

Fuel Mix Disclosure and CO₂ Emissions 2023



About the Utility Regulator

The Utility Regulator is the independent non-ministerial government department responsible for regulating Northern Ireland's electricity, gas, water and sewerage industries, to promote the short and long-term interests of consumers.

We are not a policy-making department of government, but we make sure that the energy and water utility industries in Northern Ireland are regulated and developed within ministerial policy as set out in our statutory duties.

We are governed by a Board of Directors and are accountable to the Northern Ireland Assembly through financial and annual reporting obligations.

We are based at Queens House in the centre of Belfast. The Chief Executive and two Executive Directors lead teams in each of the main functional areas in the organisation: CEO Office; Price Controls; Networks and Energy Futures; Markets; Consumer Protection and Enforcement. The staff team includes economists, engineers, accountants, utility specialists, legal advisors and administration professionals.



Abstract

The purpose of this paper is to set out the 2023 calendar year fuel mix and CO₂ emissions figures for Northern Ireland suppliers operating in the SEM. The disclosures are based on 2023 calendar year data and must be published on bills no later than two months from the publication of this paper.

Audience

Electricity Suppliers, Generators and Consumers.

Consumer impact

The Utility Regulator is required to ensure that all suppliers provide (on bills and promotional materials) reliable information regarding the contribution of each energy source to their overall fuel mix and related environmental impact information over the preceding calendar year. The information in this report is used by suppliers to provide information on their websites and on customer bills regarding this fuel mix.

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Executive Summary

The Utility Regulator 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 their overall fuel mix and the associated environmental impacts in the preceding calendar year.

This document sets out the 2023 fuel mixes and CO₂ emissions factors for suppliers licensed in Northern 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 - [FMD Decision Paper](#)

The disclosures are based on the 2023 calendar year data and must be published on bills no later than two months from publication of this paper. Suppliers must make a submission to SEMO; any supplier who chooses not to make a declaration is allocated the residual mix.

Related Documents:

- The SEM All-Island Fuel Mix 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

For further information on this paper, please contact Frankie Dodds (frankie.dodds@uregni.gov.uk) at the Utility Regulator.

1. Introduction

The purpose of this paper is to set out the 2023 fuel mix and carbon dioxide (CO₂) emissions figures for electricity suppliers operating in Northern Ireland. The fuel mix and CO₂ emissions disclosures are taken from data provided to the Regulatory Authorities (RAs) by the Single Electricity Market Operator ([SEMO](#)). The disclosures must be published on bills from suppliers to electricity customers in Northern Ireland no later than two months from the publication of this paper.

The fuel mix and CO₂ emissions disclosure for 2023 provides consumers with the recent fuel mix information and environmental impact of the electricity that they buy, compared to the all-island average. The SEM Committee decision paper [SEM/11/095](#) outlines the calculation methodology and assumptions that have been used to calculate the fuel mix and CO₂ emissions for 2023. It should be noted that the fuel mix of each supplier outlined in this paper does not necessarily represent metered generation in Northern Ireland, as suppliers on the island of Ireland may claim the attributes of renewable electricity generated outside of the SEM through electronic certificates known as Guarantees of Origin (GOs), imported from EEA Member States¹, which do not need to follow the physical flow of electricity. REGOs sourced from NI or GB are also valid for NI suppliers.

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 Mix² 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. Generators in the UK who are accredited to the UK-wide RO schemes can also receive REGOs (For the purpose of this paper GOs/REGOs are referred to as GOs). These are tradeable instruments at European level and do not need to follow the physical flow of energy.

¹ The European Economic Area (EEA) is made up of the member states in the EU and additionally Norway, Lichtenstein and Iceland.

² 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.

