



## **SEM Committee Paper**

# **All-Island Fuel Mix Disclosure and CO2 Emissions 2018**

## **Information Paper**

**SEM-19-053**

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The SEM Committee is established in Ireland and Northern Ireland by virtue of section 8A of the Electricity Regulation Act 1999 and Article 6 (1) of the Electricity (Single Wholesale Market) (Northern Ireland) Order 2007 respectively. The SEM Committee is a Committee of both CRU and NIAUR (together the Regulatory Authorities) and an independent member, that, on behalf of the Regulatory Authorities, takes any decision as to the exercise of a relevant function of CRU or NIAUR in relation to an SEM matter.

## 1. INTRODUCTION

1.1 The purpose of this Information paper from the Regulatory Authorities is to set out the 2018 fuel mix and CO<sub>2</sub> emissions figures for electricity suppliers operating in the all-island wholesale Single Electricity Market (SEM). This is shown on average across the island in sections 2 and 3 of this paper, along with year-on-year trends, and per supplier in section 4. The fuel mix and CO<sub>2</sub> emissions disclosures are taken from data provided to the Regulatory Authorities by the Single Electricity Market Operator ([SEMO](#)). The disclosures must be published on bills from suppliers to electricity customers in Ireland and Northern Ireland no later than two months from the publication of this paper.

1.2 The fuel mix and CO<sub>2</sub> emissions disclosures for 2018 allow consumers to understand the recent environmental impact of the electricity that they buy, compared to the all-island average, and choose between suppliers on this basis - see Appendix 1. It should be noted that the fuel mix of each supplier (outlined in this paper) does not necessarily represent metered generation in Ireland or Northern Ireland, as suppliers may claim the attributes of renewable electricity generated outside of the SEM through electronic certificates known as Guarantees of Origin (GOs), imported from other EEA Member States<sup>1</sup>, which do not need to follow the physical flow of electricity. This is further elaborated below.

1.3 The publication of the fuel mix of suppliers and the provision of information regarding the environmental impact of electricity produced from that fuel mix is required by Article 3(9) of [Directive 2009/72/EC](#). It is the role of SEMO to administer and calculate the fuel mix figures from the information provided by suppliers. The supplier fuel mix and associated environmental impact information (emissions) is calculated by SEMO in accordance with the SEM Committee's methodology. This methodology can be found in the SEM Committee Decision Paper *Fuel Mix Disclosure in the Single Electricity Market: Calculation Methodology Decision Paper* ([SEM-11-095](#)).

1.4 At a high level, and in accordance with [SEM-11-095](#), the fuel mix figure for a supplier consists of non-renewable generation attributes, GOs and renewable generation attributes assigned to a supplier that are not included in the GO scheme and the Residual Mix<sup>2</sup> or EU Residual Mix. GOs are electronic certificates issued for energy generated from renewable sources in EEA Member States and are issued to renewable generators that are not in support schemes per MWh of generation. These are tradeable instruments at European level and do not need to follow the flow of energy. The Association of Issuing Bodies ([AIB](#)) operates a hub where such certificates can be

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<sup>1</sup> EEA Member States consist of the EU, Norway, Lichtenstein and Iceland.

<sup>2</sup> The Residual Mix is the mix of all unclaimed electricity in the system. It is calculated as the sum of: Any generation attributes (including exported certificates) not assigned to, and submitted by, a supplier; Surplus GOs declared by suppliers; and Unused certificates which were expired in the relevant Disclosure Period.

traded between countries. This allows suppliers to purchase the renewable benefit of certain generators across Europe and include it in their total fuel mix. GOs are both exported from SEM and imported to SEM to/from the rest of Europe - a clear majority are currently imported to SEM.

1.5 Renewable generators that are signed up to the AIB's GO 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 SEMO which performs the fuel mix calculation on behalf of the Regulatory Authorities.

1.6 Attention is drawn to the following when considering the fuel mix and emissions set out in this document:

- Firstly, the GO scheme permits, depending on the quantity of GOs imported or exported to or from Ireland / Northern Ireland in a given period, has the potential to vary significantly from the actual renewable generation produced within each jurisdiction<sup>3</sup>. The sole function of the GO is to prove that a given share of quantity of energy was produced from a renewable source in the EEA. 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. Hence there is no double-counting of the same unit of European renewable electricity generation in the fuel mix disclosure.
- Secondly, in the event that there is a deficit of generation attributes to meet overall All-Island demand, the European Residual Mix will be 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.

