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Renewables Obligation
Annual Report
2016-17

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The Renewables Obligation (RO) is a scheme which supports the deployment of large-scale renewable electricity generating stations in the United Kingdom (UK), including smaller scale renewable generation in Northern Ireland (NIRO), by setting an obligation on licensed electricity suppliers to source a portion of their supply from renewable sources.

Executive Summary

Renewables Obligation 2016-17

This report covers the 2016-17 obligation period (1 April 2016 – 31 March 2017).

Renewable Obligation Certificates (ROCs) issued and renewable generation

In the 2016-17 obligation period, 86.2 million ROCs were issued based on 65.2TWh electricity generated by stations accredited under the scheme. The total electricity supplied in the UK was 294.1TWh; therefore renewable generation under the RO was equivalent to 22.2% of the UK electricity supply market. When combined with the 7.5TWh generated by Feed-in-Tariff (FIT) installations, this figure rises to 24.8%, which represents a decrease of 0.4 percentage points when compared to last year's results.

The number of ROCs issued was lower than the supplier obligation of 100.7 million ROCs. Almost all technologies recorded a decrease in the number of ROCs issued compared to the 2015-16 obligation period and the largest decreases were to offshore wind (3.0m fewer) and fuelled stations (1.6m fewer). Solar Photovoltaic PV generating stations constitute an exception; for this technology the number of ROCs issued (1.5m) increased by 21.5% from the previous reporting year.

An equivalent of 28.3 million tonnes of carbon dioxide equivalent (CO_2e) emissions were avoided through renewable electricity generation under the scheme. This shows a decrease of 16.2% from last year's figure of 33.7 million tonnes CO_2e, which was due to the lower greenhouse gas (GHG) conversion factor in 2016-17.

Generating stations accredited

In 2016-17 we accredited 4,531 generating stations, a substantial reduction from the 6,724 generating stations accredited in 2015-16. The vast majority (3,505) of the stations accredited were microgenerators in NI.

However, the aggregate capacity of the stations we accredited during 2016-17 was 2,601MW, a 27% increase on the 2,033MW reported in 2015-16. Onshore wind stations accounted for around 51% of the total number of accreditations. This is a very substantial increase in proportion since last year when the share was 35%.

From the start of the scheme in 2002 until the end of 2016-17, we have accredited 25,156 generating stations with a total capacity of 29.2GW. This is a small increase (4,367) in the total number of stations accredited by the end of 2015-16 obligation period (20,789).

Compliance by licensed suppliers

Overall, suppliers presented 90.21 million ROCs towards the total UK obligation of 100.7 million ROCs. The proportion of the obligation met by presenting ROCs (89.5%) was notably

lower than the corresponding figure in 2015-16 (99.9%). This resulted in the largest buy-out and late payment funds ever recorded on the scheme, totalling over £464.3 million.

The notional value of each ROC was £49.87, leading to a scheme value of £4.5 billion.[1] The cost of support in 2016-17 was £65.88 per MWh supplied (£58.07 in 2015-16) and the cost of GHG savings under the scheme was £159.24 per tonne CO_2e emissions avoided.

In 2016-17 three suppliers did not meet their obligation: two suppliers went into receivership and one supplier failed to make a late payment by the legislative deadline on 31 October. One of the three suppliers had an obligation under the RO and RO Scotland (ROS), however, the shortfall in the buy-out funds was well below the threshold for triggering mutualisation.[2]

Other minor incidents of non-compliance include the late submission of supply data, erroneous payments and the provision of inaccurate information. In total, 32 incidents relating to the Compliance round 2016-17 were logged in the Supplier Performance Report (SPR), which was published on our website for the first time in September 2017.

Audits under the RO

In 2016-17 our external auditors carried out 47 audits of large generators and 113 Northern Ireland micro generators. We also audited four licensed suppliers to ensure that the supply volume submission process is managed effectively. The majority of generators and all suppliers audited were rated as "good" or "satisfactory". We worked with suppliers to ensure findings were addressed effectively where audits were returned with a "weak" or "unsatisfactory" rating.

Recent changes to RO legislation

The Department for Business, Energy and Industrial Strategy (BEIS) and the devolved administrations in Scotland and Northern Ireland (NI) introduced a number of amendments in 2016 and 2017. On 12 May 2016, the Energy Act 2016 amended the Electricity Act 1989 to close the RO schemes to new onshore wind generating capacity and any additional capacity in England, Scotland and Wales from 13 May 2016. The Renewables Obligation Closure Order (Northern Ireland) 2016 closed the NIRO scheme for new large (>5MW) onshore wind generating capacity from 1 April 2016. Subsequently, the Renewables Obligation Closure (No. 2) Order (Northern Ireland) 2016 closed the NIRO scheme for new small (≤5MW) onshore wind generating capacity from 1 July 2016. Five grace periods were also introduced. These enable operators of generating stations that meet certain criteria to apply for accreditation until 31 January 2019.

Implementation and improvement update

During 2016-17 significant changes were made to the Renewables and CHP Register. These reflect the closure of the RO to new and additional capacity and associated grace periods, the new bioliquid sustainability threshold and the updated data submission process for licenced suppliers.

As part of our continued focus on customer service, we undertook a number of activities to manage customer expectations and to ensure that scheme participants are clear on their ongoing obligations and effectively informed when scheme changes occur (webinars, data reminders, workshops, enhanced guidance documents).

[1] Calculations are explained in details in Chapter 5
[2] Threshold to trigger mutualisation s £269,705,914.50 for England and Wales, and £26,970,591.44 for Scotland.

Contents

Context

The Renewables Obligation (RO) is a scheme which supports the deployment of large-scale renewable electricity generating stations in the United Kingdom (UK), including smaller scale renewable generation in Northern Ireland (NIRO). It puts an obligation on licensed electricity suppliers to source some of their supply from renewables, a proportion which increases every year.

The scheme was introduced in England, Wales and Scotland in 2002 and in Northern Ireland in 2005. There are three separate obligations across the UK: the Renewables Obligation England and Wales (RO), the Renewables Obligation Scotland (ROS) and the Northern Ireland Renewables Obligation (NIRO). The scheme is governed by three separate, but similar, pieces of legislation[3], one for each obligation. These are known as the RO Orders ('the Orders').

The scheme obligation period runs annually from 1 April to 31 March. The obligation level for suppliers is announced before the start of each obligation period by the Department for Business, Energy and Industrial Strategy (BEIS) on behalf of the Secretary of State. During an obligation period, we accredit generating stations under the scheme and issue them with Renewables Obligation Certificates (ROCs) for the renewable electricity they generate. ROCs are tradable and can be sold between parties.

After the end of an obligation period, we confirm each supplier's obligation based on the obligation level and the amount of electricity it has supplied to its customers. We set this obligation as a number of ROCs. Suppliers must meet their obligations by presenting ROCs to us, making a payment per ROC into a buy-out fund, or through a combination of these. We then withdraw our scheme administration costs from the buy-out fund and redistribute the remaining buy-out payments to suppliers in proportion to the number of ROCs they presented.

The Orders require us to produce an annual report on the scheme by 1 April following the end of an obligation period. Much of the information in this report is included as part of our legal obligations but we have also included additional information that we think is relevant and beneficial to scheme stakeholders and the general public.

The Gas and Electricity Markets Authority (the Authority) is the body responsible for administering the RO and ROS in Great Britain (GB). We also administer the NIRO on behalf of the Utility Regulator Northern Ireland (UR), however UR retains the statutory responsibility for administering the NIRO. The Authority's day-to-day functions are performed by Ofgem.

[3] The Renewables Obligation Order 2015 (RO), Renewables Obligation (Scotland) Order 2009 (ROS) and Renewables Obligation Order (Northern Ireland) 2009 (NIRO) and their respective amendments.

1. Introduction

Scheme administration

1.1 We administer the RO (England and Wales) and ROS (Scotland) in GB. We also administer the NIRO (Northern Ireland) on behalf of the Utility Regulator Northern Ireland (UR) through an Agency Service Agreement,[4] however UR retains the statutory responsibility for administering the NIRO.

1.2 The legislation governing the administration of the three schemes,[5] collectively referred to as 'the Orders' in this report, define our powers and responsibilities. These include:

- accrediting generating stations so they can receive ROCs[6]
- publishing a list of accredited generating stations (with full and preliminary accreditation)
- issuing, revoking and withholding ROCs
- establishing and maintaining a register of ROCs
- monitoring compliance of suppliers and generators on the requirements of legislation
- adjusting the buy-out price and mutualisation ceiling in line with the Retail Price Index (RPI) each year (NI is excluded from mutualisation)
- receiving buy-out and late payments from suppliers and redistributing these funds
- publishing an annual report on scheme activity in the preceding obligation period by 1 April each year.

1.3 Our costs for administering the RO are recovered from the buy-out fund. We take our costs for the current scheme year from the previous year's buy-out fund. On 18 August 2017 we published proposed costs for 2017-18 of £3,991,814 on our website.[7] The administration costs were then revised in October 2017 to account for additional legal costs associated to a case in Northern Ireland. Our revised forecast cost for the administration of the RO for 2017-18 has therefore increased from £3,991,814 to £4,191,814.[8]

Purpose of this document

1.4 This report fulfils our duty to publish an annual report on the scheme activity during the 2016-17 obligation period by 1 April 2018. The Orders[9] state the minimum information the report must include:

- details of the compliance of each obligated electricity suppliers, including the ROCs they presented, payments they made and our redistribution of these payments,
- the number of ROCs we issued, broken down by generation technology,
- details of any mutualisation triggered (except for the NIRO), and
- the outcome of any investigations we conducted into suppliers' and generators' compliance with the Orders.

1.5 We can also publish "any other matter" that we consider relevant in the report. So we have included information on the number and type of stations we have accredited, the amount of renewable generation for which ROCs were claimed, biomass sustainability, the value of the

[4] Section 121 of the Energy Act 2004 gives us the power to enter into "arrangements" like an agency service agreement.
[5] Appendix 1 contains a full list of current RO legislation.
[6] For further information please see our Guidance for Generators: https://www.ofgem.gov.uk/system/files/docs/2017/03/ro_guidance_for_generators-130317.pdf
[7] https://www.ofgem.gov.uk/system/files/docs/2017/08/renewables_obligation_cost_of_administration_2017-18.pdf
[8] https://www.ofgem.gov.uk/system/files/docs/2017/10/roc_additional_cost_letter.pdf
[9] Article 86(1)(f) of the RO, Article 57(1)(f) of the ROS and Article 49(1)(e) of the NIRO list the requirements for the annual report.

scheme, recent and upcoming changes in legislation and improvements we have made to the administration of the scheme.

Points to note

1.6 Unless it is clear from the context, 'RO' refers to the three UK obligations – the RO England and Wales, the ROS and the NIRO – collectively. Similarly, 'ROC' refers to England and Wales ROCs (ROCs), Scottish ROCs (SROCs) and Northern Ireland ROCs (NIROCs).

1.7 There are technically three buy-out funds and three late payment funds for the RO (one for each obligation). Where we refer to the 'buy-out fund' or 'late-payment fund' without specifying the obligation, this refers to all three collectively.

1.8 The data included in this report were downloaded from the Renewables and CHP Register (the Register) on 28 November 2017. The data stored in the Register are live data and subject to change. For example, a station's accreditation details might be amended or the number of ROCs issued/revoked might change. As such, data downloaded from the Register at a later date may vary from those used in this report.

1.9 In July 2016 it was announced that the Departement of Energy and Climate Change (DECC) was to be merged with the Department for Business, Innovation and Skills (BIS) to become the new department for Business, Energy and Industrial Strategy (BEIS). In 2016 it was also announced that the Department of Enterprise, Trade and Investment Northern Ireland (DETINI) was to become part of the new Department for Economy (DFE). We have referred to these departments by their previous names where the announcements and legislation were made by those departments, as opposed to the new ones. We have referred to them by their current names when talking about their roles in general terms or something which is expected to happen in the future.

2. Generators accredited under the RO

Chapter summary

By the end of 2016-17 we had accredited 25,156 stations since the start of the scheme, with a total capacity of 29.2GW. We accredited around 592MW of solar PV capacity in 2016-17, which was down on the 1.1GW accredited in the 2015-16 period. There has been an increase in on-shore wind capacity accredited in 2016-17 (1.8GW) compared with that in 2015-16 (722MW). The contribution from offshore wind decreased from 50MW in 2015-16 to zero capacity accredited in 2016-17. We received fewer micro NIRO applications (stations in NI with a Declared Net Capacity (DNC) of 50kW or less) compared to the previous reporting year. However, almost 22,000 of the stations now accredited under the RO are micro NIRO stations.

2.1 One of our functions under the Orders is to accredit eligible renewable generating stations. For more information on how a generating station becomes accredited under the RO please refer to our Guidance for generators.[10]

2.2 We make a number of general assumptions on the data used within this section of the report, detailed below. These are the same assumptions applied since the 2014-15 RO Annual Report.

- When we refer to stations accredited during the 2016-17 obligation period, we mean that the station's accreditation became effective during the obligation period regardless of when we processed the application.
- We only include data on generating stations that have received full accreditation. We have not included any information on stations with preliminary accreditation, nor those that have had their accreditation withdrawn so the data are subject to change year on year.
- References to "fuelled" generating stations relate to stations generating electricity from eligible biomass, bioliquids, biogas, energy crops or waste but do not include landfill gas and sewage gas only stations.
- The capacities we quote are Declared Net Capacity (DNC),[11] rather than Total Installed Capacity (TIC),[12] values unless specified otherwise. The main exception to this is fuelled generating stations that burn renewable fuel alongside fossil fuel (we term these co-firing stations).

2.3 For the purpose of the annual report, to determine the capacity of a fuelled station, we have to calculate the renewable proportion of the electricity generated by the station. For example, a generating station's capacity might be 2GW, but if it only burns 2% of eligible renewable fuels its renewable capacity is taken to be 40MW. There are more complicated cases, such as where a station burns different proportions of renewable fuel (the biomass fraction) from month to month, or where it did not claim any ROCs in 2016-17, so there is no biomass fraction to use. Where we have issued ROCs to them previously and they are still accredited under the scheme, our methodology for determining a station's capacity is as follows:

[10] https://www.ofgem.gov.uk/system/files/docs/2017/01/guidance_for_generators_-_jan_1
[11] DNC means "the maximum capacity at which the station could be operated for a sustained period without causing damage to it (assuming the source of power used by it to generate electricity was available to it without interruption) less the amount of electricity that is consumed by the plant".
[12] TIC means "the maximum capacity at which the station could be operated for a sustained period without causing damage to it (assuming the source of power used by it to generate electricity was available to it without interruption)".

- If we issued ROCs to a station in 2016-17, we multiply its average biomass fraction for the year by its capacity. The biomass fraction may be 100%, for example in the case of dedicated biomass stations.
- If we did not issue ROCs to a station in 2016-17, but they are still accredited and have received ROCs previously, we use the station's biomass fraction from the most recent year it did receive ROCs and multiply this by its current capacity.
- If we did not issue ROCs to a station in 2016-17, nor at any time since April 2007 (the earliest date for which we have data on the Register), but it remains accredited, we use the average biomass fraction from 2016-17 for all active stations (39.2%) and multiply this by the station's capacity. For inactive co-firing stations with a capacity of 1GW or more, we use the average biomass fraction from 2016-17 (0.91%) for active co-firing stations of this size. This average does not take into account fractions for Drax, power station, whose average biomass fractions are so high that they would skew the capacities of the inactive stations to an unrealistically high value.

