sub>2</sub> on customer bills no later than two months from publication of this paper.

Fuel mix disclosure is required under European legislation and the CER has the role to ensure that suppliers provide reliable information on customer bills and other promotional material. The Single Electricity Market (SEM) Committee made a decision in 2009 to follow a certificate based methodology for fuel mix disclosure in the SEM. Fuel mix is a process for calculating how green a supplier is. It is the role of the Single Electricity Market Operator (the SEMO) to administer and calculate the fuel mix figures from the information provided by the electricity suppliers. Due to the nature of the certificate based methodology it is important to note that there is no connection between the SEMO calculation for the purposes of the fuel mix disclosure and Ireland's national renewable energy targets under the 2009 Renewable Energy Directive<sup>1</sup>. The Fuel Mix Disclosure Information Paper is published once a year by the Commission for Energy Regulation (CER).

The fuel mix of suppliers and associated environmental impact information (emissions) is calculated for the period from January to December by the SEMO in accordance with the SEM Committee's decisions. This calculation is completed at the end of the second quarter of each year.

Under Regulation 25 of S.I. No. 60 of 2005, which transposes Article 3(6) of the Electricity Directive (2003/54/EC), the CER is required to ensure that all suppliers provide reliable information on bills and promotional materials sent to customers regarding the contribution of each energy source to the overall fuel mix of the supplier concerned and the associated environmental impacts in the preceding year.

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<sup>1</sup> Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC

# Related Documents

- The SEM All-Island Fuel Mix Disclosure for previous periods can be found [here](#).
- The CER Fuel Mix and CO2 Emission Factors Disclosure for previous periods can be found [here](#)
- [SEM-09-081](#) Interim Arrangements: Fuel Mix Disclosure in the SEM. Decision paper on the methodology and principals for the calculation of fuel mix disclosure in the SEM.
- [SEM-11-095](#) Fuel Mix Disclosure in the Single Electricity Market: Calculation Methodology Decision Paper
- CER Decision on Supervisory Framework for Administration of Guarantees of Origin CER 11/824

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# Public/ Customer Impact Statement

The purpose of the Fuel Mix Disclosure is to provide consumers with information to allow them to understand the environmental impact of the electricity that they buy and to choose between suppliers based on their fuel mix and emissions information.

This Information Paper sets out the Fuel Mix Disclosure and CO2 Emissions for 2015 as a total all island figure and by supplier. The CER's role is to ensure that all suppliers provide reliable information regarding the contribution of each energy source to their overall fuel mix and related environmental impact information.

For the purposes of the Fuel Mix disclosure, suppliers can purchase renewable Guarantees of Origin (GOs). These GOs are certificates that provide customers with certainty that the electricity has been generated from a renewable source. As a result, the renewable share of the supplier fuel mix in this report is higher than the renewable sources used in the production of electricity in Ireland. GOs may be traded cross border and are further explained in Appendix 2.

Supplier	Coal	Gas	Peat	Renewable	Other
All-Island	16.0	36.4	5.9	41.1	0.7
Airtricity (Ireland)	0.0	0.0	0.0	100.0	0.0
Bord Gais (Ireland)	5.1	72.4	1.9	20.4	0.2
Electric Ireland (Ireland)	17.9	50.4	6.6	24.4	0.7
Energia(Ireland)	0.0	0.0	0.0	100.0	0.0
Vayu (Ireland)	0.0	0.0	0.0	100.0	0.0
Panda Power (Ireland)	0.0	0.0	0.0	100.0	0.0
LCC Power Limited t/a Go Power(Ireland)	0.0	0.0	0.0	100.0	0.0

Suppliers in Ireland who did not make declarations for the purposes of fuel mix disclosure were PrePay Power and Pinergy and are assigned the Residual Mix. The Residual Mix for Irish suppliers is below:

### Residual Mix for Irish Suppliers 2015:

Coal	38.8%
Gas	23.9%
Peat	14.2%
Renewable	21.5%
Other	1.6%

See Appendix 3 for the All-Island Residual Mix.

The information presented in this report is used by suppliers to provide information on their websites and on customer bills regarding the overall fuel mix and environmental impact for customers.