Therefore, for these reasons the fuel mix disclosure figures for a given disclosure period may not necessarily be representative of the actual all-island Production Fuel Mix for a given calendar year.

1.7 The fuel mix information should be presented on electricity bills in accordance with SEM-11-095. A template for this purpose is reproduced in the Appendix of this paper. In particular the Regulatory Authorities would like to remind suppliers of the following:

- Where fuel mix information is on the back of a bill reference must be made to it on the front of the bill;
- While radioactive waste information is required by Directive 2009/72/EC, this figure is 0.000 t/MWh for all suppliers in 2018 and therefore need not be included with the 2018 fuel mix disclosure information on bills;

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<sup>3</sup> There were 8,151,671 imported GO certificates declared by suppliers for disclosure in the 2018 fuel mix. One GO represents 1MWh of electricity produced from a renewable source. The 8,151,671 imported contributed to approximately 37.9% of the overall renewable figure of 21,518,322 MWh.

- To ensure consistency across suppliers, percentages should be rounded to one decimal place;
- CO2 information should be given in the unit tonnes of CO2 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 accordance with [SEM-11-095](#); and
- The 2018 fuel mix information must be on all bills within two months of the publication of this paper.

## 2. AVERAGE ALL-ISLAND FUEL MIX

2.1 This section sets out the 2018 and year-on-year fuel mix for the all-island SEM, i.e. on average across the island. The SEM Committee decision paper [SEM-11-095](#) outlines the calculation methodology and assumptions which has been used to calculate the fuel mix and CO2 emissions for 2018 - again we note that all figures here include GOs and not only metered generation (see section 1). Figure 1 below shows the average all-island 2018 fuel mix and percentage changes from 2017.