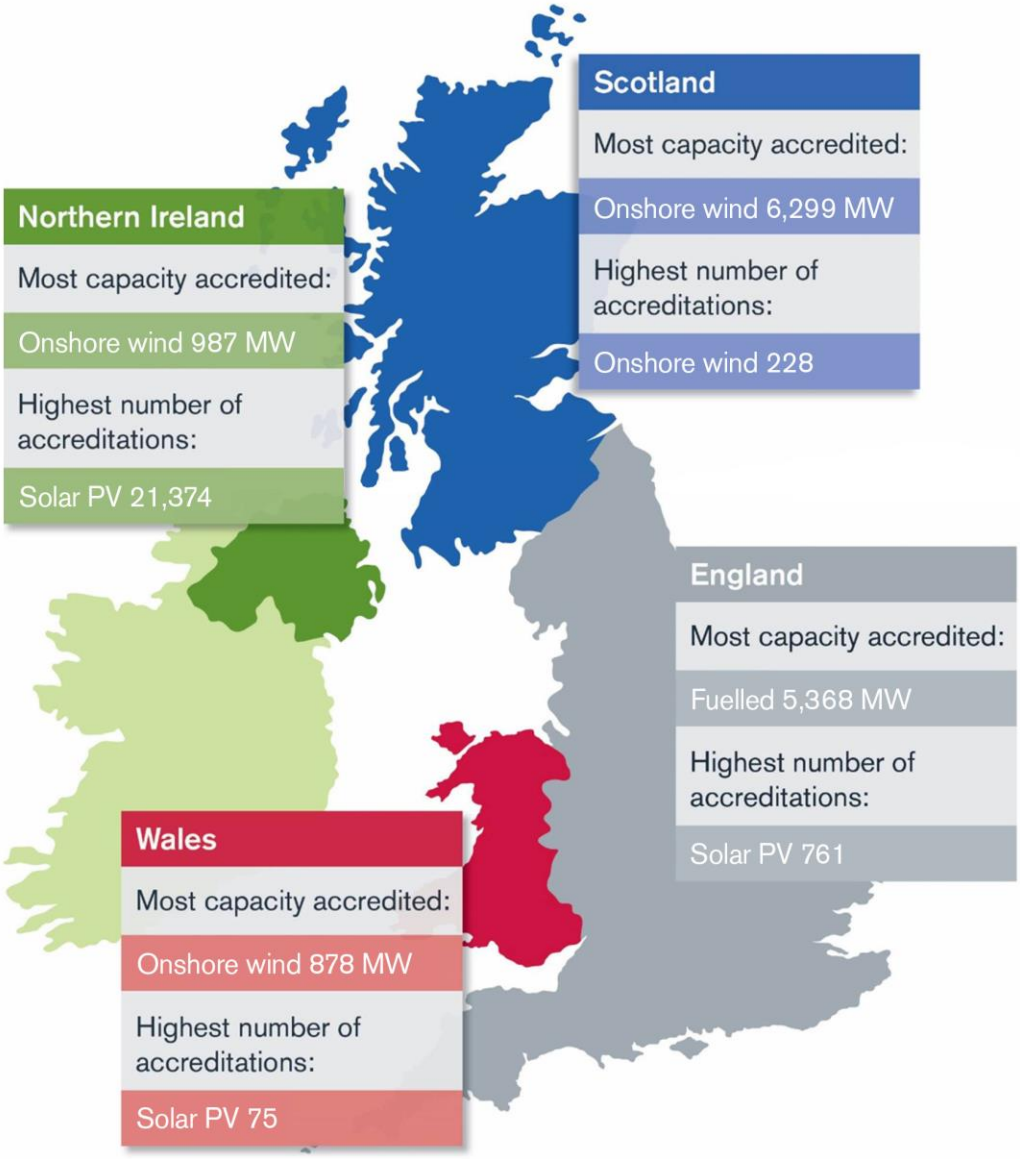
2.4 Since 1 April 2010, with the introduction of the FIT scheme in GB, all wind, solar PV, hydro and anaerobic digestion (AD) stations with a DNC of 50kW or less (micro generators) are ineligible for the RO. Since no FIT scheme exists in NI, micro generators remain eligible for accreditation under the NIRO. A large majority of the total number of accreditations granted are for such stations. Given this, when reporting on the number and type of large stations accredited under the RO, we have removed the micro NIRO stations from some of the information in this chapter.

Stations accredited from the start of the scheme to the end of 2016-17

2.5 By the end of 2016-17 there were 25,156 stations accredited under the RO. The combined capacity of these stations was 29,223MW. Mirroring last year's trend, this represents a significant increase on the reported figures from last year's report, of 20,789 stations accredited and 25,585MW capacity. Micro NIRO stations account for 21,835 of all these stations, with a combined capacity of 115MW, a large increase on last year's figures of 18,015 stations and 105MW accredited during 2015-2016. While the increase in stations accredited is still quite large, comparatively we are seeing a smaller increase on the number of stations, at 40% less than the 2015-16 increase, and on the total capacity installed, 12% of the increase seen in 2015-16.

2.6 As one would expect, the technologies with the most accreditations and the highest total capacity vary across each country in the UK. These trends are shown in **Figure 2.1**.

Figure 2.1: The highest accreditation and capacity renewable technologies across the UK at the end of 2016-17



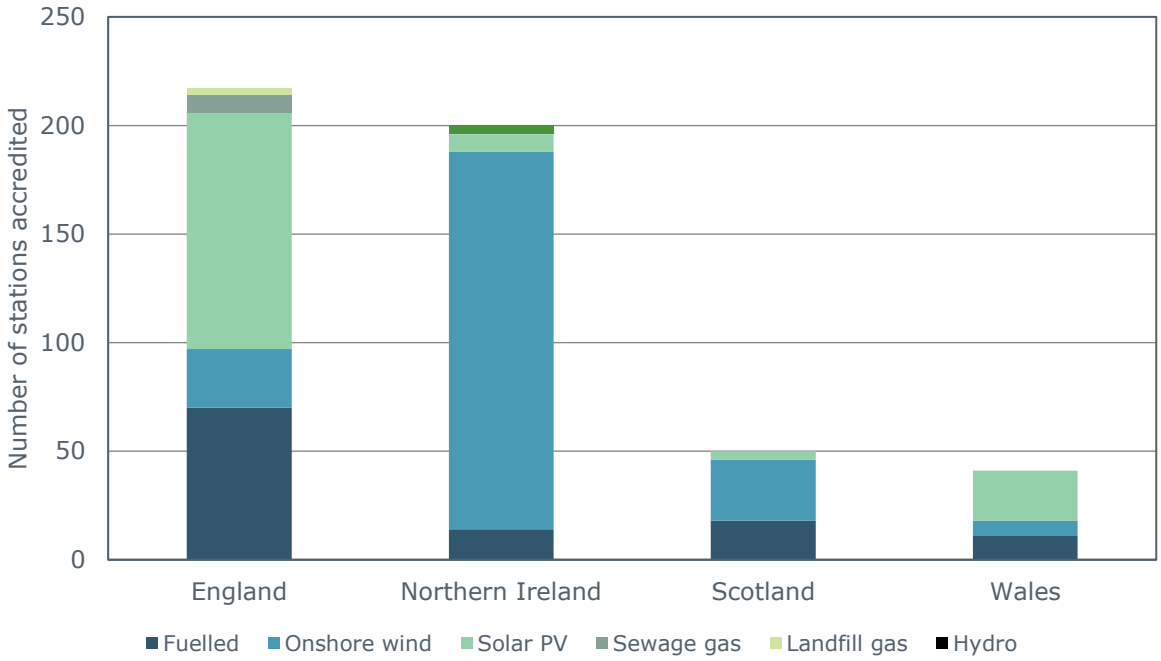
Generators accredited in 2016-17

Numbers of generating stations accredited

2.7 4,531 stations were accredited under the RO in 2016-17. This is a large reduction compared to the number of generating stations that were accredited in 2015-16 and 2014-15 6,724 and 6,658 respectively, but slightly higher than 2013-14 numbers (4,068).

2.8 The majority (3,505) of the stations accredited were micro NIRO, just under 98% (21,360) of which were small solar photovoltaic (PV) stations installed on domestic properties.

Figure 2.2: Number of accreditations in 2016-17 by country and technology (excluding micro NIRO)



2.9 **Figure 2.2** shows that, in England (50%) and Wales (56%), solar PV makes up the largest proportion of accredited generating stations. This is a marked drop from 2015-16 (77%). The GB scheme closed to small scale (less than or equal to 5MW) solar PV from 1 April 2016 so only stations which met grace period criteria could continue to be accredited, leading to a reduced proportion of solar PV accreditation in 2016-17.

2.10 Onshore wind stations accounted for around 46% of the total number of all RO accreditations across Great Britain and Northern Ireland. This is a substantial increase in proportion since last year when the share was 35%. Primarily this was due to the 174 onshore wind stations accredited in NI during 2016-17 of which 168 were small scale onshore wind stations (between 50kW and 5MW in capacity).

2.11 The historic accreditation profile of all generating stations in Great Britain and Northern Ireland (non-micro) can also be seen in the **figure 2.3** below. A large number (178) of stations were accredited in March 2017 due to a surge in applications ahead of the closure of the scheme on 1 April 2017 and the end of the small scale solar PV (≤ 5MW) grace period window. Almost half of the stations accredited in March 2017 were solar PV stations (86) with small scale solar PV (≤5MW) making up the bulk of these numbers (82) and a number of (4) large scale solar PV (≥5MW). This shows a continuing decrease in the number of solar PV stations accredited from March 2016 where 135 stations were accredited before the early closure of small scale solar PV (≤5MW). The remaining stations accredited consisted of various different technologies onshore wind (50) and fuelled (35) stations hydro (2), tidal (2), landfill gas (1) and wave (1).

Figure 2.3: Number of generating stations (excluding micro NIRO) with accreditations effective from RO Years 2012-13 to 2016-17

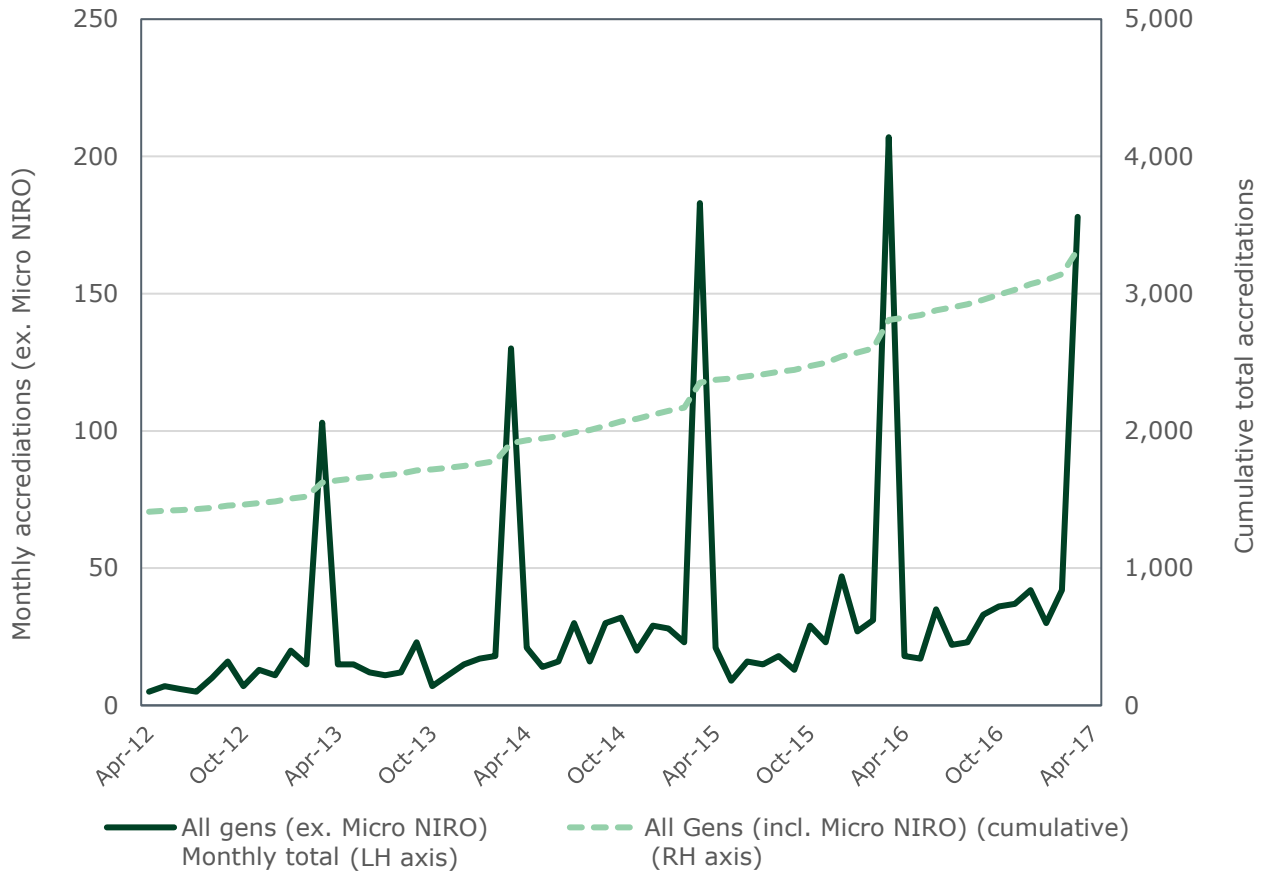
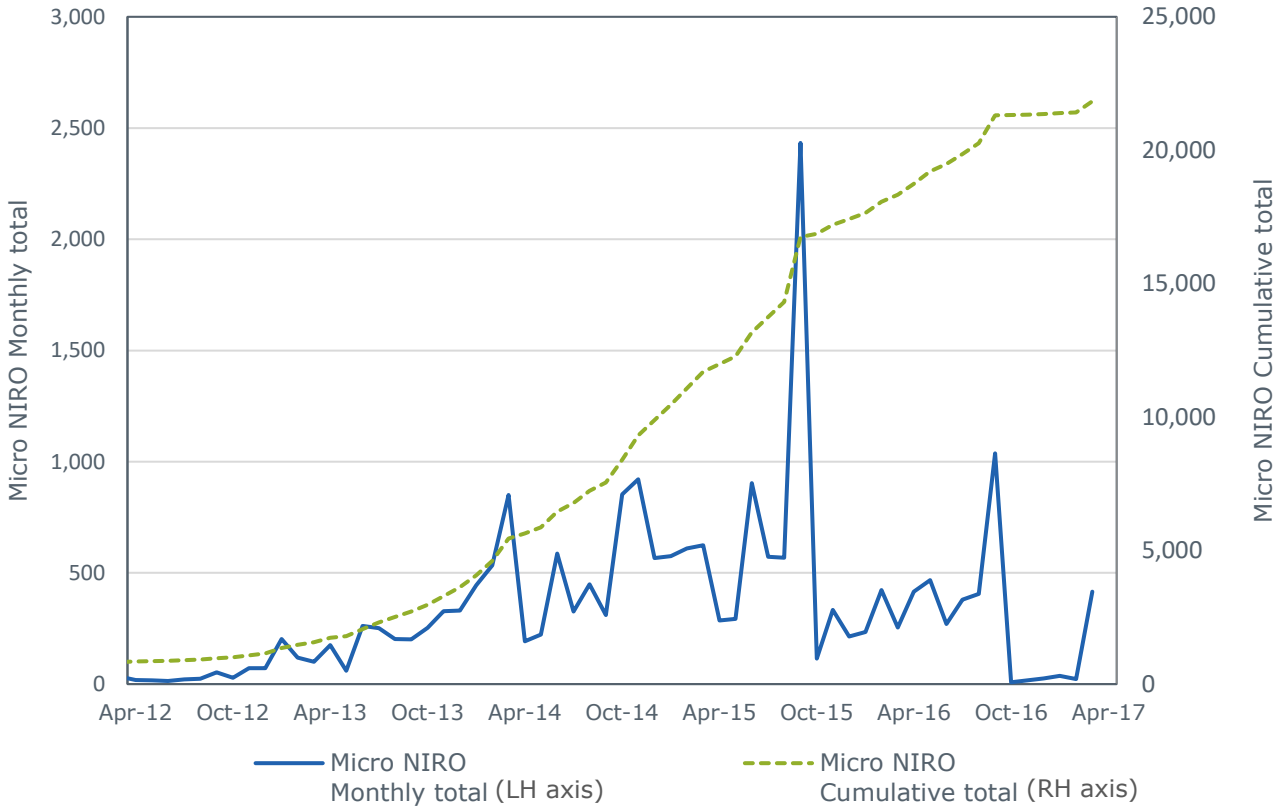