# Glossary of terms

- **FMD** – Fuel Mix Disclosure
- **GO** – Guarantee of Origin
- **SEMO** – Single Electricity Market Operator
- **AIB** – Association of Issuing Bodies
- **Ofgem** – Office of Gas and Electricity Markets
- **UR** – Utility Regulator
- **CER** – Commission for Energy Regulation
- **SEM** – Single Electricity Market
- **DAERA** – Department of Agriculture, Environment and Rural Affairs

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# 1 Background and Introduction

Fuel Mix Disclosure is required by Article 3(9) of Directive 2009/72/EC. The transposing legislation in Ireland, S.I. number 60 of 2005, requires the Commission for Energy Regulation (“the CER”) to ensure Suppliers provide reliable fuel mix information on all bills and promotional materials issued to customers.

The SEM Committee Decision Paper (SEM-11-095) sets out the enduring methodology for calculation of fuel mix. Suppliers publish their own information, as well as the All Island information, on all bills and promotional materials.

The purpose of this paper is to set out the updated fuel mix and CO<sub>2</sub> emissions figures for suppliers operating in the SEM. The fuel mix and CO<sub>2</sub> emissions data is taken from data provided to the CER by SEMO.

## 2 Fuel Mix & CO2 Emissions Disclosure 2015

There are two parts to this paper:

1. Section 2.2 sets out the All Island Fuel Mix and All Island Average CO<sub>2</sub> Emissions. The All Island is also presented yearly for comparison.
2. Section 2.3 sets out the Supplier’s Fuel Mix and CO<sub>2</sub> Emissions

All the figures in the report are derived from the methodology described in SEM-11-095.



## 2.1 Presentation of Information

The fuel mix information should be presented on bills in accordance with SEM/11/095 and a template for this purpose is reproduced in the Appendix 1 to this paper. In particular the CER would like to remind suppliers of the following:

- Where fuel mix information is on the back of bills reference must be made to it on the front of the bill.
- While radioactive waste information is required by S.I. No. 60 of 2005, this figure is 0.000 t/MWh for all suppliers in 2015 and therefore need not be included with the 2015 fuel mix disclosure information on bills.
- To ensure consistency across suppliers, percentages should be rounded to one decimal place.
- CO<sub>2</sub> information should be given in the units tonnes of CO<sub>2</sub> per MWh (t/MWh).
- Where separate products associated with a particular fuel mix are offered to certain customers, all the supplier's customers should receive information, on request, regarding the fuel mix associated with their electricity (not simply the supplier's average fuel mix).
- In addition to the fuel mix disclosure requirements, section 3.5.3 of the CER's decision paper on the Regulation of Green Source Products in the Electricity Retail Market, [CER/15/205](#), governs display of information for suppliers who offer green source products.
- The 2015 fuel mix information must be on all bills within two months of the publication of this paper.

## 2.2 All-Island Fuel Mix 2015 and CO2 Emissions

Following the Fuel Mix Disclosure in the SEM calculation methodology, the fuel mix for suppliers will include:

- non-renewable generation attributes
- renewable generation attributes that are covered by Guarantees of Origin (“GOs”)
- renewable generation attributes that are not included in the GOs scheme
- the Residual Mix or EU Residual Mix

When considering the fuel mix and emissions in this paper, it is important to note that:

1. “Guarantees of Origin” (GOs) are electronic certificates issued for energy from renewable sources. GOs are issued to eligible generators for every 1 MWh of energy produced. The purpose of these certificates is ensure that the electricity produced has come from a renewable source. It is important to note that these may not be representative of metered generation in Ireland as they are tradeable instruments and may be imported from other countries. For the purposes of fuel mix disclosure, electricity suppliers can import GO certificates that do not reflect the physical generation of electricity produced in Ireland. Therefore the percentage figure for fuel mix in the graphs and tables in this report will not reflect the actual generation in Ireland but includes any certificates that have been imported into Ireland by electricity producers / suppliers.
2. The sole function of the GO is to prove that a given share of quantity of energy was produced from renewable source. Only one GO will be issued per MWh of electricity generated and this one GO can only be used once for the purposes of the fuel mix disclosure. Therefore there is no double counting of the same unit of electricity in the fuel mix disclosure.
3. The GO scheme permits transfer of GOs between EU Member States which, depending on the quantity of GOs imported or exported from Ireland in a given period, has the potential to vary significantly from the actual renewable generation produced within the jurisdiction.

4. In the event that there is a deficit of generation attributes as reported by suppliers to meet overall all-Island demand, the European Residual is used to meet the deficit. This to a lesser extent has the ability to lead to a fuel mix that differs from actual metered generation.

## All Island Fuel Mix

Figure 1 sets out the all-island fuel mix for 2015.