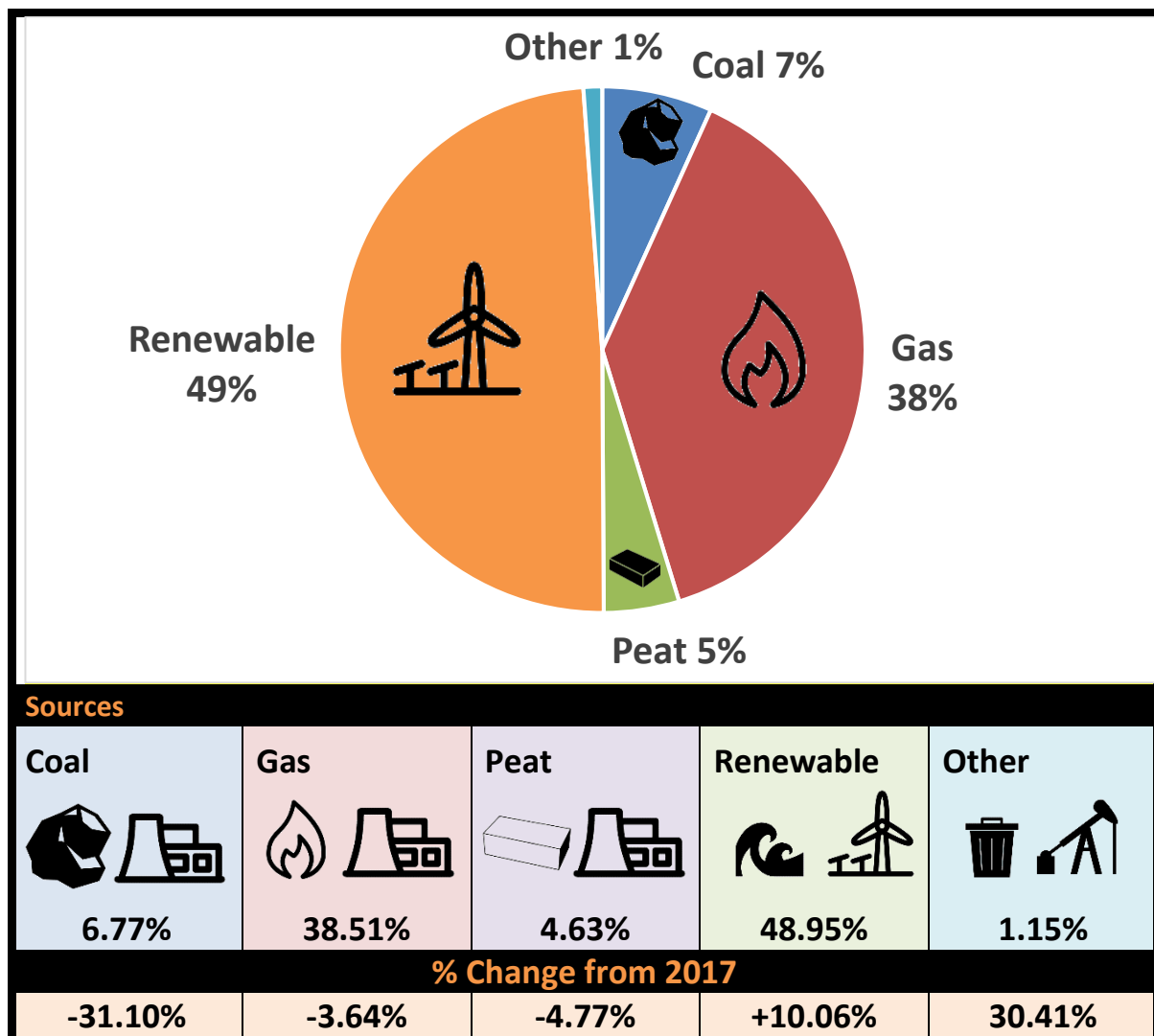
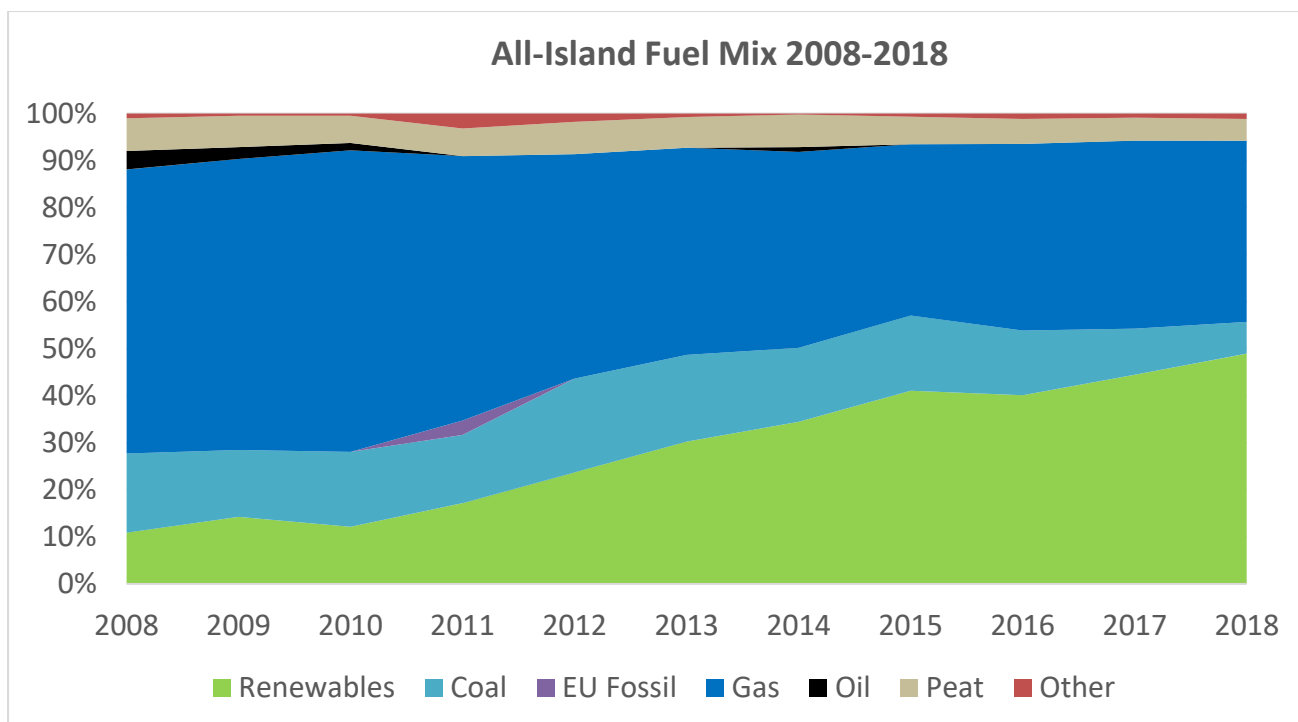