Figure 2.4: Number of micro NIRO generating stations with accreditations effective from RO Years 2012-13 to 2016-17



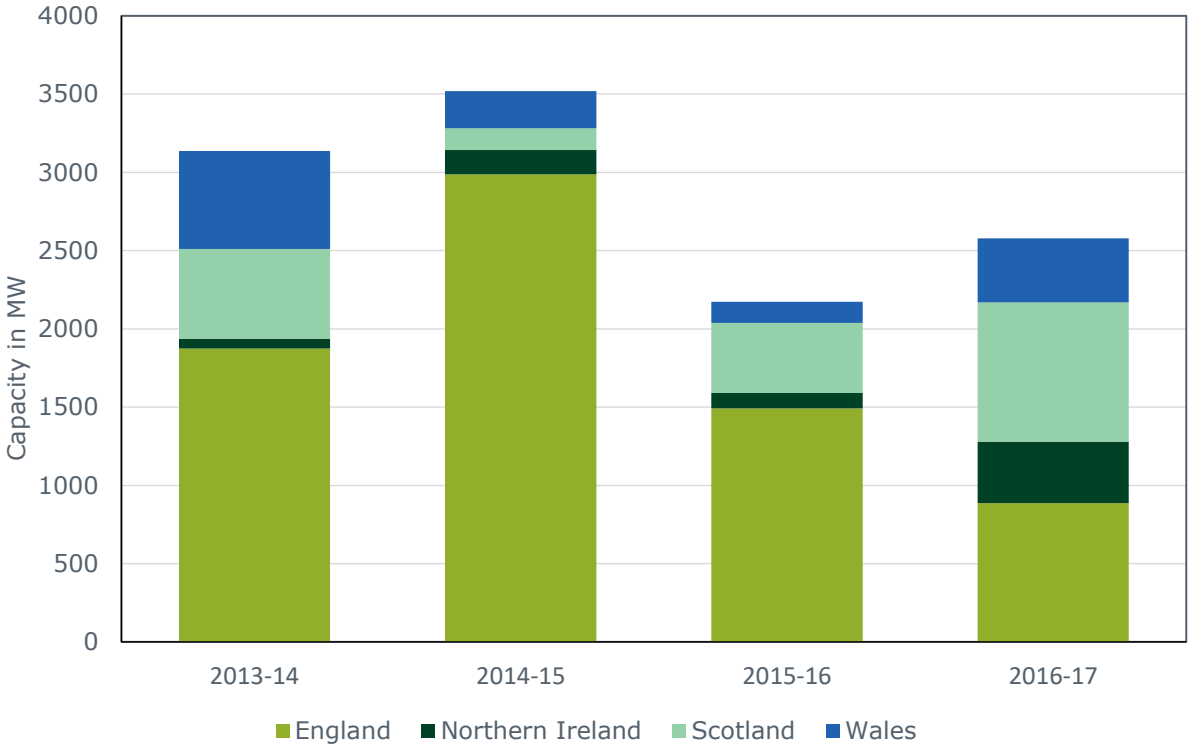
2.12 **Figure 2.3** and **Figure 2.4** show the number of stations accredited under the RO each month from April 2012 to March 2017. Micro NIRO stations are shown separately to the rest of the generating stations in **Figure 2.4**, with a cumulative total covering all stations. The overall number of accreditations across the scheme started to increase in the middle of 2012-13 and accelerated rapidly in 2013-15. The number of micro NIRO accreditations continued to rise albeit at a reduced rate after a drop in ROC banding from October 2015. Applications numbers peaked prior to a further drop in ROC banding in October 2016 (1,038 received) and the closure of the scheme in April 2017 (416 received). However, both influxes were much smaller when compared to the 2,147 applications received in September 2015.

2.13 The overwhelming majority of these micro NIRO applications are for 4kW or less solar PV stations mounted on domestic properties using a single phase grid connection. As support for micro NIRO solar PV dropped on 1 October 2016 to 2 ROCs/MWh, ahead of the subsequent closure of the scheme to new capacity from the 1st of April 2017 onwards, the uptake of the scheme has declined.

Capacity of accredited generating stations

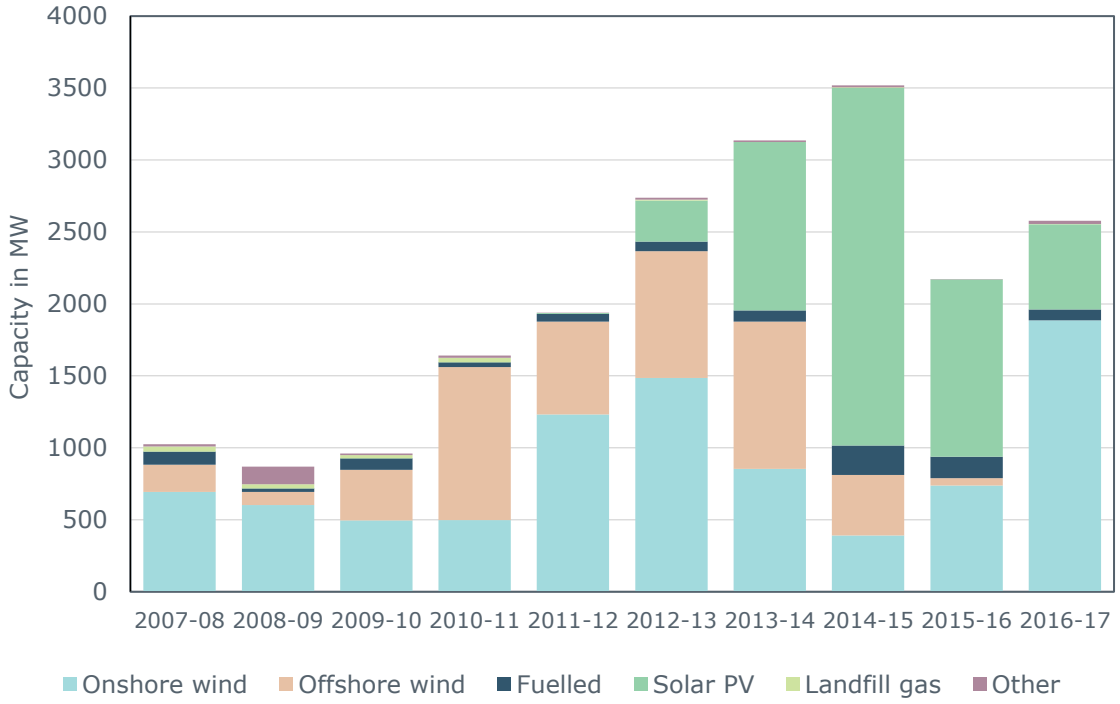
2.14 The aggregate capacity of all stations accredited in 2016-17 was 2,601MW, a 27% increase on the 2,033MW reported in 2015-16. As explored below, this was mainly due to the increase in onshore wind capacity being accredited in Scotland coinciding with the early closure of onshore wind in Great Britain on 12 May 2016.

Figure 2.5: Capacity of generators accredited by obligation year and country since 2013-14



2.15 **Figure 2.5** shows that, in contrast to previous years, capacity accredited in England decreased over the past year from 1493MW to 889MW. The capacity accredited in Scotland almost doubled this year (to 888MW) over last year (337MW). This is mostly due to 26 large (>5MW) onshore wind stations being accredited, with a combined capacity of 852MW, and 5 tidal and wave stations with a total capacity of 10MW. There was an increase in accredited capacity in Northern Ireland due to 20 large scale (>5MW) stations gaining accreditation, consisting of 16 onshore wind stations with a combined capacity of 243MW and four solar PV stations with a combined capacity of 84MW which were granted accreditation with an effective date prior to the introduction of grace periods on 1 April 2017. A total of 409MW of capacity was accredited in Wales in 2016-17. The deployment of 6 large on-shore wind farms in Wales, with a combined capacity of 323MW, accounts for 80% of the increase, this compares with over the 135MW accredited in 2015-16.

Figure 2.6: Total capacity accredited by generation technology and obligation period since 2007-08 (MW)



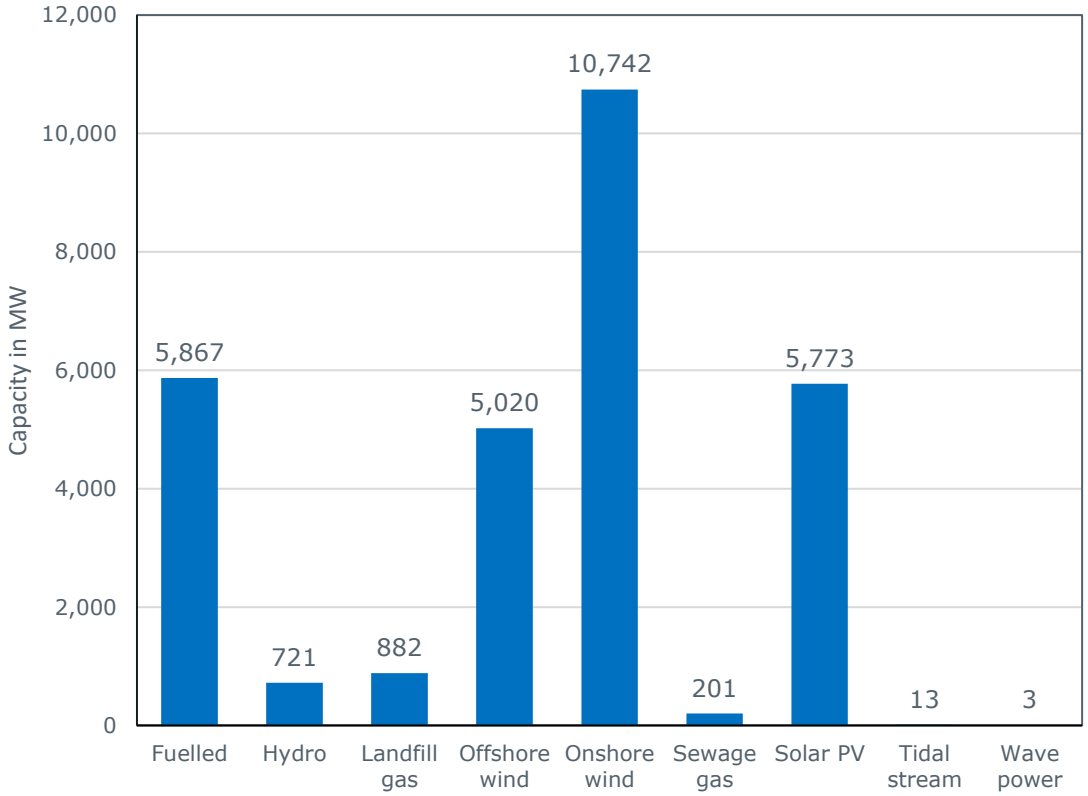
2.16 **Figure 2.6** shows that until 2013-14, onshore and offshore wind stations made up the largest proportion of accredited capacity each obligation year. For onshore wind this is mainly due to the number of stations, while for offshore it is due to the large size of individual stations. For example, offshore wind stations such as London Array and Gwynt y Môr each have installed capacities in excess of 500MW). In 2016-17 we have seen a significant increase in the accredited capacity of onshore wind stations this can be attributed to the early closure of the RO to onshore wind in May 2016. No offshore wind stations were accredited in 2016-17.

2.17 The scheme closed to new small (≤5MW) scale solar PV capacity in GB at the end of the 2015-16 obligation year, with grace periods closing on 31 March 2017. This saw a continuing decrease in accredited capacity of solar PV stations in 2016-17 (592MW) when compared to 2015-16 (1184MW).

2.18 The number of fuelled stations accredited in 2016-17 more than doubled (116) to those accredited in 2015-16 (55). Although the number of accreditations increased the overall capacity of these stations decreased from 124MW in 2015-16 to 77MW in 2016-17. The majority of the fuelled stations (110) had a capacity under 1MW whilst the largest accredited fuelled station, Snetterton Renewable Energy, had a capacity of 43MW.

2.19 **Figure 2.7** provides a simple snapshot of the total capacity currently accredited under the scheme by technology. Onshore wind has the most capacity (10.7GW) under the scheme, due to the number of stations accredited and also the large capacities of some of those stations. By the end of 2016-17 the capacity of fuelled stations (5.8GW) accredited under the scheme was greater than the capacity of solar PV and the capacity of offshore wind stations (5GW).

Figure 2.7 - Total capacity accredited under the RO by generation technology to RO year 2016-17



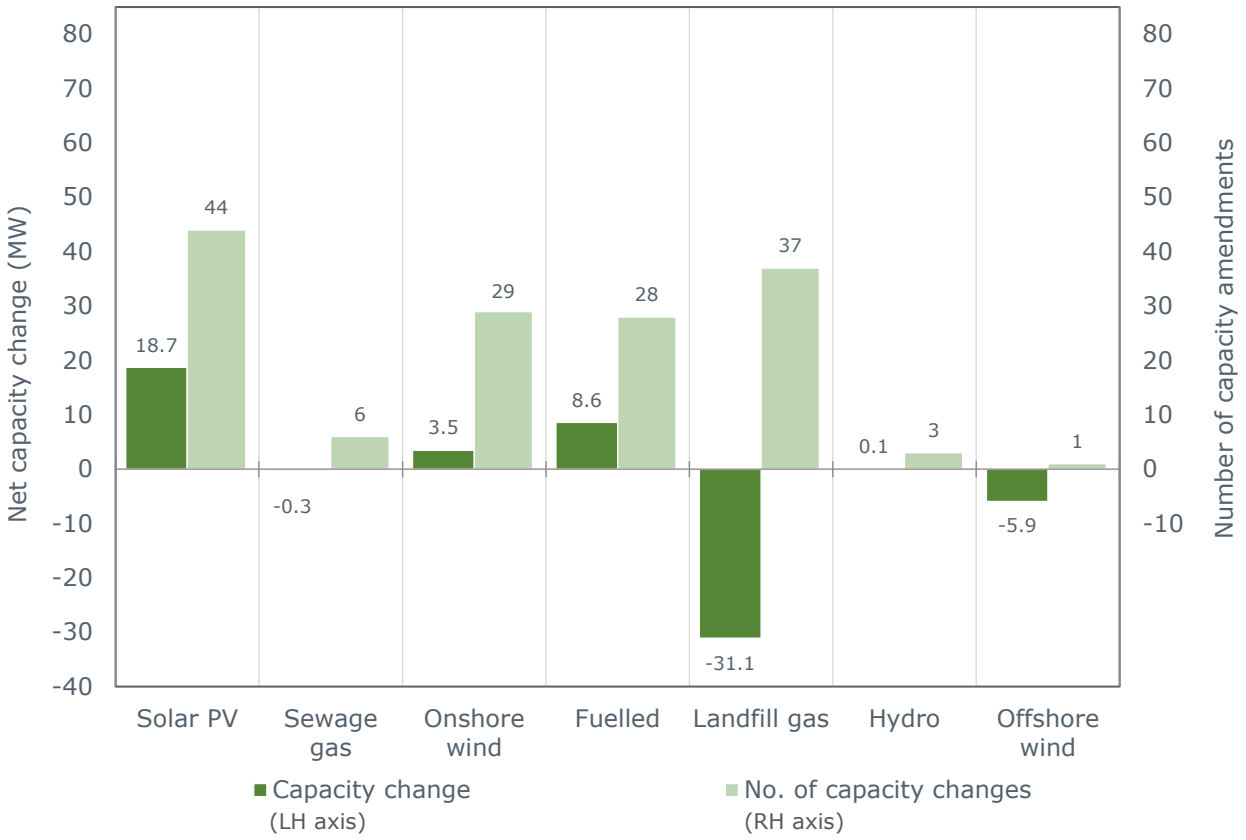
Capacity amendments

2.20 As well as accrediting new stations, we also receive requests from generators to change the details of their stations in some way. Often this is to increase or decrease a station's capacity due to the addition or removal of generating equipment.