- Renewables made the largest contribution to the all-island's electricity supply at 41.06% (up from 34.46% in 2014).
- Gas decreased to 36.36% (down from 41.66% in 2014).
- Coal increased to 16.02% (up from 15.71% in 2014).
- The "other" category at 0.7% includes Oil and the Non-Biodegradable Fraction of Waste (NDBFW).

There are a number of contributing factors to the increase in the renewable contribution between 2014 and 2015.

- Firstly, and primarily, there were a significant amount of GO certificates imported from Europe and the UK by suppliers for use in their fuel mix figures. The number of GOs imported increased from circa 5M in 2014 to 9.6M in 2015<sup>2</sup>.
- Secondly, there was an increase in installed capacity of wind. An EirGrid report<sup>3</sup> shows that the installed capacity has increased from 2013-2015: 2,990 MW in 2015, 2,787 MW in 2014 and 2,451 MW in 2013.
- Over the years the wind capacity factor has also increased: it was 32.3% in 2015, 28.5% in 2014 and 30.6% in 2013.

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<sup>2</sup>SEMO source data

<sup>3</sup> <http://www.eirgridgroup.com/site-files/library/EirGrid/Annual-Renewable-Constraint-and-Curtailment-Report-2015-v1.0.pdf>

The “other” category consists of all fuels in a given year that represent less than 1% of the final overall generation in the fuel mix disclosure calculation. Since Oil has decreased to 0.5% in 2015, it now contributes to the ‘other’ figure (with Non-Biodegradable waste).