Figure 1 All-Island Fuel Mix 2018

2.2 A longer-term trend is shown in the following graph, indicating that the overall use of fossil fuels as a fuel source for electricity suppliers in SEM has decreased on average from circa 89% in 2008 to 51% in 2018. Correspondingly, the overall share of renewable fuel sources has more than quadrupled on average from circa 11% in 2008 to 49% in 2018. From 2017 to 2018, the share of renewables in the average All-Island Fuel Mix increased from 44% to 49%.



2.3 The increase in renewable source contribution in 2018 is explained by:

- The increased import of GOs related to renewable sources in 2018. In 2017, 8,151,671 renewable GO certificates were imported. This increased to 9,524,924 for 2018. Much of this increase was sourced from Hydropower and Biomass.

2.4 In accordance with SEM-11-095, the “other” category consists of all fuels in a given year that represent less than 1% of the final overall generation. Oil (0.59%) contributes to the “other” figure, with Non-Biodegradable Waste (0.55%). EU Fossil is the residual portion of demand drawn from the EU Residual Mix which is from undetermined fossil fuels. It is now obsolete, being referred to only in 2011.

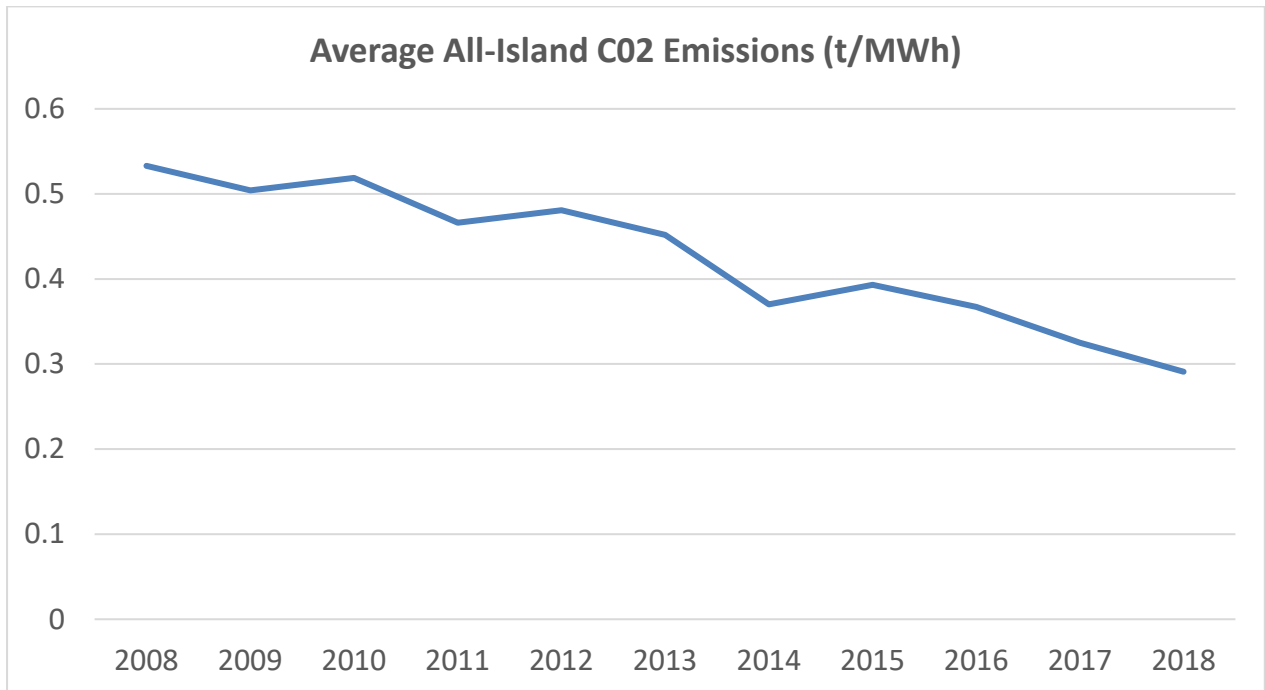
### 3. AVERAGE ALL-ISLAND CO2 EMISSIONS

3.1 Emissions data for each generator in the SEM is supplied annually to SEMO by the EPA (Environmental Protection Agency) for Ireland and the DAERA (Department of Agriculture, Environment and Rural Affairs) for Northern Ireland.

3.2 The emission figures are grouped according to fuel type and divided by metered generation to give specific emission factors for each fuel. These values can then be used to calculate the average all-island CO2 Emissions Factor and each individual supplier’s CO2 Emissions Factor.

3.3 The average all-island CO2 Emissions per MWh of electricity decreased by 11% between 2017 and 2018, from 0.325 t/MWh in 2017 to 0.291 t/MWh in 2018. This is in line with a longer-term

downward trend in average CO2 emissions, having fallen by 45% from 0.533 t/MWh in 2008, related to the increase in the share of renewable fuel sources, as shown in the graph below.





## 4. SUPPLIERS' FUEL MIX AND CO<sub>2</sub> EMISSIONS 2018


4.1 Following the presentation in section 2 and 3 of average fuel mix and CO<sub>2</sub> emissions across the island, this section sets out the fuel mix and CO<sub>2</sub> emissions for each electricity supplier.

4.2 The fuel mix calculation is carried out on an individual licence basis. 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. The generation attributes can be distributed to the excess demand within the single company prior to using the Residual Mix if the company holds multiple licences.