2.21 There were 149 changes in capacity during 2016-17. The net change in capacity across all stations as a result of this was -663.9 MW. This is mainly due to the increase in the proportion of biomass that was burnt by Drax's RO units. There was also a decrease to their original capacity, as one of their units (657.5 MW) moved to be supported under the Contracts for Difference (CfD) Scheme.

2.22 Figure 2.8 shows the capacity changes by technology (excluding the increase in renewable generation at Drax). Most of the capacity reductions were for landfill gas stations, as the quality and quantity of gas available continues to reduce. Both the highest number of capacity amendments and the most added capacity during 2016-17 was for solar PV, resulting in a net increase in capacity of 18.7 MW.

Figure 2.8 – Capacity amendments in 2016-17



NFFO generating stations

2.22 Prior to the introduction of the RO, the Non Fossil Fuel Obligation (NFFO), Northern Ireland Non Fossil Fuel Obligation (NI NFFO) and Scottish Renewables Obligation (SRO) were the government's primary instruments of renewable energy policy. We refer to these collectively as NFFO.

2.23 NFFO legislation[13] required the former public electricity suppliers (PES) to buy electricity from renewable generators. It specified that they would purchase the electricity at fixed prices for long-term contract periods (typically 15 years). The PES established the Non Fossil Purchasing Agency (NFPA) in 1990 as their agent and it enabled them to carry out their obligations to collectively contract with renewable generators and comply with the legislation. The NFPA became the electricity purchasing body in England and Wales in 2001. NFPA Scotland, a wholly-owned subsidiary of the NFPA, has acted as the purchasing body in Scotland since 2006.

2.24 The NFFO, NI NFFO and SRO are no longer open to new generators, although their contracts will continue until the last of them expires in 2019. Where these stations are also accredited under the RO, during their NFFO contact term we issue ROCs to the electricity supplier who has purchased the electricity from the station, rather than to the operator of the generating station.

[13] The Electricity (Non-Fossil Fuel Sources) (England and Wales) Order 1994, the Electricity (Non-Fossil Fuel Sources) (Northern Ireland) Order 1996 and the Electricity (Non-Fossil Fuel Sources) (Scotland) Order 1994 and subsequent orders.

2.25 At the end of 2016-17, there were 21 stations still supported under NFFO contracts, with an aggregate capacity of 81.156MW. This is down from 52 stations 2015-16. The reduction is due to several contracts having ended, either through fulfilment of the contract term or because we have granted economic termination to the contract. Of these, 19 stations are also accredited under the RO.

3. ROCs issued and renewable generation

Chapter summary

In 2016-17 we issued 86.2 million ROCs to renewable generating stations, lower than the supplier obligation of 100.7 million. This represents 65.2TWh of renewable electricity generation, a decrease of 5.7% from last year, and is equivalent to 22.2% of all electricity supplied within the UK in 2016-17. While the majority of this generation was through wind and fuelled technologies, generation through these technologies fell compared to 2015-16. Only Solar PV saw a significant increase in 2016-17 – ROC issue increased by 21.5% compared with 2015-16.

Issuing ROCs

3.1 We issue ROCs to the operators of accredited generating stations based on their net renewable output. Generators submit their output figures to us[14] on a monthly basis with the exception of micro generators who can opt to claim on an annual basis. Chapters 4 and 5 of the 'Renewables Obligation: Guidance for Generators' explain in detail how we calculate and issue ROCs.[15]

3.2 Banding was introduced in the 2009 Renewables Obligation Order (ROO)[16] prior to which all accredited stations received 1 ROC per MWh of generation. Since the introduction of banding stations are issued ROCs at a rate determined by one or more of the following: the technology used to generate electricity, when the station was accredited, and its installed capacity. The level of support offered can also differ between each of the three orders. Further information on banding can be found in Appendix 3 of the 'Renewables Obligation: Guidance for Generators'.

ROCs issued and associated renewable generation in 2016-17

3.3 Renewable generation under the RO, and therefore the total number of ROCs issued, fell from the record level seen within the 2015-16 obligation period. This meant that renewable generation through the RO scheme, as a proportion of all electricity supplied within the UK, also fell in comparison to the previous year, however renewable generation under the RO was still well above the levels seen in 2014-15. The exact figures for 2016-17 and the percentage change from the two previous years are shown in **Table 3.1**.

[14] https://www.ofgem.gov.uk/system/files/docs/2017/03/ro_guidance_for_generators-130317.pdf
[15] https://www.ofgem.gov.uk/publications-and-updates/renewables-obligation-guidance-generators-2
[16] Article 27 of the RO and ROS Orders and article 25 of the NIRO.

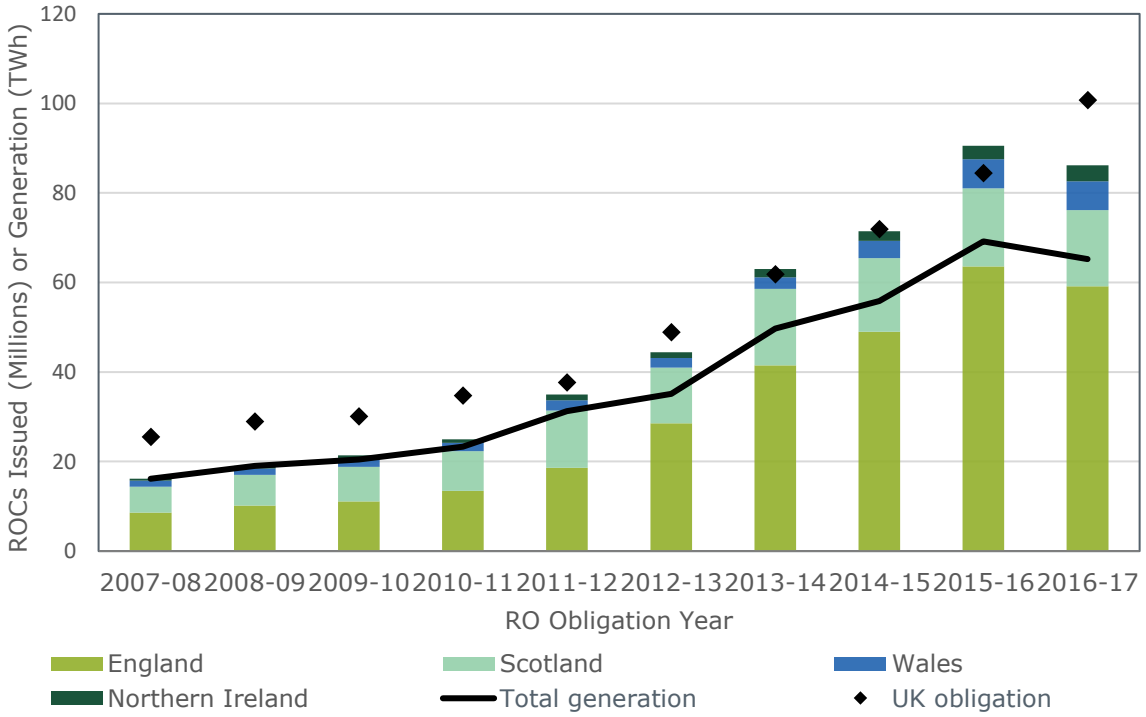
Table 3.1: Comparison of ROCs issued in 2015-16 and 2016-17

	2016-17	Change from 2015-16	Change from 2014-15
Total number of ROCs issued	86,170,351	-4.9%	+20.6%
Associated renewable generation (MWh)	65,232,940	-5.7%	+16.7%
Total UK electricity supply (MWh)	294,110,461	-0.6%	-1.7%
RO renewable generation as a proportion of electricity supply*	22.2%	-5.2 pp	+3.5 pp
Renewable generation including FIT (MWh)	72,982,940	-2.4%	+22.3%
Renewable generation as a proportion of electricity supply*	24.8%	-1.8 pp	+4.9 pp

*RO and FIT generation figures include generation not exported to the grid and therefore not captured within the total figure. Approximately 93.5% of electricity generated through the RO is exported to the grid.
Pp: percentage points

3.4 The reduction in number of ROCs issued alongside an increase in UK supplier obligation has led to the largest absolute shortfall in ROCs since the scheme began, as shown in **Figure 3.1**. The total shortfall was almost 16 million ROCs.

Figure 3.1: ROCs issued, obligation level and renewable generation since 2007-08



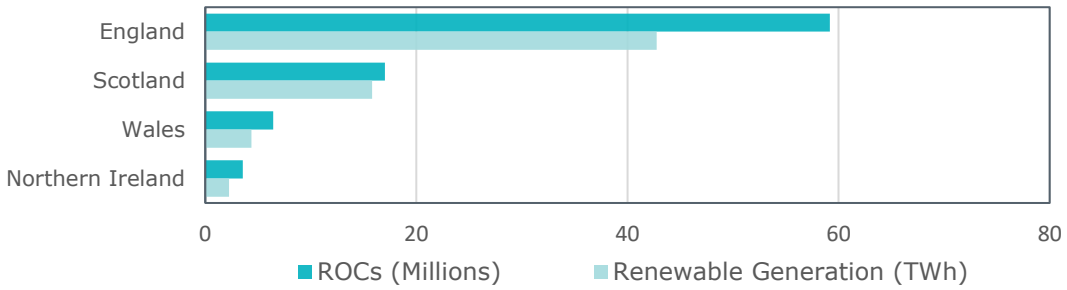
3.5 Since the introduction of banding, the increase in the number of ROCs issued has outpaced the growth in generation, shown in **Table 3.2**. In 2016-17 an average of 1.32 ROCs were issued per MWh of generation. This is due to the continued growth in capacity of technologies such as Solar PV which are issued ROCs at a rate higher than 1 ROC/MWh.

Table 3.2: Average number of ROCs issued per MWh of generation since the introduction of banding

RO Obligation Year	Average number of ROCs issued per MWh of generation	Change from previous obligation year
2009-10	1.04	+4.4%
2010-11	1.07	+2.7%
2011-12	1.12	+4.4%
2012-13	1.27	+13.1%
2013-14	1.27	+0.2%
2014-15	1.28	+0.9%
2015-16	1.31	+2.4%
2016-17	1.32	+0.9%

3.6 The majority of capacity accredited and benefitting from these higher ROC rate is located within England, while in Northern Ireland, Scotland and Wales most capacity is associated with technologies which receive lower ROC rates, as shown in **Figure 3.2**. In Northern Ireland a very large number of generators receive ROCs at a rate greater than 1 ROC/MWh, however the total number of ROCs issued to these generators is still small. Overall 68.7% of all ROCs, representing 65.6% of renewable generation, were issued to generating stations located within England in 2016-17. For more information on ROC rates and banding refer to Appendix 3 of the 'Renewable Obligation: Guidance for Generators'.

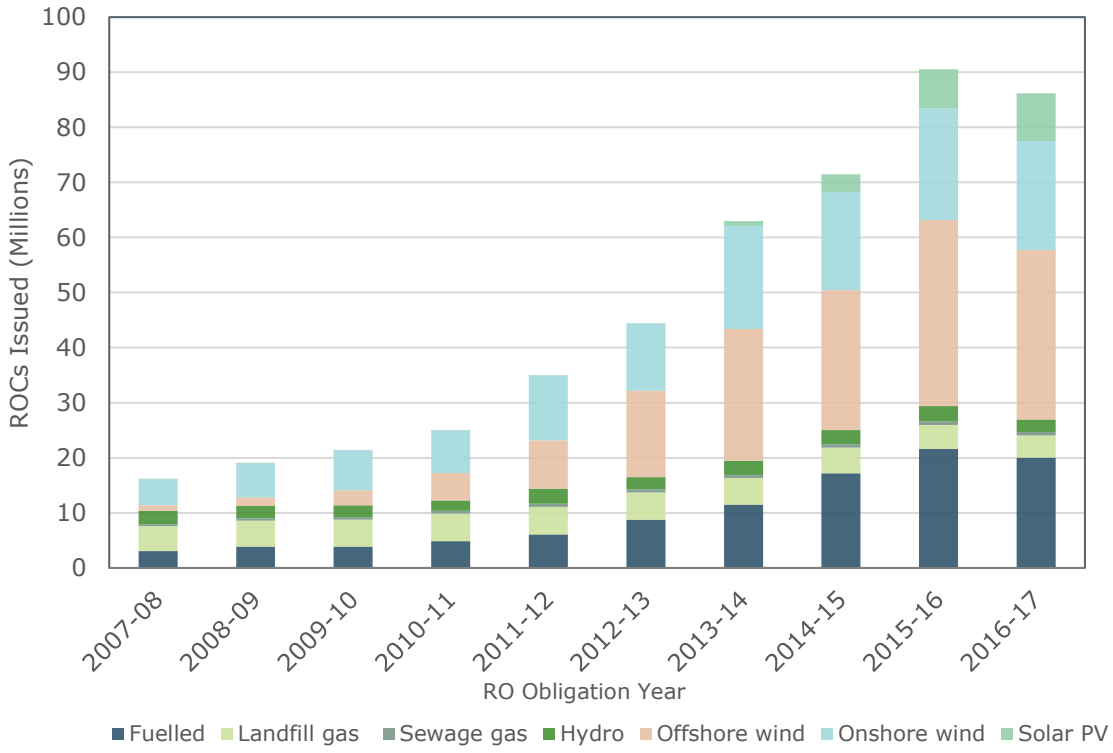
Figure 3.2: ROCs issued and renewable generation by country for 2016-17



Technologies

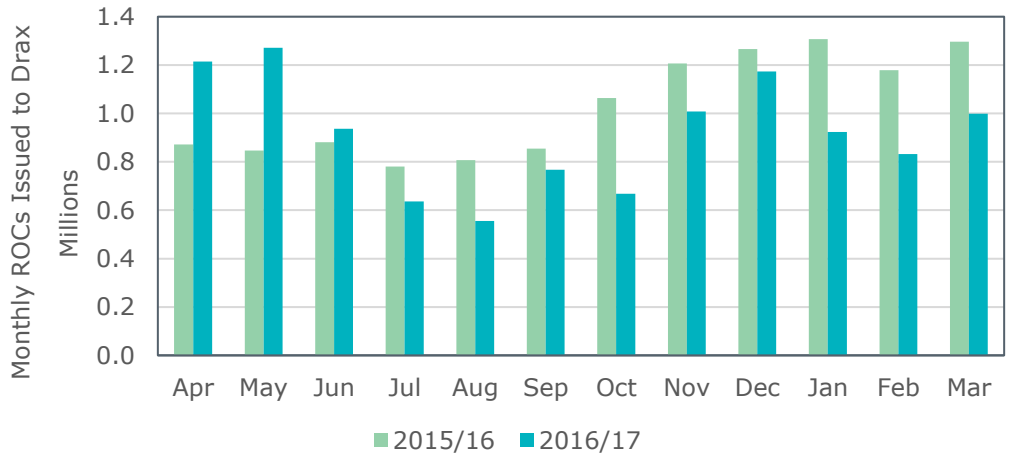
3.7 **Figure 3.3** shows the total number of ROCs issued to different technologies per obligation period since April 2007. The number of ROCs issued to solar PV generating stations increased by 21.5% over 2016-17 (1,533,714), however almost all other technologies saw a decrease in the number of ROCs issued. The largest decreases were to offshore wind (-3.0m ROCs) and fuelled (-1.6m ROCs) stations.