Attention is drawn to the following when considering the fuel mixes and emission intensities set out in this document:

- Firstly, the all-island and Northern Ireland fuel mixes - resulting from the application of trading in GOs - have the potential to vary significantly from the actual renewable generation produced. This depends on the quantity of GOs imported or exported to or from Ireland and Northern Ireland in respect of the 12-month period for which the calculated fuel mix applies. The sole function of the GO is to prove that a given share of quantity of energy was produced from a renewable source. A single GO is 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, if 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 also – but to a lesser extent - can 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.

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. The Utility Regulator 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 was required, this figure is zero for all suppliers in 2023 and therefore need not be included with the 2023 fuel mix disclosure information on bills;
- To ensure consistency across suppliers, percentages should be rounded to one decimal place;
- CO₂ information should be given in the unit *grams of CO₂ per kWh* (gCO₂/kWh);
- 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 2023 fuel mix information must be on all bills within two months of the publication of this paper.

As a result of Brexit, REGOs from the UK are not acceptable as renewable certificates within EU Member States (including Ireland) since 1 Jan 2021. The following is from the notification from the European Commission³:

“Guarantees of origin that have been issued by designated bodies in the United Kingdom in accordance with Article 15(2) of Directive 2009/28/EC will no longer be recognised by the EU-27 Member States as of the withdrawal date.”

In the previous All-Island FMD, SEMO, in conjunction with both RAs, provided an update on GOs and REGOs arrangements in the EU, NI and UK. The latest arrangements on GOs and REGOs in the EU, NI and UK are summarised as follows:

- **For Suppliers licensed in Northern Ireland:** The UK Government announced in July 2022 its intention to cease the recognition of EU GOs from April 2023. EU GOs were eligible for the 2022 reporting period. The Government will ensure Ofgem will continue to issue REGOs to allow electricity suppliers in NI to comply with their FMD obligations.⁴

It should be noted that the NI Government has not made a decision to disallow the use of EU GOs in NI. However, market participants should monitor communications or agreements from either the EU, NI or UK authorities with regards to this position.

- **For Suppliers licensed in Ireland:** From 1 January 2021, UK REGOs are not accepted for import or cancellation for FMD in Ireland.

