Single Electricity Market

2012 All-Island Fuel Mix Disclosure

Information Note

12 July 2013

SEM-13-044

Table of contents

1 Introduction

1.1 Purpose

The purpose of this paper is to set out the 2012 calendar year fuel mix and CO_2 emissions figures for suppliers operating in the SEM. The disclosures are based on the 2012 calendar year data and must be published on bills no later than two months from the publication of this paper.

1.2 Background Information

The fuel mix of suppliers in the SEM is currently calculated as required by Article 3(9) of Directive 2009/72/EC. In addition, the provision of information regarding the environmental impact of electricity produced from that fuel mix is also required.

The methodology used to calculate the fuel mix disclosure figures for 2008, 2009 and 2010 can be found in the SEM Committee[1] Decision Paper *Interim Arrangements: Fuel Mix Disclosure in the SEM* (SEM-09-081).

This was superseded in 2011 by the methodology used currently which can be found in the SEM Committee Decision Paper *Fuel Mix Disclosure in the Single Electricity Market: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] The SEM Committee is a Committee of the CER, the UR and an independent member which, on behalf of the Regulatory Authorities, takes decisions on SEM matters.

2 Fuel Mix and CO_2 Emissions Disclosure 2012

In section 2.3 below each supplier's fuel mix figures are listed by fuel type for 2012. These figures derive from the methodology described in SEM-11-095. The all-island fuel mix is also indicated for comparison. In section 2.4, the tonnes of CO_2 per MWh of electricity supplied are given for each supplier as well as an overall figure representative of the all-island electricity market.

2.1 Presentation of Information

The fuel mix information should be presented on 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 bills reference must be made to it on the front of the bill.
- While radioactive waste information is required by the Directive this figure is 0.000t/MWh for all suppliers in 2012 and therefore need not be included with the 2012 fuel mix disclosure information on bills.
- To ensure consistency across suppliers, percentages should be rounded to one decimal place.
- CO_2 information should be given in the units tonnes of CO_2 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.

The 2012 fuel mix information must be on all bills within two months of the publication of this paper.

2.2 All-Island Fuel Mix 2012

The SEMC decision paper SEM/11/095 outlines the calculation methodology which has been used to calculate the fuel mix and CO2 emissions for 2012 as set out in this paper. At a high level the fuel mix figure for a supplier consists of non-renewable generation attributes assigned to a supplier, guarantees of origin assigned to a supplier, renewable generation attributes assigned to a supplier that are not included in the guarantees of origin scheme and the Residual Mix or EU Residual Mix.

Attention is drawn to the following when considering the fuel mix and emissions set out below. Firstly, the guarantees of origin scheme permits transfer of renewable generation attributes (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 within the jurisdiction. Secondly in the event that there is a deficit of generation attributes to meet overall all-Island demand, the European Residual 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 it should be highlighted that the fuel mix disclosure figures are not necessarily representative of the actual metered generation output on an all-island basis for a given disclosure period[2].

As can be seen from the graphs below, based on the methodology set out in SEM/11/095 in 2012 gas made the largest contribution to the island's electricity supply at 48% (down from 56% in 2011) while renewable energy made up 24% of the total **[Figure 1]**.

Relative to 2011, renewables contributed more to the fuel mix in 2012 **[Figure 2]**. There are a number of contributing factors to this increased figure. Firstly, with the introduction of guarantees of origin scheme in 2011 in Ireland and the increased capacity factor of wind in 2011, there are a significant number of GOs (842,689) pertaining to 2011 production but used for 2012 Fuel Mix Disclosure figures. Secondly, in 2012 there were a significant amount of GO certificates imported from Europe by suppliers for use in their fuel mix figures (circa 1.4 million). Thirdly, while not as high as previous years there was an increase in installed capacity of wind in 2012. Lastly, 2012 was higher than the expected range for rainfall although the wind capacity factor was within annual averages[3].

[2] Of the 8,339,201.56MWh from renewables included in the 2012 fuel mix (23.7% of the mix) there were 3,113,617 GOs used in the 2012 FMD calculation of which 1,411,229 GOs were imported and 842,689 GOs were issued in a previous period but not cancelled and therefore available for the 2012 FMD calculation. A GO is active for 12 months and once expired it can still be used, retired and transferred until it is cancelled. The GO will be cancelled once used in a FMD calculation or if not retired by a supplier for fuel mix purposes in the final relevant disclosure period.