**Figure 1 All Island Fuel Mix 2015**

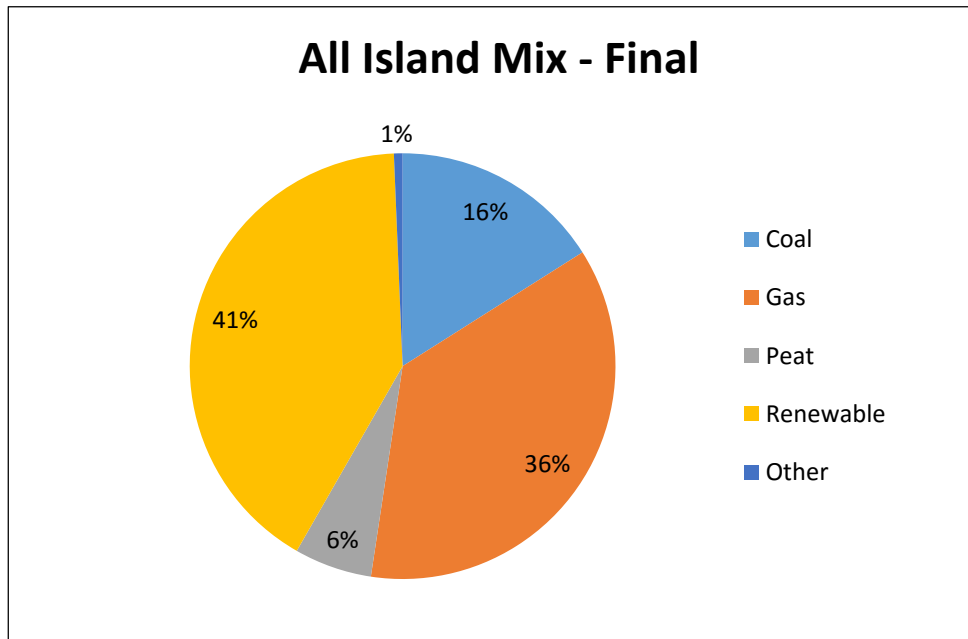
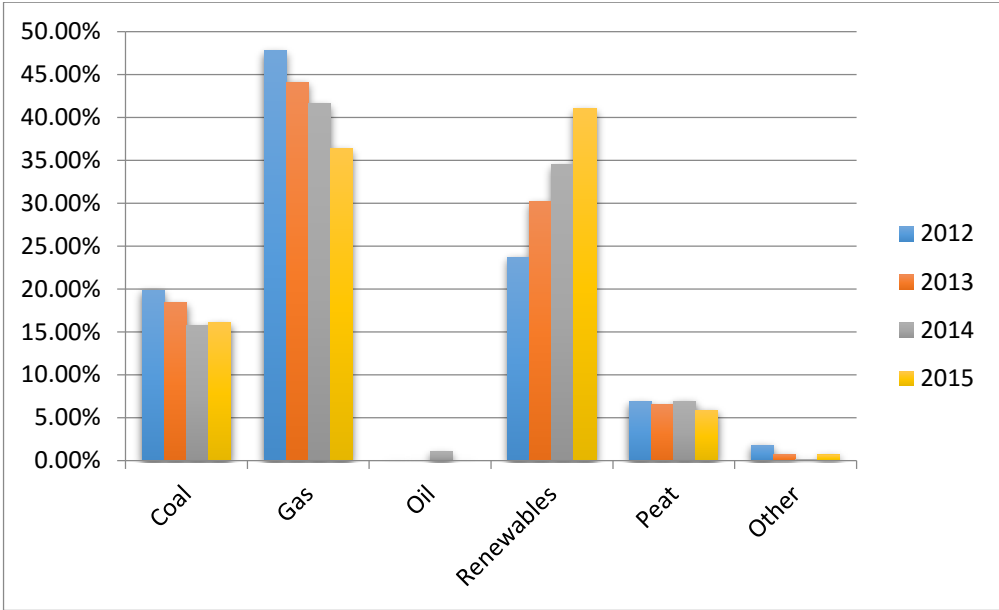
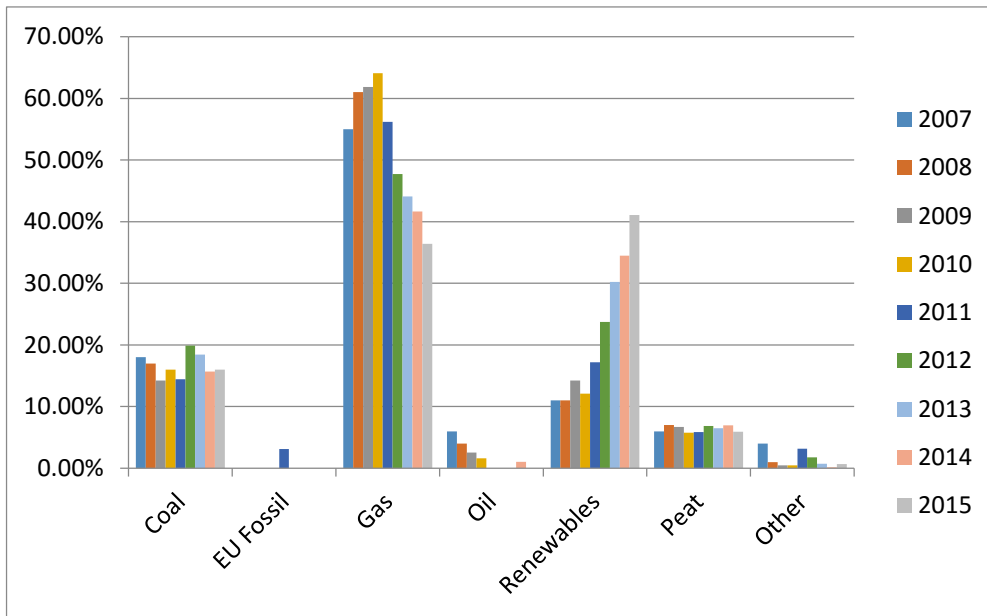


Figure 2 Fuel Mix Comparison 2012 - 2015



**Figure 3 Fuel Mix 2007-2015**



<b>Fuel-Mix 2005-2015</b>											
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Coal	24.00%	19.00%	18.00%	17.00%	14.24%	15.98%	14.44%	19.89%	18.42%	15.71%	16.02%
EU Fossil	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.12%	0.00%	0.00%	0.00%	0.00%
Gas	46.00%	50.00%	55.00%	61.00%	61.85%	64.06%	56.16%	47.74%	44.09%	41.66%	36.36%
Oil	12.00%	9.00%	6.00%	4.00%	2.53%	1.59%	0.00%	0.00%	0.00%	1.06%	0.00%
Renewables	9.00%	11.00%	11.00%	11.00%	14.23%	12.11%	17.21%	23.74%	30.24%	34.46%	41.06%
Peat	8.00%	7.00%	6.00%	7.00%	6.70%	5.78%	5.88%	6.86%	6.49%	6.95%	5.90%
Other	1.00%	4.00%	4.00%	1.00%	0.45%	0.48%	3.18%	1.77%	0.75%	0.17%	0.65%

Note:

- Figures from 2007 relate to Ireland only and calculations are based on pre-SEM methodology,
- Figures for 2008, 2009 and 2010 relate to Ireland and Northern Ireland and are based on the Interim Arrangements methodology referenced in this paper.
- Figures for 2011 onwards relate to Ireland and Northern Ireland and are based on the SEM Committee Decision Paper Fuel Mix Disclosure in the Single Electricity Market: Calculation Methodology Decision Paper (SEM-11-095) referenced in this paper.
- The “Other” category consists of all fuels which represent less than 1% of the final overall generation in the calculation. For 2015 this consists of Oil and the Non-Biodegradable Fraction of Waste (NBDFW).