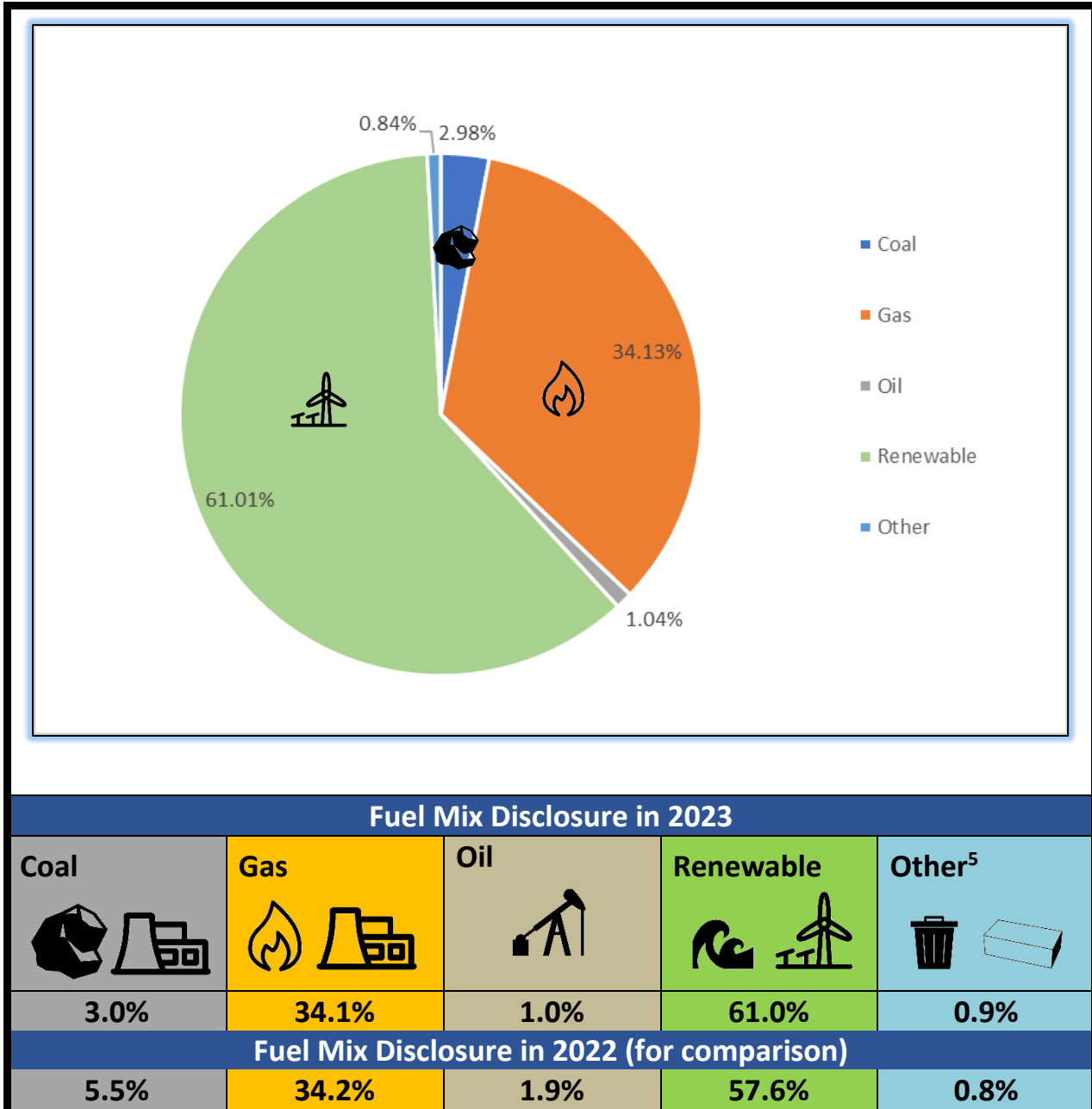
The above arrangements are currently in place; should subsequent communications or agreements from either the EU, NI or UK authorities indicate a change in this position, both RAs in conjunction with SEMO will provide market participants with an update on any changes to any future FMD processes.

³ [Notification](#) from the European Commission, issued on 7 March 2018.

⁴ <https://www.ofgem.gov.uk/environmental-and-social-schemes/renewable-energy-guarantees-origin-rego/renewable-energy-guarantees-origin-rego-electricity-suppliers-and-generators/guarantees-origin-goos>

2. Average All-island Fuel Mix

Figure 1: All-Island Fuel Mix 2023



This section sets out the 2023 and year-on-year fuel mix for the all-island SEM.

⁵ For this report in 2022 Waste to Energy and Peat meet the criteria for inclusion in the "Other" category.

The SEM Committee decision paper [SEM-11-095](#) outlines the calculation methodology and assumptions that have been used to calculate the fuel mix and CO₂ emissions for 2023. Figure 1 above shows the average all-island 2023 fuel mix and percentage changes from 2022.

For 2023, the predominant fuels in the final residual mix were gas and renewables. Coal has decreased from 2022; renewables for 2023 have increased bringing it to 61.3%.

In accordance with [SEM/11/095](#), the “Other” category consists of the aggregate of all fuels in a given year that individually represent less than 1% of the final overall generation. For this report in 2023 waste to energy (0.6%) meets the criteria for inclusion in the “Other” category

As for previous years, the combined and significant renewable and gas claims meant that there was a surplus of claims and indigenous generation compared to supplier demand leading to a net surplus of Residual Demand. This meant that there was no need to use the EU Residual Mix for 2023 leading to zero values for Nuclear and EU Fossil which are components of the EU Residual Mix. Table 2 below provides the All-Island Mix by year.