4.3 The below table shows the individual fuel mixes and carbon dioxide emissions in tonne per MWh of electricity of each supplier. The average all-island fuel mix (as per section 2) is also provided for reference. Those suppliers who did not submit a fuel mix declaration to SEMO have been assigned the Residual Mix and are highlighted as such in the table.

4.4 Two self-suppliers<sup>4</sup> made declarations for the purposes of fuel mix disclosure. Their fuel mix has been included at the end of the table. However, it should be noted that the purpose of this paper is to provide information to customers on the fuel mix of their electricity supply. Therefore, only suppliers serving electricity customers are required to disclose their assigned fuel mix. Submissions received from self-suppliers have been accepted and are included in this report due to the low volumes of such submissions received. However, if the number of these increase in subsequent reports, then their inclusion may be reviewed as they may detract from the aim of the report.

**Table 1 Suppliers' Fuel Mix by Fuel Type in 2018**

Supplier	Jurisdiction	Coal	Gas	Peat	Renewable	Oil	Other	tCO <sub>2</sub> /MWh
	All-Island	6.8%	38.5%	4.6%	48.9%	1.2%	0.0%	0.291
<b>Bord Gais Energy</b>	ROI	2.5%	62.2%	1.7%	33.2%	0.4%	0.0%	0.322
<b>Budget Energy</b>	NI	13.4%	32.3%	9.2%	42.8%	1.2%	1.1%	0.379

<sup>4</sup> A self-supplier is a supplier which supplies electricity only to its own site which does not compete to supply energy to any third party and which does not use Market Messages to support their operations.

<b>Electric Ireland</b>	All-Island	5.3%	55.1%	3.6%	35.0%	0.5%	0.4%	0.340
	ROI	5.9%	51.3%	4.0%	37.7%	0.5%	0.5%	0.333
	NI	0.0%	89.4%	0.0%	10.6%	0.0%	0.0%	0.401
<b>Energia</b>	All-Island	0.0%	15.5%	0.0%	84.5%	0.0%	0.0%	0.070
	NI	0.0%	79.3%	0.0%	20.7%	0.0%	0.0%	0.356
	ROI	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.000
<b>Just Energy Limited</b>	ROI	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.000
<b>Go Power</b>	ROI	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.000
	NI	15.5%	37.4%	10.6%	33.8%	1.4%	1.3%	0.439
<b>Panda Power</b>	ROI	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.000
<b>Power NI</b>	NI	6.1%	75.0%	4.2%	13.7%	0.5%	0.5%	0.443
<b>Click Energy</b>	NI	4.1%	9.8%	2.8%	82.7%	0.4%	0.3%	0.115
<b>SSE Airtricity</b>	ROI	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.000
	NI	0.0%	65.9%	0.0%	34.1%	0.0%	0.0%	0.295
<b>Naturgy</b>	All-Island	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.000
	ROI	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.000