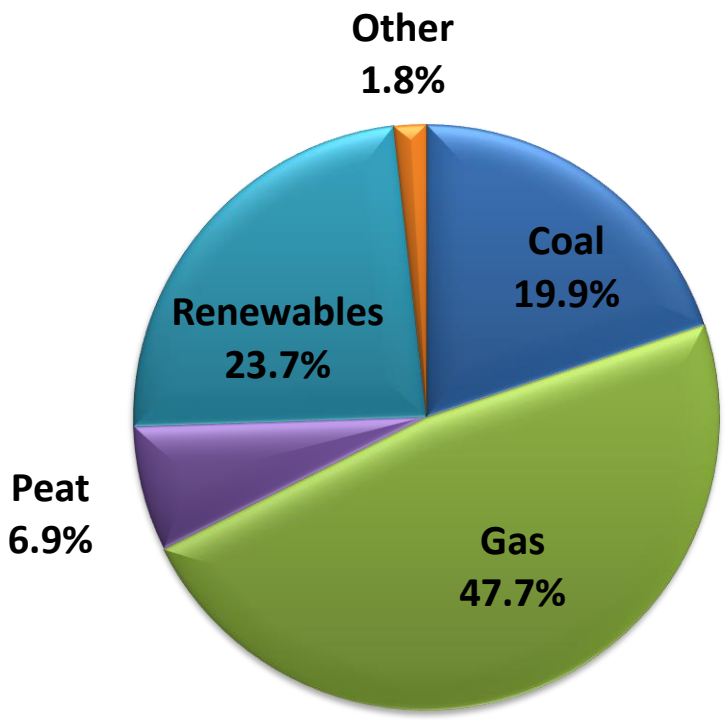
[3] http://www.met.ie/climate/MonthlyWeather/clim-2012-ann.pdf and http://www.metoffice.gov.uk/climate/uk/2012/annual.html

Coal increased in 2012 in comparison to 2011. This is predominantly due to the increase in gas prices and the relative competitive cost of coal as a fuel in the market. Subsequently gas has decreased in 2012 due to the relative increase in the other fuel sources and higher cost of gas **[Figure 3]**.

The “Other” category consists of all fuels which represent less than 1% of the final overall generation in the calculation as set out in SEM/11/095 decision paper. The ‘other’ contribution for 2012 consists of Oil, EU Fossil, nuclear and Non-Biodegradable Fraction of Waste (NBDFW).

The average carbon dioxide emissions per MWh of electricity rose approximately 3% (0.015t/MWh) in 2012 to 0.481t/MWh for the island **[Table 1]**. This was mainly a result of the increase in coal in the final mix due to increased gas prices. The SEMO calculates the CO2 emission factors for four fuels (oil, coal, gas and peat). Emissions figures are supplied by the EPA and DOE annually for each fuel type. 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. 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.

Figure 1 **All-Island Fuel Mix 2012**



Renewables = 19.5% wind, 3.1% hydro, 0.6% landfill gas, 0.5% biomass, and >0% for each of biogases, solar and ocean energy [4]

[4] The percentage breakdown of renewable generation is based on non-loss adjusted metered generation in the SEM and non-SEM generation (obtained from the MRSO) only. In other words GO interaction, interconnection, loss adjustment factors and supplier declaration interactions (Residual Mix) have not been included.