Table 2: All-Island Fuel Mix 2015-2023

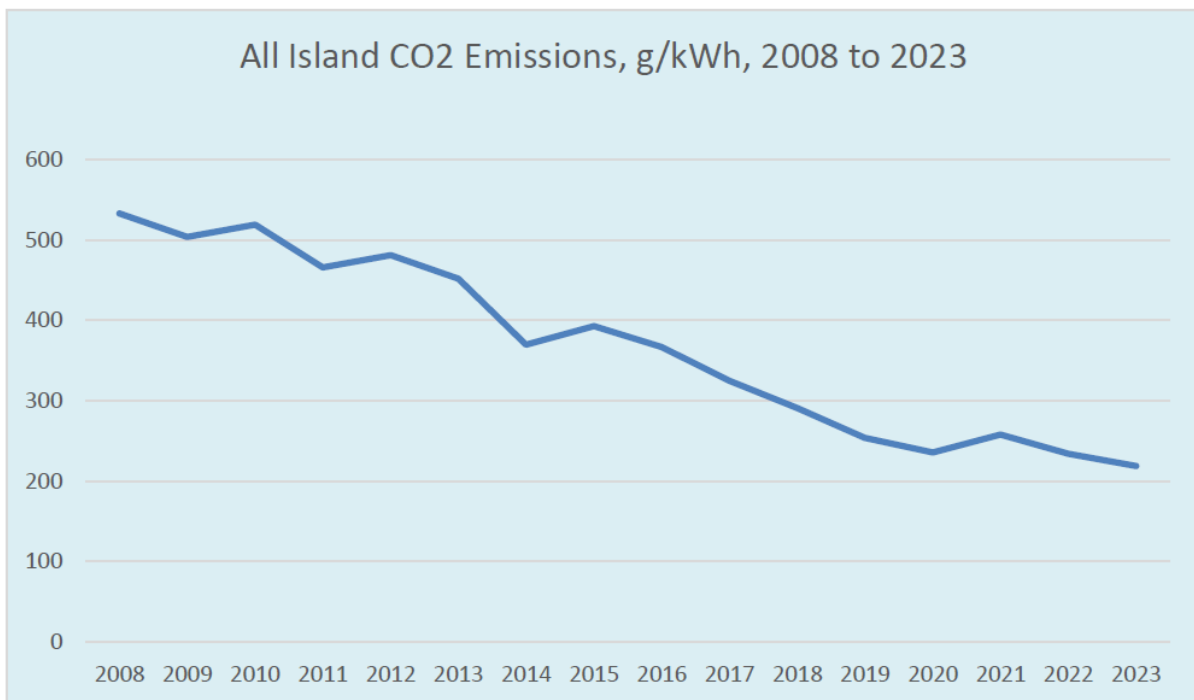
Fuel	2023	2022	2021	2020	2019	2018	2017	2016	2015
Coal	2.98%	5.50%	6.80%	2.98%	2.63%	6.77%	9.83%	13.76%	16.02%
EU Fossil	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Gas	34.13%	34.20%	33.60%	35.75%	37.86%	38.51%	39.96%	39.66%	36.36%
Nuclear	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Oil	1.04%	1.90%	2.70%	0.41%	0.66%	0.59%	0.60%	0.99%	0.49%
Peat	0.22%	0.40%	0.50%	2.07%	4.25%	4.63%	4.86%	5.35%	5.90%
Renewable	61.01%	57.60%	55.90%	57.86%	54.04%	48.95%	44.47%	40.09%	41.06%
Waste Energy	0.62%	0.40%	0.50%	0.94%	0.56%	0.55%	0.28%	0.15%	0.17%

3. Average All-island CO₂ Emissions

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

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.

The All-Island CO₂ Emissions Factor has continued to decrease from 0.258 in 2021, 0.234 in 2022 down to 0.223 in 2023. This decrease is predominantly driven by an increase renewable generation and reduced coal, oil and peat generation in 2023.