	NI	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.000
<b>Pinergy</b>	ROI	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.000
<b>3T Power</b>	NI	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.000
<b>Suppliers assigned All Island Residual Mix</b>	<b>Jurisdiction</b>	<b>Coal</b>	<b>Gas</b>	<b>Peat</b>	<b>Renewable</b>	<b>Oil</b>	<b>Other</b>	<b>tCO2 /MWh</b>
<b>Be Energy</b>	ROI	17.9%	43.0%	12.1%	23.9%	1.6%	1.5%	0.468
<b>Flogas</b>	ROI	17.9%	43.0%	12.1%	23.9%	1.6%	1.5%	0.468
<b>PrePay Power</b>	ROI	17.9%	43.0%	12.1%	23.9%	1.6%	1.5%	0.468
<b>Self-Supplier</b>	<b>Jurisdiction</b>	<b>Coal</b>	<b>Gas</b>	<b>Peat</b>	<b>Renewable</b>	<b>Oil</b>	<b>Other</b>	<b>tCO2 /MWh</b>
<b>BRI Green Energy Supply</b>	ROI	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.000
<b>Killowen Biogas</b>	ROI	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.000

## APPENDIX 1 PRESENTATION OF INFORMATION ON BILLS

### Default Presentation of Information<sup>5</sup>

<b>Supplier Z Disclosure Label</b>		
<b>Applicable Period: January 2018 to December 2018</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
Your specific fuel mix may differ to the fuel mix shown because SUPPLIER Z offer green source products. For information on your fuel mix and on the environmental impact of your electricity supply visit <a href="http://www.SupplierZ.ie">www.SupplierZ.ie</a> or, for further details call 00XXX X XXX XXXXX <sup>6</sup>		

<sup>5</sup> Please refer to SEM-11-095 for further detail on presentation requirements. Note that the fuel categories used each year can vary.

<sup>6</sup> Please see section 3.5.3 from the CRU'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 ALL-ISLAND FUEL MIX 2005-2018

### Fuel Mix 2005-2018

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Coal</b>	24.00%	19.00%	18.00%	17.00%	14.24%	15.98%	14.44%	19.89%	18.42%	15.71%	16.02%	13.76%	9.83%	6.77%
<b>EU Fossil</b>	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>Gas</b>	46.00%	50.00%	55.00%	61.00%	61.85%	64.06%	56.16%	47.74%	44.09%	41.66%	36.36%	39.66%	39.96%	38.51%
<b>Oil</b>	12.00%	9.00%	6.00%	4.00%	2.53%	1.59%	0.00%	0.00%	0.00%	1.06%	0.00%	0.00%	0.00%	0.00%
<b>Renewables</b>	9.00%	11.00%	11.00%	11.00%	14.23%	12.11%	17.21%	23.74%	30.24%	34.46%	41.06%	40.09%	44.47%	48.95%
<b>Peat</b>	8.00%	7.00%	6.00%	7.00%	6.70%	5.78%	5.88%	6.86%	6.49%	6.95%	5.90%	5.35%	4.86%	4.63%
<b>Other</b>	1.00%	4.00%	4.00%	1.00%	0.45%	0.48%	3.18%	1.77%	0.75%	0.17%	0.65%	1.14%	0.88%	1.15%

### Note:

- Figures from 2005 to 2007 relate to Ireland-only and calculations are based on a pre-SEM methodology.
- Figures for 2008, 2009 and 2010 relate to Ireland and Northern Ireland and are based on the Interim Arrangements Methodology ([SEM-09-081](#)).
- 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 the Related Documents section of this paper.
- The “Other” category consists of: Oil (the years it is below 1%); the Non-Biodegradable Fraction of Waste (NBDFW) and EU Fossil (only for 2011).