## CO2 Emissions

The average carbon dioxide emissions per MWh of electricity increased from 0.370 t/MWh in 2014 to 0.393 t/MWh in 2015 for the island, as shown in table 1. Some of this increase can be attributed to the slight increase in the % of coal in the fuel mix, rising from 15.71% in 2014 to 16.02% in 2015.

To calculate this, emissions figures are supplied by the EPA (Environmental Protection Agency) and DAERA (Department of Agriculture, Environment and Rural Affairs) annually to the SEMO for each conventional generator in the SEM.

These emission figures are totalled according to fuel type and divided by the metered generation to give specific emission factors of a given fuel. All emissions factors are then grouped together and each fuel's emissions factor is multiplied by the corresponding percentage in the All Island Mix. The resulting values are then summed to give a Final All Island emissions factor. This process is repeated for each Supplier, using their individual mix, to arrive at their individual Supplier emissions factor.

**Table 1 Average CO<sub>2</sub> Emissions (t/MWh)**

2008	0.533
2009	0.504
2010	0.519
2011	0.466
2012	0.481
2013	0.452
2014	0.370
2015	0.393



## 2.3 Suppliers' Fuel Mix by Fuel Type in 2015

Supplier	Coal	Gas	Peat	Renewable	Other
All-Island	16.0	36.4	5.9	41.1	0.7
Airtricity (Ireland)	0.0	0.0	0.0	100.0	0.0
Airtricity (All-Island)	0.0	17.5	0.0	82.5	0.0
Bord Gais (Ireland)	5.1	72.4	1.9	20.4	0.2
Bord Gais (All-Island)	5.4	72.0	2.0	20.4	0.2
Electric Ireland (Ireland)	17.9	50.4	6.6	24.4	0.7
Electric Ireland(All-Island)	16.5	52.2	6.1	24.6	0.7
Energia(Ireland)	0.0	0.0	0.0	100.0	0.0
Energia(All-Island)	0.0	16.1	0.0	83.9	0.0
Vayu (Ireland)	0.0	0.0	0.0	100.0	0.0
Vayu (All-Island)	0.0	0.0	0.0	100.0	0.0
Panda Power (Ireland)	0.0	0.0	0.0	100.0	0.0
LCC Power Limited t/a Go Power(Ireland)	0.0	0.0	0.0	100.0	0.0
LCC Power Limited t/a Go Power (All-Island)	34.6	21.3	12.7	30.0	1.4

Note: The fuel mix calculation is carried out on an individual licence basis. When calculating the fuel mix, where a supplier operates as a single company but holds separate licences (such as a supplier that operates in both jurisdictions) those licences that have excess generation attributes are distributed among the licences with excess demand within the single company prior to using the Residual Mix.

Suppliers in Ireland who did not make declarations for the purposes of fuel mix disclosure were PrePay Power and Pinergy and are assigned the Residual Mix. The Residual Mix for ROI Suppliers includes a PSO adjustment and is made up of the following:

## Residual Mix for ROI Suppliers 2015:

Coal	38.8%
Gas	23.9%
Peat	14.2%
Renewable	21.5%
Other	1.6%

See Appendix 3 for the All-Island Residual Mix; this does not include a PSO adjustment value.