Figure 3.3: Annual issue of ROCs by generation technology since 2007-08



3.8 The reduction in ROCs issued to fuelled stations was primarily due to one of the largest generators accredited under the RO, Drax Power Station, being issued fewer ROCs than in 2015-16. One of the generating units of Drax transferred from the RO to the Contracts for Difference[17] scheme. **Figure 3.4** shows in each month from July onwards, fewer ROCs were issued than in 2015-16. Due to maintenance, Unit 3 of Drax was not operational between July and October and Unit 1 of Drax was removed from the scheme in December 2016.

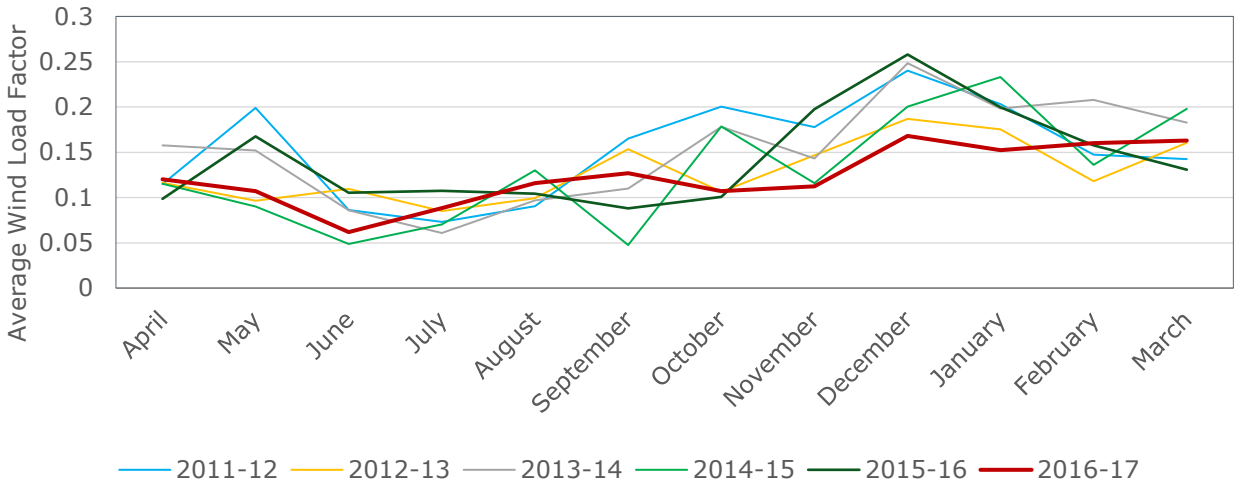
Figure 3.4: Monthly ROC Issue for Drax in 2015/16 and 2016/17



[17] https://www.gov.uk/government/collections/electricity-market-reform-contracts-for-difference

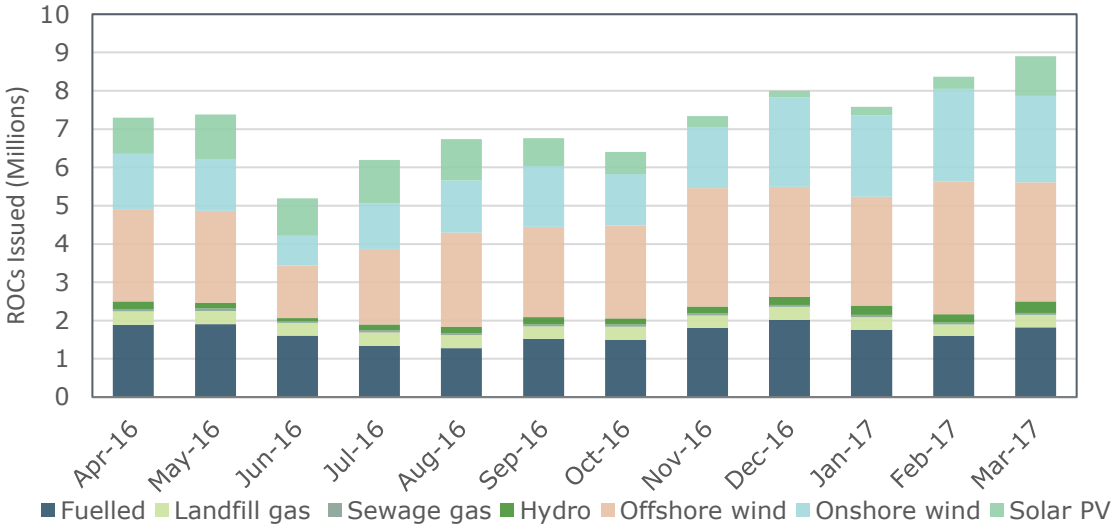
3.9 Lower than usual wind speeds across the winter, especially compared to the high wind speeds of 2015-16, were the cause of the decrease in ROCs issued to on-shore and off-shore wind stations. Wind load factors across November 2016, December 2016 and January 2017 were the lowest we have observed for that period for the last six years. Load factors across the rest of the year were also low, as shown in **Figure 3.5**.

Figure 3.5: Average wind load factors by month for 2011-12 to 2016-17



3.10 **Figure 3.6** shows how these two factors contributed to lower ROC issue across winter compared to other months in the year. The highest ROC issue was in the month of March, due to high wind load factors and a high number of Solar PV ROCs. This is as a result of a high number of applications coming through in this month due to closure of the RO scheme and the end of the grace periods available to new solar.

Figure 3.6: ROCs issued each month in 2016-17 by technology

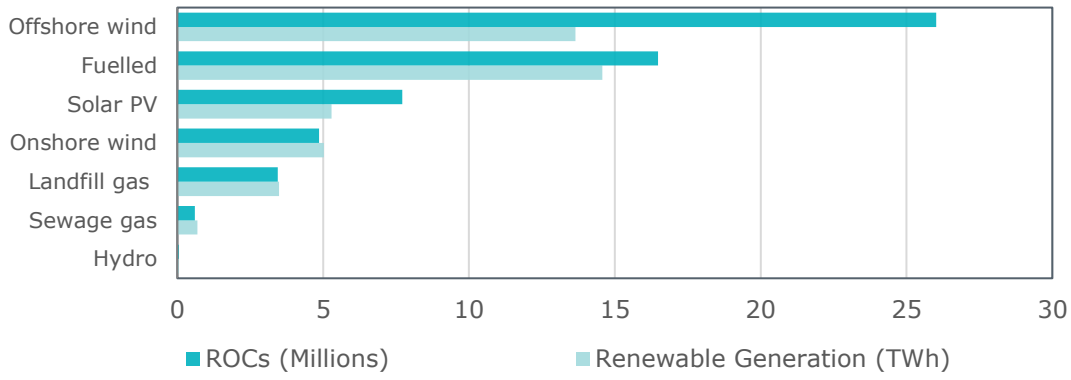


England

3.11 The majority of the accredited capacity for offshore wind, fuelled and solar PV in the UK (over 80% of ROCs issued to these technologies) were issued to stations located within

England. **Figure 3.7** shows that despite fuelled stations generating the most electricity, offshore wind stations received more ROCs. Most fuelled generation came from larger stations which received a lower ROC rate than offshore wind. Solar PV was the only technology which received more ROCs in 2016-17 than 2015-16, due to the continued growth in accredited capacity.

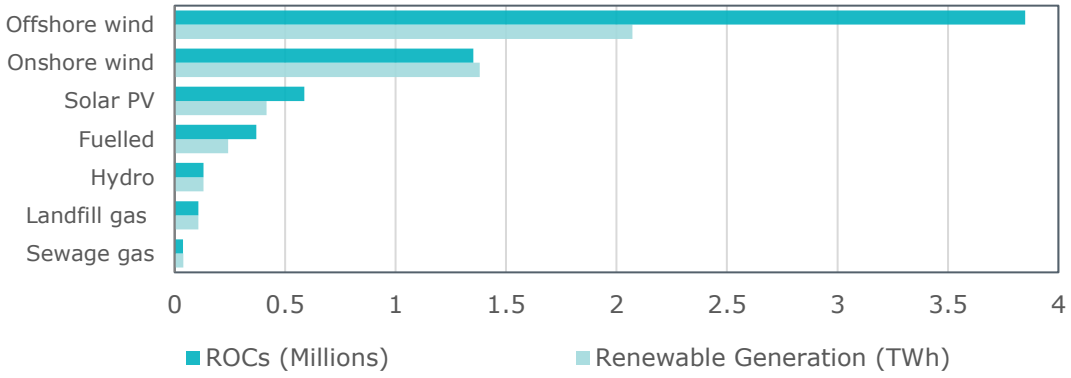
Figure 3.7: ROCs issued and renewable generation in England by technology type for 2016-17



Wales

3.12 Offshore wind was the largest technology in Wales in 2016-17, as shown in **Figure 3.8.** This was led by the Gwynt y Môr offshore wind farm, which accounted for over half of all ROCs issued to generating stations in Wales and 37.6% of generation. Generation through solar PV continued to grow, with generation increasing by 29.4% and ROC issue by 25.7% compared to 2015-16.

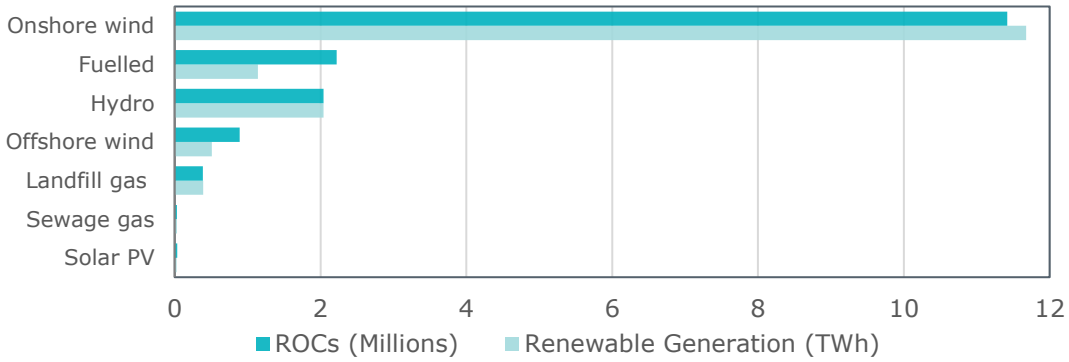
Figure 3.8: ROCs issued and renewable generation in Wales by technology type for 2016-17



Scotland

3.13 **Figure 3.9** shows that renewable generation in Scotland is dominated by onshore wind with two thirds of all ROCs issued going to this technology. Generation through Scottish onshore wind is the third largest contributor by country / technology in the UK, only behind fuelled and offshore wind located within England. ROCs issued to fuelled stations overtook those issued to hydro in 2016-17, primarily due to hydro generation falling by almost 20%.

Figure 3.9: ROCs issued and renewable generation in Scotland by technology type for 2016-17

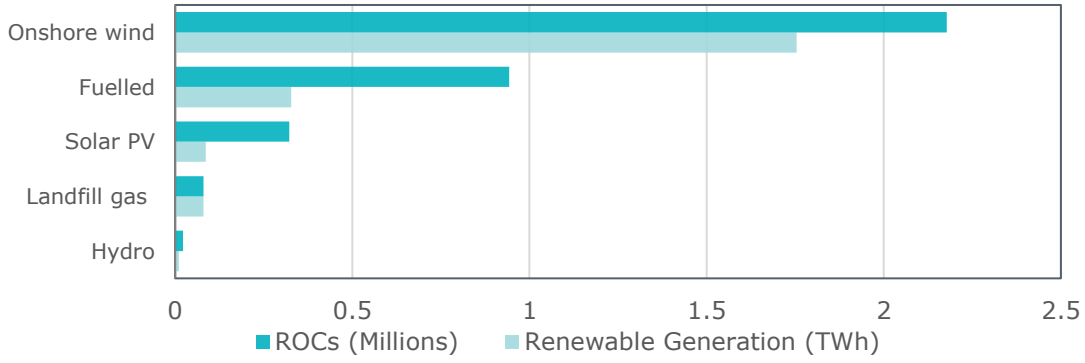


Northern Ireland

3.14 Fuelled generation in Northern Ireland rose significantly in 2016-17, with generation rising by 75% and ROC issue by 69%. Despite this rise, **figure 3.10** shows that renewable electricity generation in Northern Ireland still predominantly comes from onshore windfarms. This is mostly from large conventional wind farms.

3.15 In contrast to the rest of the UK the country also has significant numbers of smaller generators. Wind turbines with a DNC of less than 250kW accounted for 28% of onshore wind ROCs, anaerobic digestion stations with a DNC of less than 50kW in capacity accounted for 55% of fuelled ROCs, and 96% of all solar ROCs were issued to stations with a capacity under 50 kW. The FIT scheme encompasses the majority of small scale generation within GB however Northern Ireland never adopted this scheme, therefore small scale generation is supported through the RO scheme.

Figure 3.10: ROCs issued and renewable generation in Northern Ireland by technology type for 2016-17



Revoked and retired ROCs

3.16 ROCs can be revoked if we find that the number initially issued is incorrect. We may identify such errors through our own investigations, audits of generating stations (see Chapter 6), or where the generator notifies us themselves.

3.17 This year we revoked 16,507 ROCs which were issued during the 2016-17 obligation year. This is a significantly lower number than the 430,962 revoked in the 2015-16 obligation year, and more in line with what had been observed in previous years (14,915 in 2014-15).

For more information regarding the exceptionally high number revoked in 2015-16, please see the 'Renewables Obligation (RO) Annual Report 2015-16.[18]

3.18 We are unable to revoke ROCs if a supplier has already presented the ROCs to us for compliance. In this situation we must withhold an equivalent number of ROCs from being issued to the station in the future.[19] This year we withheld 28,421 ROCs from being issued.

3.19 The registered holder of a ROC may voluntarily retire it on the Register at any time and these can no longer be used for RO compliance. A registered holder may retire a ROC for a number of reasons, for example if they can no longer use it towards their obligation because it has already expired. This year no ROCs were retired by their holders.

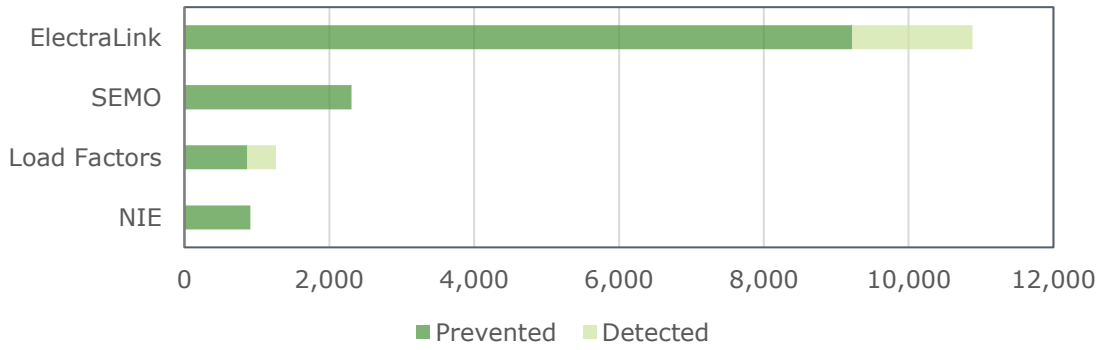
Monthly ROC validation

3.10 In December 2015 we implemented a method of validating the output data submitted to us on a monthly basis for export only stations. By comparing submissions against export data provided by third-parties we can identify and rectify errors prior to ROC issue and help to protect the scheme against error and fraud.

3.21 We currently use five sources of data to validate ROC claims: data from Elexon and Single Electricity Market Operator (SEMO) cover the larger generating stations in GB and Northern Ireland respectively and data from Electralink and Nothern Ireland Electricity Networks (NIE) covers most of the smaller generators in GB. Data from Scottish Power also covers stations settled entirely within the Scottish Power network. Together this covers the vast majority of the capacity accredited under the RO. Additionally, we carry out load factor analysis of all submissions and query any which appear to be outside of expected thresholds.