4. Suppliers' Fuel Mix and CO₂ Emissions

Following the presentation in section 2 and 3 of average fuel mix and CO₂ emissions across the island, this section sets out the fuel mix and CO₂ emissions for each electricity supplier.

The fuel mix calculation is carried out on an individual licence basis. Up to and including the 2023 year, 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.

Table 3 below show the individual fuel mixes and carbon dioxide emissions in grams per kWh of electricity for each supplier. The average all-island fuel mix (as per section 2) is also provided for reference.

Table 3: Suppliers' Fuel Mix by Fuel Type in 2023

Supplier	Jurisdiction	Coal	Gas	Renewable	Oil	Other	Emissions (gCO ₂ /kWh)
	All-Island	3.0%	34.1%	61.0%	1.0%	0.9%	223
3T Power	NI	0.0%	0.0%	100.0%	0.0%	0.0%	0
Budget Energy	NI	0.0%	0.0%	100.0%	0.0%	0.0%	0
Click Energy	NI	4.5%	30.0%	62.7%	1.6%	1.2%	228
Electric Ireland	All-Island	2.9%	36.5%	58.8%	1.0%	0.8	234
	NI	0.0%	54.2%	45.8%	0.0%	0.0%	274
Flogas Enterprise Solutions	NI	0.0%	0.0%	100.0%	0.0%	0.0%	0
GO Power	NI	6.3%	42.4%	47.3%	2.2%	1.8%	322
Power NI	NI	0.0%	67.7%	32.3%	0.0%	0.0%	342
SSE Airtricity	NI	0.0%	11.9%	88.1%	0.0%	0.0%	060

5. Appendix 1: Presentation of Information on Bills

Default Presentation of Information⁶

Supplier Z Disclosure Label		
Applicable Period: January 2023 to December 2023		
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		
CO ₂ Emissions	X g/kWh	X g/kWh
Your specific fuel mix may differ from the fuel mix shown because SUPPLIER Z offers green source products. For information on your fuel mix and on the environmental impact of your electricity supply visit www.SUPPLIER Z.co.uk or, for further details call 00XXX X XXX XXXXX		

⁶ Please refer to SEM-11-095 for further detail on presentation requirements. Note that the fuel categories used each year can vary.

6. Appendix 2 – All-island Fuel Mix 2008-2023

Fuel Mix 2008-2023 (percentage share of total)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Coal %	17.00	14.24	15.98	14.44	19.89	18.42	15.71	16.02	13.76	9.83	6.77	2.63	2.98	6.80	5.50	2.98
EU Fossil %	0.00	0.00	0.00	3.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gas %	61.00	61.85	64.06	56.16	47.74	44.09	41.6	36.36	39.66	39.96	38.51	37.86	35.75	33.60	34.20	34.13
Oil %	4.00	2.53	1.59	0.00	0.00	0.00	1.06	0.00	0.00	0.00	0.00	0.00	0.00	2.70	1.90	1.04
Renewables %	11.00	14.23	12.11	17.21	23.74	30.24	34.46	41.06	40.09	44.47	48.95	54.04	57.86	55.90	57.60	61.01
Peat %	7.00	6.70	5.78	5.88	6.86	6.49	6.95	5.90	5.35	4.86	4.63	4.25	2.07	0.50	0.40	0.22
Other %	1.00	0.45	0.48	3.18	1.77	0.75	0.17	0.17	0.15	0.28	0.55	0.56	0.94	0.50	0.40	0.62

Note:

- Figures for 2008, 2009 and 2010 are based on the Interim Arrangements Methodology ([SEM/09/081](#)).
- Figures for 2011 onwards 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 threshold for a fuel-types inclusion in the “Other” category is <1% of Final All-Island Mix. The “Other” category consists of Non-Biodegradable Fraction of Waste (NBDFW) and EU Fossil (only for 2011).