Figure 2 Fuel Mix Comparison 2011 and 2012

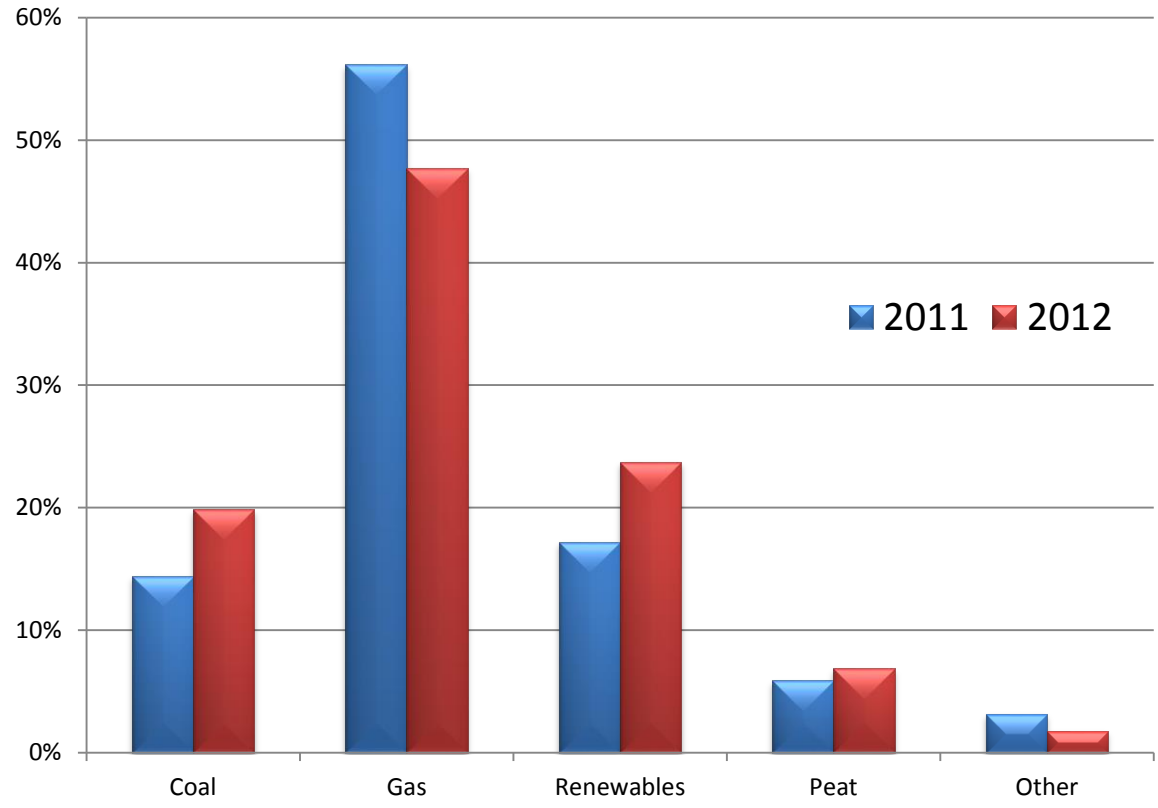
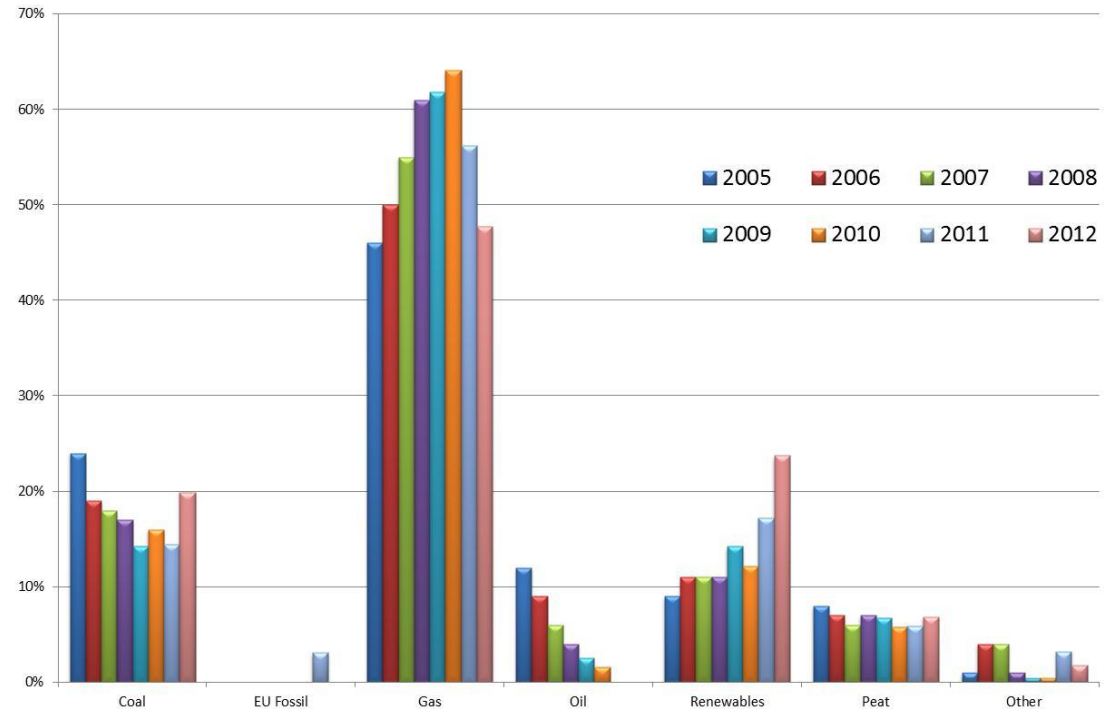