3.22 Through these methods we identified 109 submissions in 2016-17 which had been, or were to be, over-issued ROCs, with the errors totalling 15,365 ROCs. **Figure 3.11** shows that the majority of this error was 'prevented', meaning that the submission was corrected prior to ROC issue. In some cases we were only able to correct the submission following ROC issue, in which case any excess ROCs issued were revoked. This is classed as 'detected' error.

Figure 3.11: ROCs saved as a result of monthly validation checks



Emissions saved by the scheme

3.23 The Department for Environment, Food and Rural Affairs (Defra) publishes a periodic report on conversion factors for greenhouse gas (GHG) on its website.[20] For UK electricity, it

[18] https://www.ofgem.gov.uk/system/files/docs/2017/03/ro_annual_report_2015-16.pdf
[19] Article 25 of the RO, 41A of the ROS and article 37A of the NIRO
[20] https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting

publishes these conversion factors as an equivalent mass of carbon dioxide per kilowatt-hour ($kgCO_2e/kWh$) and they are available both for generation and for transmission and distribution. From this, we can calculate a figure for the amount of GHG emissions avoided renewable generation under the scheme.

3.24 The GHG conversion factor for 2016-17 is 0.43310 $kgCO_2e$ /kWh.[21] Multiplying this by the 65.2TWh of renewable electricity generated by stations accredited under the RO gives an approximate saving of 28.3 million tonnes of carbon dioxide equivalents (CO_2e) for the 2016-17 obligation period. This is a decrease of 16.2% from last year's figure of 33.7 million tonnes CO_2e. The majority of this decrease is due to the lower GHG conversion factor in 2016-17.

3.25 Our calculation of the cost of reducing carbon emissions due to the RO in 2016-17, derived from the value of the scheme, is detailed in Chapter 5.

[21] We reached this figure by adding the generation and transmission and distribution factors to reach overall values for UK electricity in 2016 and 2017 (0.44932 and 0.38443 $kgCO_2e$ respectively).

4. Biomass sustainability

Chapter summary

In the 2016-17 obligation period, 244 fuelled generating stations were required to report their biomass fuels against the land and greenhouse gas emissions criteria, collectively known as the sustainability criteria. Of these, 103 were bioliquid stations and solid biomass or biogas stations greater than 1MW where the sustainability criteria were formally linked to ROC issue. Compliance with the sustainability criteria was not linked to ROC issue for the remaining 141 solid biomass and biogas stations smaller than 1MW. The analysis in this chapter is based upon the data provided by these stations as part of their annual and monthly reporting requirements.

4.1 All bioliquid stations and solid biomass and biogas stations with a Declared Net Capacity (DNC) of more than 50kW, using biomass, must report against land and greenhouse gas criteria (known collectively as the sustainability criteria) and provide additional information annually on the fuels used (known as the profiling data).[22]

4.2 There are two criteria that a fuel must satisfy to be classed as sustainable, these are:

- the land criteria – these focus on the land from which the biomass was sourced and whether it meets the requirements of the legislation,[23] and
- the life-cycle greenhouse gas (GHG) emissions associated with the biomass – for solid biomass and biogas this is measured in grams of CO_2 equivalent per mega Joule of electricity (gGHG/MJ electricity). For bioliquids it is expressed as a percentage emissions saving against the fossil fuel comparator.[24]

4.3 All bioliquid stations and solid and gas stations with a Total Installed Capacity (TIC) greater than or equal to 1MW must report against the criteria each month on the Register as part of their ROC claim. Reporting on and meeting the sustainability criteria are formally linked to Renewable Obligation Certificates (ROC) issue and certificates can be postponed, revoked or withheld if the sustainability criteria are not met.

4.4 On an annual basis, this monthly information is independently verified by an auditor with a report submitted to Ofgem for review. The report is undertaken by an independent auditor in accordance with ISAE 3000 (revised) (the International Standard on Assurance Engagements).[25] Failure to submit by the deadline will result in future ROCs being withheld until the report is submitted and approved.

4.5 Operators presented 103 audit reports to us in 2016-17. Of the reports submitted, 31 were for bioliquid stations, 69 for solid biomass and biogas stations and 3 that include both bioliquids and solid biomass. There are five accredited RO stations that have not yet presented an audit report and so we have suspended the issuance of ROCs to these stations.[26]

4.6 Stations using solid biomass or biogas with a TIC of under 1MW but a DNC greater than 50kW are not required to report monthly on their fuels but are required to report against the

[22] Article 82, 83 and 84 of the ROO 2015, Article 54A and 54B of the ROS 2009 Order (as amended) and Article 46A and 46B of the NIRO 2009 Order (as amended).
[23] See our 'Sustainability Criteria Guidance': https://www.ofgem.gov.uk/publications-and-updates/renewables-obligation-sustainability-criteria
[24] The fossil fuel comparator is specified in Paragraph 19, Annex V, Part C of the Renewable Electricity Directive as 91gCO2e/MJ
[25] Or equivalent standard
[26] Correct as of 19th February 2018

sustainability criteria in their annual profiling data.[27] The RO legislation states that the information in the profiling data must be supplied to the best of the operator's knowledge and belief. It does not need to be verified by an independent auditor and is not linked to ROC issue.[28]

4.7 Due to the closure of the RO to new applicants on 31 March 2017, there is a substantial number of stations that have not yet been granted accreditation, but will likely claim ROCs for generation in the 2016-17 reporting period.[29] It is important to note that this report only includes the information for stations that have been granted accreditation at the time of publication.

4.8 The information in this chapter is based on the data provided by the operators of fuelled stations as part of their monthly and annual reporting requirements at the time of the writing of this chapter.[30] Some annual sustainability information has not yet been approved and so this information may be subject to change. In order for comparisons to be made, the Renewables Obligation: Annual Report 2015-16[31] and Sustainabiliy Dataset[32] were utilised, which contain the sustainability information for stations that generated in the 2015-16 period.[33] The sections below segregate the stations into gasification, anaerobic digestion (AD), direct combustion of solid biomass and bioliquid stations.

Gasification stations

4.9 41 accredited gasification stations burnt 391.6 million m^3 of syngas in 2016-17. **Table 4.1** shows how stations reported their consignments[34] against the sustainability criteria. There are no instances where a consignment has not met the criteria. For stations that reported against the GHG criteria, the weighted average emission was 8.99 gCO_2e/MJ.[35] This is a significant reduction in comparison to the weighted average figure from the 2015-16 period (15.7 gCO_2e/MJ).

[27] Annual profiling data contains information submitted by the operator regarding the sustainability characteristics of their fuel. This includes information such as type of biomass, the form of biomass, country of origin and whether it was wood or derived from wood.
[28] Article 82 of the ROO 2015, Article 54 of the ROS 2009 Order (as amended) and Article 46 of the NIRO 2009 Order (as amended).
[29] See our 'Guidance on closure of the scheme in England, Scotland and Wales': https://www.ofgem.gov.uk/publications-and-updates/renewables-obligation-guidance-closure-scheme-england-scotland-and-wales
[30] 19th February 2018
[31] See our 'Annual Report 2015-16': https://www.ofgem.gov.uk/publications-and-updates/renewables-obligation-ro-annual-report-2015-16
[32] See our '2015-16 Biomass Sustainability Dataset': https://www.ofgem.gov.uk/publications-and-updates/biomass-sustainability-dataset-2015-16
[33] The 2015-16 Biomass Sustainability Dataset and Annual Report have been utilised for comparison purposes and may not contain information for stations that were granted accreditation after the publications were written.
[34] Where we refer to a consignment in the context of stations greater than or equal to 1MW, this refers to a single consignment submission for one month. For stations less than 1MW, this is just reported once in the year.
[35] The GHG emission threshold for biogas stations is 79.2 gCO_2e/MJ

Table 4.1: Consignments reported by gasification stations against the sustainability criteria, split by capacity

		Gasification Stations <1MW[36]	Gasification Stations ≥1MW
Meets the land criteria	Yes	40	0
	No	0	0
	Exempt	0	12
	Unknown	0	0
Meets the greenhouse gas emissions criteria	Yes	28	0
	No	0	0
	Exempt	0	12
	Unknown	12	0

4.10 40 of the accreditated gasification stations, that were required to reported against the sustainability criteria, have a TIC less than 1MW. All consignments burnt in these 40 stations were derived from woody biomass. **Table 4.2** shows that 90.1% of syngas burnt in these stations was derived from soft wood with 9.7% derived from a mixture containing a majority of soft wood.

Table 4.2: Quantity of syngas based on wood type utilised in gasification stations greater than 50kW but less than 1MW

	m^3 of Syngas	% contribution
100% Softwood	26,858,246.6	90.1%
99-75% Softwood, 1-25% Hardwood	2,901,834.0	9.7%
100% Hardwood	60,286.0	0.2%

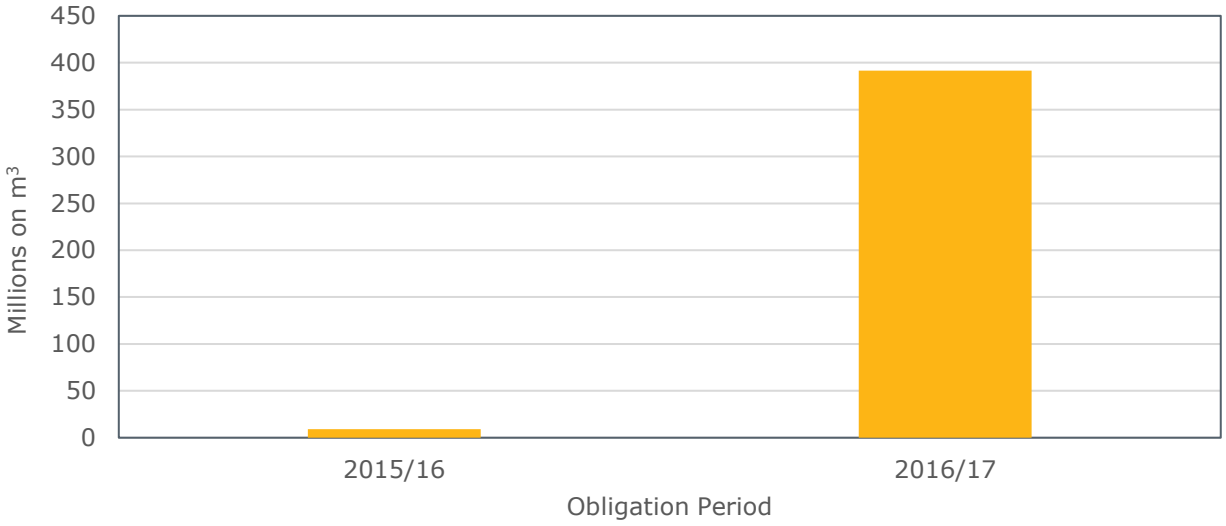
4.11 All the wood was sourced from within the UK where the intention was to retain, restock or naturally regenerate all, or the majority of, the forest within five years. None of this wood was reported as likely to be a protected or threatened species.

4.12 There was only one gasification station which had a TIC greater than 1MW. This station burned 359.4 million m^3 of syngas in 2016-17, all of which was derived from waste wood sourced from within the UK and was therefore exempt from the land and GHG emissions criteria. As their fuel is derived from a waste, this station did not need to report against the wood biomass questions in the profiling data and so it is unknown whether the fuel was derived from softwood or hardwood.

4.13 As displayed in **Figure 4.1**, the quantity of syngas burnt in gasification stations in 2016-17 was substantially higher in comparison to 2015-16. This is due to an increase in both the generation by the gasification station greater than 1MW and the number of accredited gasification stations.

[36] The sustainability criteria for gasification stations less than 1MW are not formally linked to ROC issue

Figure 4.1: A comparison of the quantities of syngas burnt in gasification stations in the 2015/16 and 2016/17 obligation periods



Anaerobic digestion stations

4.14 **Table 4.3** shows the number of consignments reported by AD stations against the sustainability criteria. No consignments were reported as having not met the criteria. For stations that reported a figure, the weighted GHG emission was 31.6 gCO_2e/MJ,[37] which is an increase of 8.4 gCO_2e/MJ in comparison to 2015-16 and can mainly be attributed to the increased use of whole crops, vegetables and silage as a feedstock.

Table 4.3: Consignments reported by anaerobic digestion stations against the sustainability criteria, split by capacity

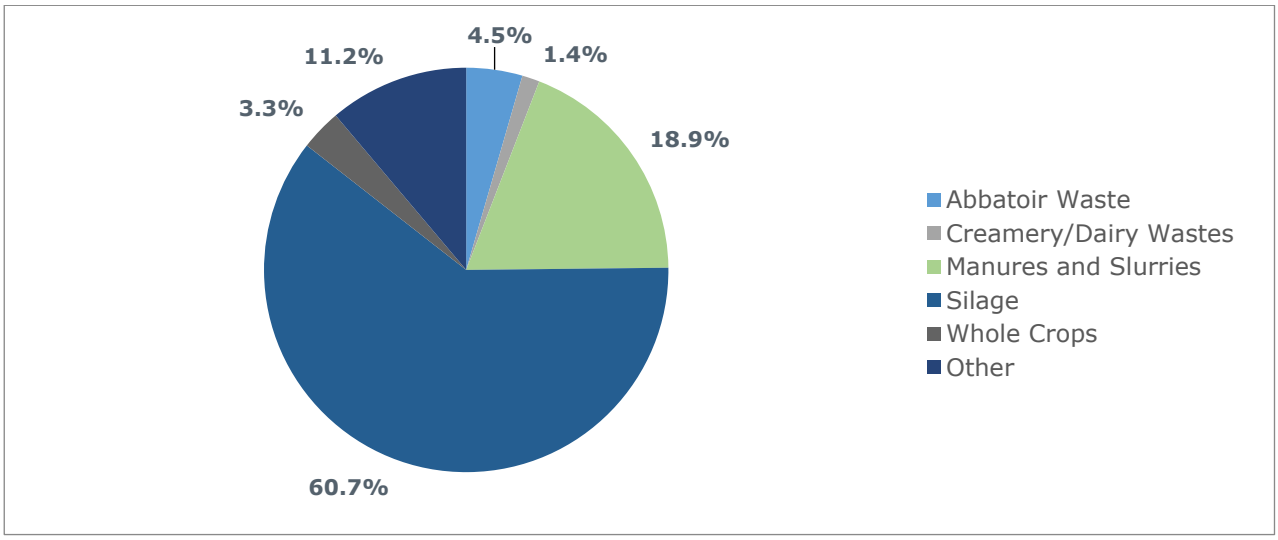
		AD Stations <1MW[38]	AD Stations ≥1MW but <25MW	AD Stations ≥ 25MW
Meets the land criteria	Yes	76	78	0
	No	0	0	0
	Exempt	96	677	15
	Unknown	21	0	0
Meets the greenhouse gas emissions criteria	Yes	7	143	0
	No	0	0	0
	Exempt	95	612	15
	Unknown	91	0	0

4.15 There are currently 74 AD stations with a TIC less than 1MW that were required to report against the sustainability criteria. Of these, the 69 that reported fuel quantities burned 147.4 million m^3 of biogas. **Figure 4.2** illustrates that the vast majority of this gas was derived from the digestion of silage, with manures and slurries also making a significant

[37] The GHG emission threshold for biogas stations is 79.2 gCO_2e/MJ
[38] The sustainability criteria for anaerobic digestion stations less than 1MW are not formally linked to ROC issue

contribution. This perhaps suggests that many of these stations are installed on or near farms. The 'other' feedstock category consists of alcohol, grease trap waste and mixtures.[39]