## 2.4 Suppliers' CO2 Emissions for 2015

Supplier	tCO2/MWh
<b>All-island</b>	<b>0.393</b>
<b>Airtricity (Ireland)</b>	<b>0.000</b>
<b>Airtricity (All-Island)</b>	<b>0.085</b>
<b>Bord Gais (Ireland)</b>	<b>0.421</b>
<b>Bord Gais (All-Island)</b>	<b>0.423</b>
<b>Electric Ireland (Ireland)</b>	<b>0.486</b>
<b>Electric Ireland (All-Island)</b>	<b>0.476</b>
<b>Energia (Ireland)</b>	<b>0.000</b>
<b>Energia (All-Island)</b>	<b>0.078</b>
<b>Vayu (Ireland)</b>	<b>0.000</b>
<b>Vayu (All-Island)</b>	<b>0.000</b>
<b>Panda Power (Ireland)</b>	<b>0.000</b>
<b>LCC Power Limited t/a Go Power (Ireland)</b>	<b>0.000</b>
<b>LCC Power Limited t/a Go Power (All-Island)</b>	<b>0.571</b>
<b>NRGVend Limited t/a Prepay Power (Ireland)</b>	<b>0.640</b>
<b>Waterpower Engineering Ltd t/a Pinergy (Ireland)</b>	<b>0.640</b>

# Appendix 1 Bill Layout

## Default Presentation of Information<sup>4</sup>

<b>Supplier Z Disclosure Label</b>		
<b>Applicable Period: January 2015 to December 2015</b>		
<b>Electricity supplied has been sourced from the following fuels:</b>	<b>% of total</b>	
	<b>Electricity Supplied by Supplier Z</b>	<b>Average for All Island Market (for comparison)</b>
Coal	X %	X %
Natural Gas	X %	X %
Nuclear	X %	X %
Renewable	X %	X %
Peat	X %	X %
Oil	X %	X %
EU Fossil	X %	X %
Other	X %	X %
<b>Total</b>	<b>100 %</b>	<b>100 %</b>
<b>Environmental Impact</b>		
CO <sub>2</sub> Emissions	X t/MWh	X t/MWh
<p>For more information on the environmental impact of your electricity supply visit <a href="http://www.SupplierZ.ie">www.SupplierZ.ie</a> or call 00XXX X XXX XXXX <sup>5</sup></p>		

<sup>4</sup> Please refer to SEM-11-095 for further detail on presentation requirements. Note that the fuel categories used each year can vary.

<sup>5</sup> Please see section 3.5.3 from the CER's decision paper on the Regulation of Green Source Products in the Electricity Retail Market, [CER/15/205](#), for suppliers who offer green source products.

## Appendix 2 Guarantees of Origin

A Guarantee of Origin (GO) certificate is an instrument defined in European legislation<sup>6</sup> that certifies that electricity generated is from renewable energy sources. The GO guarantees that one MWh of electricity has been produced from renewable energy sources. Electricity suppliers buy GOs to certify that their electricity demand is covered by certified renewable sources. A GO is a "green label" which ensures that one MWh of electricity has been produced from renewable energy sources and when customer buys power which has been certified with GOs, the customer has a guarantee that the electricity is from renewable sources.

In Ireland, SEMO is a member of the Association of Issuing Bodies (AIB) since May 2015. AIB is a European body that provides a standardised system for European Energy Certificate System - "EECS" and GOs are part of this European certification system. In Ireland, SEMO is the body that issues GOs to generators.

Guarantees of Origin are electronic certificates issued for energy generated from renewable sources and are issued to renewable generators that are not in support schemes (such as the PSO in Ireland) per MWh of generation. These are tradeable instruments and do not need to follow the flow of energy. Guarantees of Origin Certificates are traded at a European level. The AIB operates a hub where such certificates can be traded between countries. Suppliers can purchase Guarantees of Origin certificates to use as proof of the share or quantity of energy from renewable sources in their Fuel Mix. Guarantees of Origin are both imported and exported between Ireland and the rest of Europe.

Renewable generators that are signed up to the Guarantees of Origin scheme are issued GOs per MWh of generation which can then be transferred to suppliers to use in their fuel mix disclosure. Each year, suppliers submit a fuel mix declaration form to the Single Electricity Market Operator (SEMO), which performs the fuel mix calculation on behalf of the Regulatory Authorities. This declaration outlines all of a supplier's claims on electricity, broken down into Guarantees of Origin held by the supplier on SEMO's registry, Renewable Energy Guarantees of Origin (which are held on Ofgem's registry) and the attributes of specific generators, some of which may be supported by the Public Service Obligation levy. A Supplier can also include non-renewable Generator Attributes in its fuel mix declaration.

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<sup>6</sup> EU Directive 2009/28/EC

## Appendix 3 All Island Residual Mix

The All-Island Residual Fuel Mix is as follows:

<b>Fuel</b>	<b>Percentage</b>
Coal	40.7%
Gas	25.0%
Peat	15.0%
Renewable	17.7%
Other	1.7%

This does not include a PSO adjustment value.