Figure 3 Fuel Mix 2005-2012



	2008	2009	2010	2011	2012
Coal	17%	14%	16%	14%	20%
EU Fossil	0%	0%	0%	3%	0%
Gas	61%	62%	64%	56%	48%
Oil	4%	3%	2%	--	--
Renewables	11%	14%	12%	17%	24%
Peat	7%	7%	6%	6%	7%
Other	1%	0%	0%	3%	2%

Numbers may not sum to 100% due to rounding.

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 and 2012 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 2012 this consists of Oil, Nuclear, EU Fossil and Non-Biodegradable Fraction of Waste (NBDFW).

Table 1	**Average CO_2 Emissions (t/MWh)**
2008	**0.533**
2009	**0.504**
2010	**0.519**
2011	**0.466**
2012	**0.481**

2.3 Suppliers' Fuel Mix by Fuel Type in 2012

Supplier	Coal	Gas	Peat	Renew able	Other
All-island	**19.9%**	**47.7%**	**6.9%**	**23.7%**	**1.8%**
Airtricity (Ireland)	22.1%	17.4%	7.6%	50.5%	2.5%
Airtricity (Northern Ireland)	39.3%	30.9%	13.5%	13.0%	3.3%
Airtricity (All-Island)	26.9%	21.2%	9.3%	39.9%	2.7%
Bord Gais (Ireland)	11.6%	68.3%	4.0%	15.1%	1.0%
Bord Gais (Northern Ireland)	44.7%	35.2%	15.4%	1.0%	3.8%
Bord Gais (All-Island)	12.9%	67.0%	4.4%	14.6%	1.1%
Electric Ireland (Ireland)	19.4%	48.3%	6.7%	24.0%	1.6%
Electric Ireland (Northern Ireland)	0.0%	89.1%	0.0%	10.9%	0.0%
Electric Ireland (All-Ireland)	17.2%	52.8%	5.9%	22.6%	1.4%
Energia (Ireland)	6.3%	70.1%	2.2%	20.9%	0.5%
Energia (Northern Ireland)	28.7%	22.6%	9.9%	36.3%	2.4%
Energia (All-Island)	11.0%	60.3%	3.8%	24.1%	0.9%
Power NI (Northern Ireland)	31.%	52.8%	10.9%	2.0%	2.7%
Vayu (Ireland)	0.0%	0.00%	0.0%	100.0%	0.0%
Vayu (Northern Ireland)	0.0%	50.1%	0.0%	49.9%	0.0%
Vayu (All-Ireland)	0.0%	0.8%	0.0%	99.2%	0.0%

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.

2.4 Suppliers' CO_2 Emissions for 2012

Supplier	tCO2/MWh
All-island	**0.481**
Airtricity (Ireland)	0.370
Airtricity (Northern Ireland)	0.650
Airtricity (All-Island)	0.449
Bord Gais (Ireland)	0.470
Bord Gais (Northern Ireland)	0.740
Bord Gais (All-Island)	0.480
Electric Ireland (Ireland)	0.476
Electric Ireland (Northern Ireland)	0.418
Electric Ireland (All-Ireland)	0.469
Energia (Ireland)	0.410
Energia (Northern Ireland)	0.476
Energia (All-Island)	0.424
Power NI (Northern Ireland)	0.654
Vayu (Ireland)	0
Vayu (Northern Ireland)	0.235
Vayu (All-Ireland)	0.004

Appendix: Bill Layout

Default Presentation of Information[5]

Supplier Z Disclosure Label **Applicable Period: January 2012 to December 2012**		
Electricity supplied has been sourced from the following fuels:	**% of total**	
	Electricity Supplied by Supplier Z	**Average for All Island Market (for comparison)**
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 %
Total	100 %	100 %
Environmental Impact		
CO2 Emissions	X t/MWh	X t/MWh
For more information on the environmental impact of your electricity supply visit www.SupplierZ.ie or call 00XXX X XXX XXXX		

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