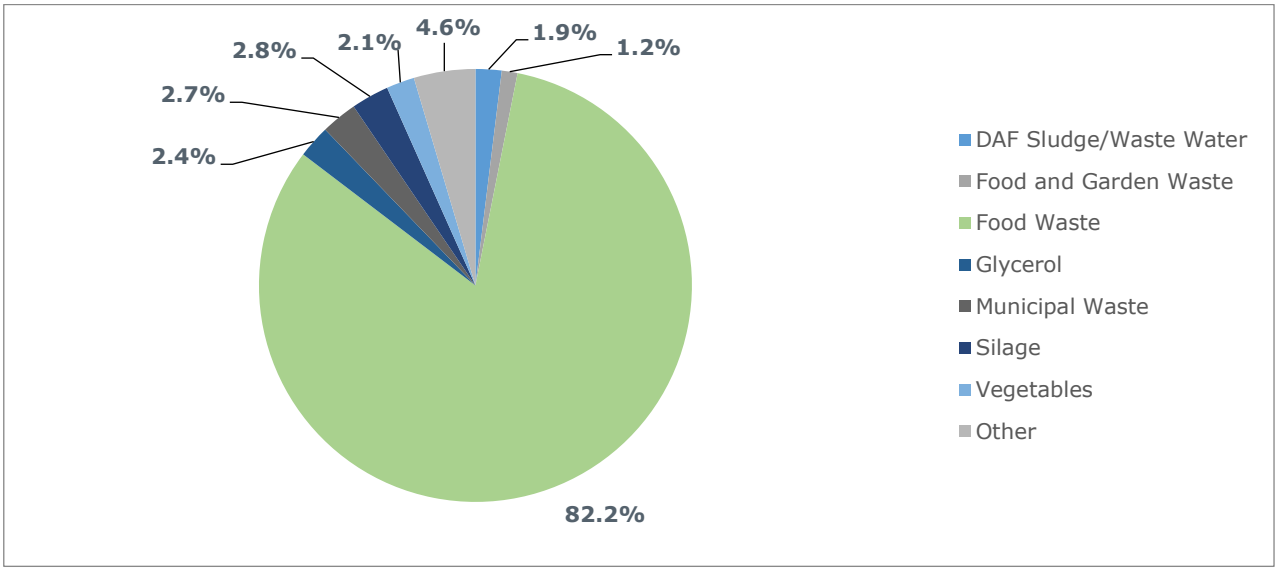
Figure 4.2: Type and proportion of feedstocks used (by volume of gas burnt) in anaerobic digestion stations less than 1MW but greater than 50kW



4.16 30 AD stations over 1MW but less than 25MW were required to report against the sustainability criteria in 2016-17. Collectively they burned 312.3 million m^3 of biogas; the majority of which is derived from food waste as seen in **Figure 4.3**. Here, silage is the source of significantly less biogas than in stations less than 1MW and additional feedstocks are used such as Disolved Air Flotation (DAF) sludge and waste water, glycerol and vegetables. The 'other' feedstocks consist of biodegradable waste, alcohol and distillery waste, abbatoir waste, manures and slurries, dairy waste and grease trap waste; all of which contibute just 3.4% towards the total quantity of AD gas used in these stations.

[39] There are a number of stations whose fuel measurement and sampling procedures do not require them to keep records of individual feedstocks and so report a mixture on their profiling data.

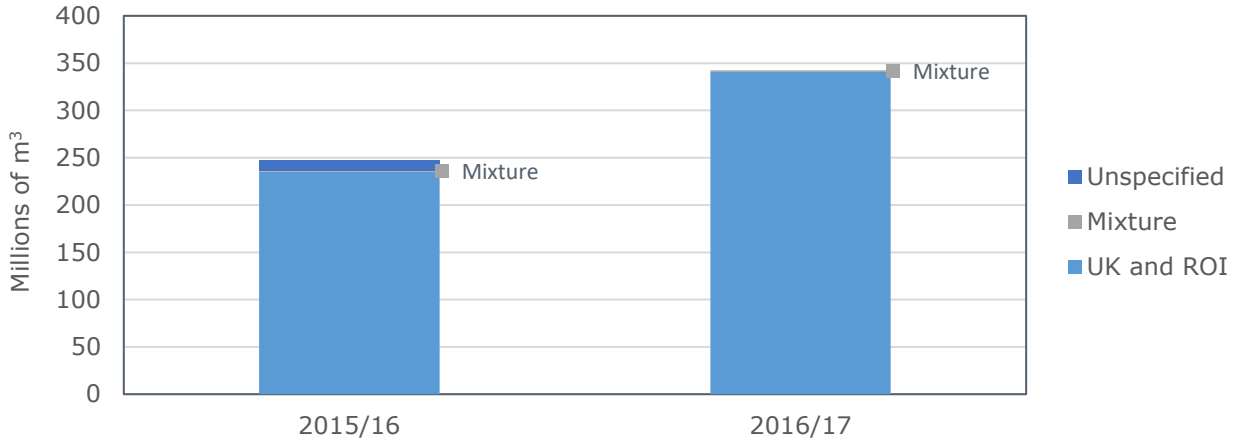
Figure 4.3: Type and proportion (by gas) of feedstocks used in anaerobic digestion stations greater than 1MW but less than 25MW



4.17 There were two AD stations with a TIC greater than 25MW that were required to report against the sustainability criteria. They burnt 8.2 million m^3 of syngas. As in the 2015-16 period, these stations are primarily fossil fuel based but are supplemented with AD gas from waste water that arises from on-site processes.

4.18 As with gasification stations, there was an increase in accredited AD stations and therefore a significant increase in the quantity of fuel used in 2016-17 in comparison to 2015-16. The vast majority of additional biogas burnt was derived from feedstocks produced or obtained in the UK and Republic of Ireland (ROI), as seen in **Figure 4.4**. A county of origin was reported for all fuels in 2016-17 unlike 2015-16, where a portion was left unanswered and so was classified as 'unspecified'.

Figure 4.4: A comparison of the quantities of biogas used in anaerobic digestion stations in the 2015/16 and 2016/17 obligation periods



Solid biomass burnt in direct combustion stations

4.19 **Table 4.4** displays the sustainability criteria reported for solid biomass consignments burnt in direct combustion stations. There is one case of non-compliance with the land criteria for a consignment burned in a station greater than 1MW and so ROCs were withheld. This occurrence was derived from a woody biomass feedstock used in a month where it could not be proved that 70% was obtained from a sustainable source.[40] The weighted average GHG emission for stations that reported a figure is 26.9 gCO_2e/MJ; a slight decrease of 2.1 gCO_2e/MJ compared to 2015-16.[41]

Table 4.4: Solid biomass consignments reported by direct combustion stations against the sustainability criteria, split by capacity

		Solid Biomass Stations <1MW[42]	Solid Biomass Stations ≥1MW but <25MW	Solid Biomass Stations ≥ 25MW
Meets the land criteria	Yes	4	289	895
	No	0	1	0
	Exempt	10	284	208
	Unknown	0	0	0
Meets the greenhouse gas emissions criteria	Yes	2	302	946
	No	0	0	0
	Exempt	9	272	157
	Unknown	3	0	0

4.20 12 stations with a TIC under 1MW that were required to report against the sustainability criteria burnt 41,149 tonnes of solid biomass in direct combustion stations; the majority of

[40] The land criteria for wood biomass states that at least 70% must come from a sustainable source have been transposed into the RO Order from the Timber Standard for Heat and Electricity. Available at: https://www.gov.uk/government/publications/timber-standard-for-heat-electricity

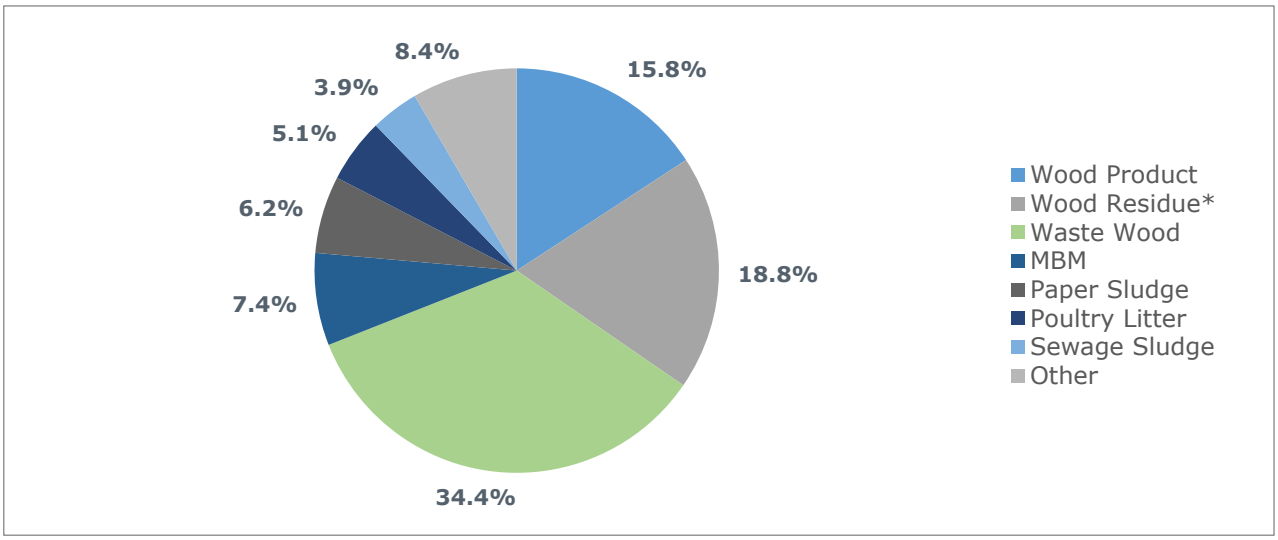
[41] The GHG emissions threshold is 79.2 gCO_2e/MJ for solid biomass stations. Any stations classed as a 'post-2013 dedicated biomass station' have a threshold of 66.7 gCO_2e/MJ. 'Dedicated biomass' is defined in Schedule 5 of the ROO and Schedule 2 of the ROS and NIRO Orders

[42] The sustainability criteria for direct combustion stations less than 1MW that use solid biomass are not formally linked to ROC issue

which was woody biomass. Waste wood contributed 74.1% towards this total, with wood products contributing 12.9% and wood residues 10.7%. The remaining 2.3% was derived from poultry litter.

4.21 A broader range of fuels were burnt by the 25 stations with a TIC greater than 1MW, but less than 25MW, as illustrated in **Figure 4.5**. Woody biomass is the primary contributor to the total of 1.8 million tonnes of solid fuel used in these stations. However, meat and bone meal (MBM), poultry litter and sewage sludge also make significant contibutions. The 'other' fuels used include food waste, husks, grain, animal bedding, woodflour filter cake and plant tissue waste.

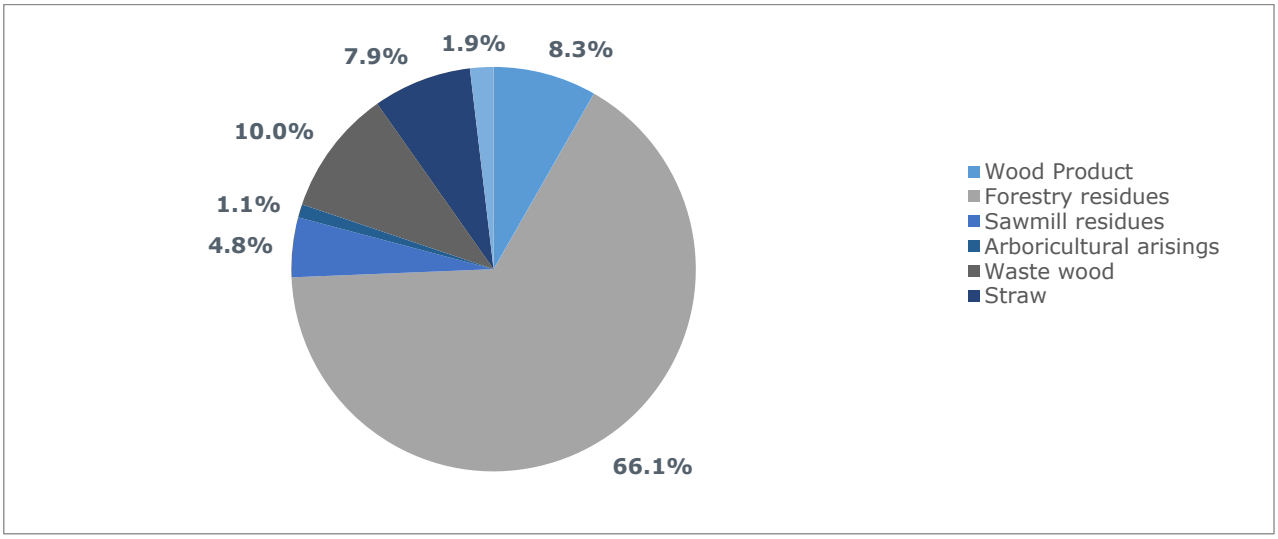
Figure 4.5: Type and proportion of solid biomass used in direct combustion stations greater than 1MW but less than 25MW



*includes sawmill, forestry and arboricultural residues

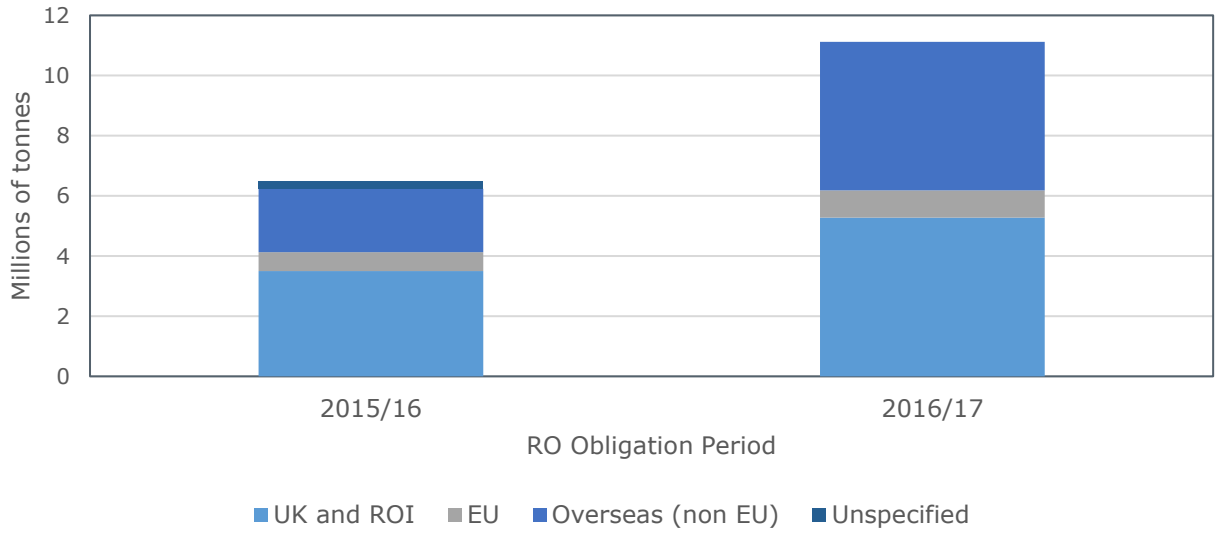
4.22 There are 16 stations with a TIC greater than 25MW that reported against the sustainability criteria. They primarily burnt forestry residues, with other woody biomass making significant contibutions to the 9.6 million tonnes of solid biomass burnt by these stations. Straw is the only non-wood fuel to make a notable contibution to the total as seen in **Figure 4.6**. Energy crops (miscanthus and willow), oat husks, MBM, paper sludge and olive pomace were also burnt in stations greater than 25MW but only contribute 1.9% of the total solid fuel burnt, indicated in **Figure 4.6** as 'other'.

Figure 4.6: Type and proportion of solid biomass used in direct combustion stations greater than 25MW



4.23 2016-17 saw an increase of 72% (4.7 million tonnes) in the quantity of solid biomass burnt in direct combustion stations as shown in **Figure 4.7**. The majority of this increase can be attributed to biomass that was grown or was obtained in non-EU overseas countries, although additional biomass was also sourced from the UK and ROI as well as the EU. As with AD, a country of origin has been reported for all consignments unlike the 'unspecified' portion seen in 2015-16.

Figure 4.7: A comparison of the quantities of solid biomass used in direct combustion stations in the 2015/16 and 2016/17 obligation periods



Bioliquid stations

4.24 Although potentially exempt from the land criteria, there are no exemptions for bioliquids in regard to the GHG emissions criteria. Wastes are exempt from the land criteria but still need to report against the GHG emissions criteria as shown in **Table 4.5**. The

weighted GHG emissions saving for bioliquid consignments was 89.6% against a fossil fuel comparator, far exceeding the current threshold of a 50% emissions reduction compared to the fossil fuel comparator.[43]

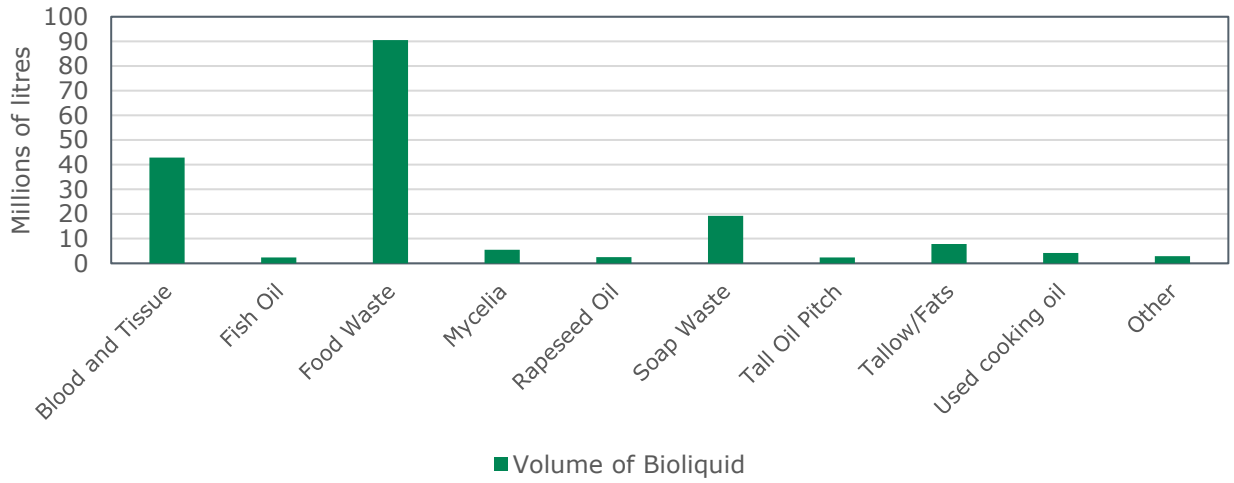
Table 4.5: Consignments of bioliquid reported against the sustainability criteria

	Yes	No	Exempt	Unknown
Meets the land criteria	119	0	341	62
Meets the greenhouse gas emissions criteria	502	11	1	8

4.25 There were 81 cases where bioliquid consignments did not meet the sustainability criteria or were reported as 'unknown'. These consignments consisted of fish waste, soap waste, compost liquor, sludge, rapeseed oil and surfactant. Where the criteria were not met, the gross calorific values of the consignments were very low and so they contributed little to electricity production. Therefore, very little or no deduction was made to ROC qualifying percentage for the use of unsustainable biomass and no ROCs were revoked. As with 2015-16, the low GHG emissions and gross calorific values could be an indication that these consignments were burnt as a method of waste disposal rather than electricity production. Where a consignment was reported as 'unknown', it was assumed that the fuel did not meet the sustainability criteria and so no ROCs were issued.

4.26 The 37 stations required to report against the sustainability criteria burnt 180.0 million litres of bioliquid consignments in 2016-17. This year saw a significant increase in the quantity of food waste used in bioliquid stations, as shown in **Figure 4.8**, overtaking soap waste as the primary liquid fuel. Similarly to 2015-16, the fuels used in the greatest quantities are wastes. The only product to make notable contribution is rapeseed oil. 'Other' bioliquids used include milk waste, fish waste, sludge, liquid woodflour filter cake and fatty acid methyl esters (FAME).

Figure 4.8: The total volumes of bioliquid reported by consignment

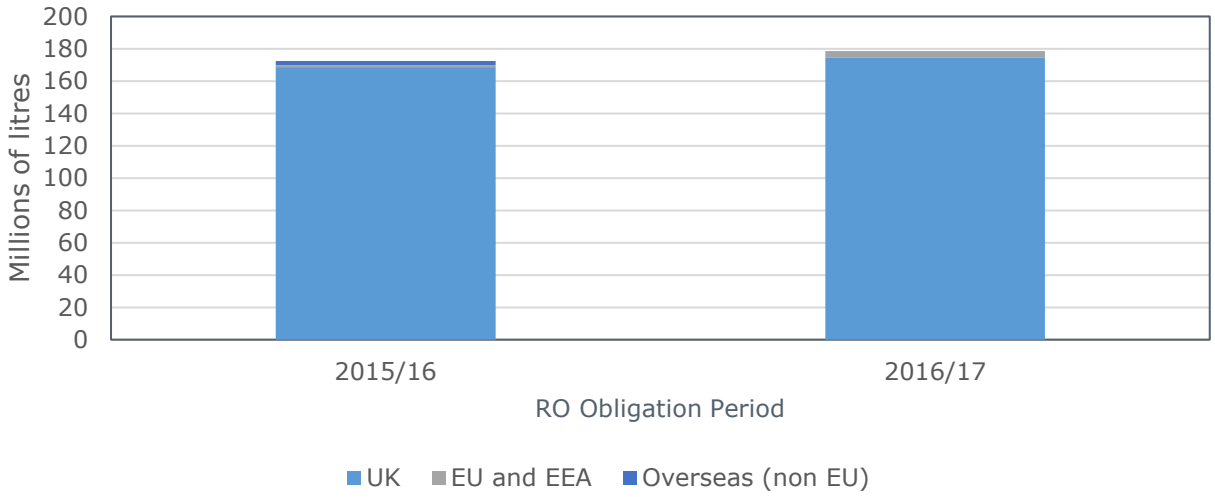


4.27 The majority of bioliquids, used in stations that reported against county of biomass origin, were sourced from within the UK (97.8%) as shown in **Figure 4.9**. In contrast to the other station technologies, there was only a small increase in the quantity of fuel used in bioliquid stations between 2015-16 and 2016-17; an increase of 3.4% from 172.5 million litres to 178.4 million litres. This small increase came from bioliquids obtained in the UK and in the

[43] The GHG emissions threshold for bioliquids rose from 35% to 50% on 1st January 2017.

EU and European Economic Area (EEA).[44] This was despite a decrease in the quantity sourced from non-EU overseas countries. The decrease in bioliquids sourced from non-EU overseas countries is likely to be one of the main contributors towards the improved weighted GHG emissions saving of 89.5% compared to 66.2% in 2015-16.

Figure 4.9: A comparison of the quantities of bioliquid used in the 2015/16 and 2016/17 obligation periods



[44] Some bioliquid was sourced from Norway, which is a member of the EEA and has the rights to free movement of goods across EU member states.

5. Compliance by licensed suppliers

Chapter summary

In 2016-17, suppliers presented 90.21 million Renewable Obligation Certificates (ROCs) towards the total UK obligation of 100.74 million ROCs. This resulted in the largest buy-out fund ever recorded since the beginning of the scheme in 2002. The combined sum redistributed to suppliers from the buy-out and late payment funds was £460 million for the 2016-17 obligation period. Each ROC was notionally worth £49.87, giving a scheme value of approximately £4.5 billion. All suppliers complied with their obligations except for Click Energy Limited, who did not pay the full amount (£324,946.28) to meet their obligation before the late payment deadline of 31 October 2017. However, they did make a partial payment (£162,473.14) after the late payment period had closed.

5.1 The obligation level is set by the Secretary of State and published by BEIS six months before each obligation period begins.[45]

5.2 The 2016-17 obligation level was announced by BEIS on 30 September 2015.[46] This required suppliers in England, Wales and Scotland to present 0.348 ROCs per MWh of electricity they supplied to their customers. Suppliers in NI had to present 0.142 ROCs per MWh. This was an increase of one percent in the obligation level from the previous year.

5.3 We set the buy-out price before each obligation period by taking the buy-out price from the previous obligation period and adjusting it in line with the change in the Retail Price Index (RPI)[47] during the previous calendar year. For the obligation period 2016-17 the price was set at £44.77 per ROC[48] – an increase of one percent from the 2015-16 value of £44.33.

5.4 The total obligation across all suppliers is the obligation level (ROCs per MWh) multiplied by the total amount of electricity they supplied (MWh). In 2016-17 the total supply was 286.3TWh to customers in GB and 7.8TWh in NI. Using the obligation levels in paragraph 5.2 above gave a total of 100.74 million ROCs. This is an increase of 16.3 million ROCs (16.2%) from the total obligation in 2015-16.

5.5 The obligation for all 91 suppliers that supplied electricity during the obligation period was set based on their overall supply volumes. Some licensed suppliers did not supply electricity in 2016-17 and so did not have an obligation. A breakdown by individual supply license is in Appendix 4. Suppliers with an obligation under the RO are not the complete group of licensed suppliers in the UK. A full list of all electricity supply licenses in GB is available from the Electronic Public Register on our Licensing website.[49] An equivalent list for NI is on the UR website.[50]

Information required by suppliers

5.6 After an obligation period (1 April – 31 March) each licensed supplier must:

[45] Articles 12 of the NIRO and ROS 2009 Orders and article 13 of the RO 2015 Order define these calculations to set the obligation.

[46] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/464685/Renewables_Obligation_Level_Calculations_for_2016-17.pdf

[47] RPI from the Office for National Statistics: https://www.ons.gov.uk

[48] See note 36.

[49] https://epr.ofgem.gov.uk/Document

[50] https://www.uregni.gov.uk/electricity-licenses

- estimate the amount of electricity it has supplied during the obligation period and submit these figures to us by 1 June,
- provide us with the final figures for the amount of electricity it has supplied by 1 July,
- comply with its obligations through one or a combination of the options below:
  - presenting ROCs to us by 1 September,
  - making a buy-out payment by 31 August for each ROC it has not presented, or
  - making a late payment by 31 October to meet any remaining obligation it has not met by 1 September. Late payments are subject to a daily interest penalty at an annualised rate of 5% plus the Bank of England base rate.[51]

Validation and submission of supply volumes

5.7 Appendix 5 of the 'Renewable Obligation: Guidance for Licensed Electricity Suppliers'[52] recommends a methodology for suppliers to follow when they report their supply volumes for an obligation period. This states that they should use settlement reports from Elexon[53] for supply in GB, and from Northern Ireland Electricity Networks (NIE)[54] for supply in NI.

5.8 Since 2015, when this process was first introduced, we obtain settlement reports from Elexon and NIE before suppliers submit their supply figures. An extract of the report is sent to each supplier for validation of their supply volumes. Suppliers can either accept the figures or explain any variance before submitting their figures.

5.9 There was one supplier who submitted their estimated figures to us after the 1 June deadline and two suppliers who submitted their final supply volumes after the 1 July deadline.[55] Out of 91 licensees who had an obligation in 2016-17, two went into receivership and have not submitted any supply data.

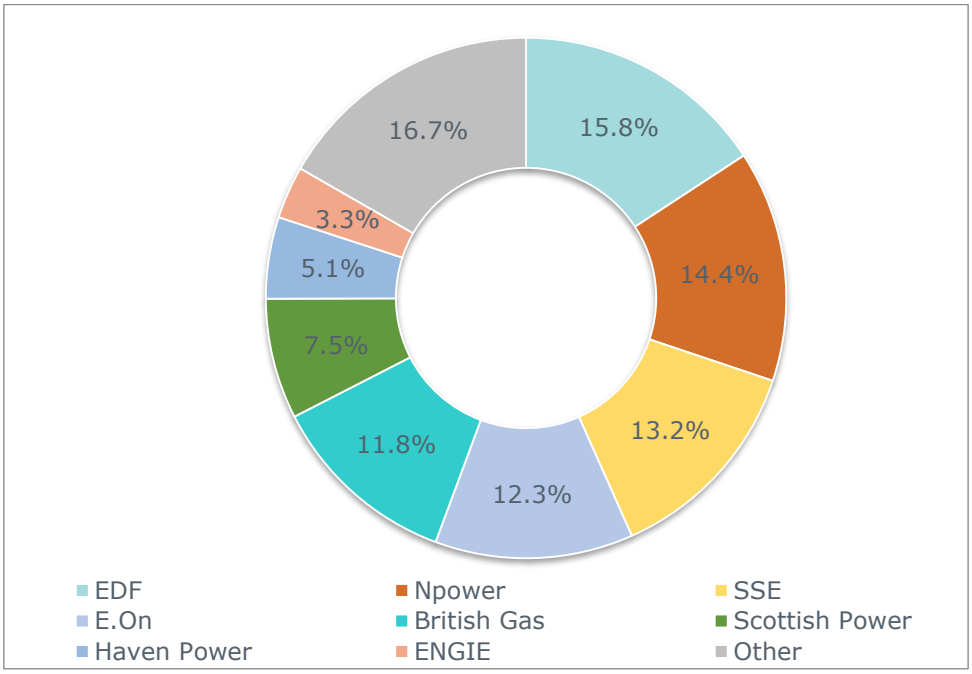
Share of obligation by suppliers

5.10 **Figure 5.1** shows how the total UK obligation was split between supplier groups.[56] Each supplier group with a share of the obligation of 3% or above is shown individually, whilst those with a share below 3% are grouped together under "Other".

5.11 The "big six" suppliers (British Gas, E.ON, EDF, Npower, Scottish Power and SSE) shared 74.95% of the obligation between them. This is down from 78.6% last year. Full details of suppliers obligations are included in Appendix 4.

[51] Defined in article 68(4) of the 2015 RO Order, article 44(4) of the 2009 ROS Order and article 41(4) of the 2009 NIRO Order.
[52] https://www.ofgem.gov.uk/sites/default/files/docs/ro_supplier_guidance_december_2015_finaldocx.pdf
[53] https://www.elexon.co.uk/
[54] https://www.nie.co.uk/
[55] A list of suppliers is provided in Appendix 4
[56] A list of supplier groups and their licenses is in Appendix 4.

Figure 5.1: Proportion of total obligation (RO, ROS, and NIRO combined) by supplier group in 2016-17



ROCs presented

5.12 Suppliers had a total of 172 obligations across the three Orders, 168 obligations of which were met.

- Suppliers met 61 of the 172 obligations by presenting ROCs alone. Of these, 25 were on the RO, 33 on the ROS, and three on the NIRO.
- Suppliers met 63 obligations entirely through either buy-out or late payments or a combination of both. Of these, 29 were on the RO, 33 were on the ROS and one on the NIRO.
- Suppliers met 44 obligations through a combination of buyout/late payments and ROCs. Of these 33 were on the RO, eight were on the ROS and three on the NIRO.
- Three suppliers did not meet their obligations for the following reasons:
    - Two suppliers (GB Energy Supply and Open Electric) that had a total of three obligations went into receivership during the 2016-17 Compliance Round.
    - One supplier in Northern Ireland (Click Energy) failed to make a late payment by 31 October legislative deadline. However, they did make a partial payment (£162,473.14) after the late payment period had closed.

Payments made by suppliers

5.13 **Table 5.1** summarises the obligation and ROCs presented by suppliers across the Orders. This shows that suppliers presented 90.21 million ROCs to us for compliance in 2016-17. This is an increase of 5.8 million ROCs, or 6.9%, on the 84.4 million they presented in 2015-16.

5.14 Suppliers met 89.54% of the total obligation by presenting ROCs to us. As expected, this is notably lower than the proportion presented in the previous reporting year (99.9%). This resulted in more suppliers 'buying out' all or part of their obligations by making a buyout and/or late payments in 2016-17 than in recent reporting years. Consequently, the buyout

fund and late paymemts fund were the largest since the RO began in 2002, totalling over £464.3 million.

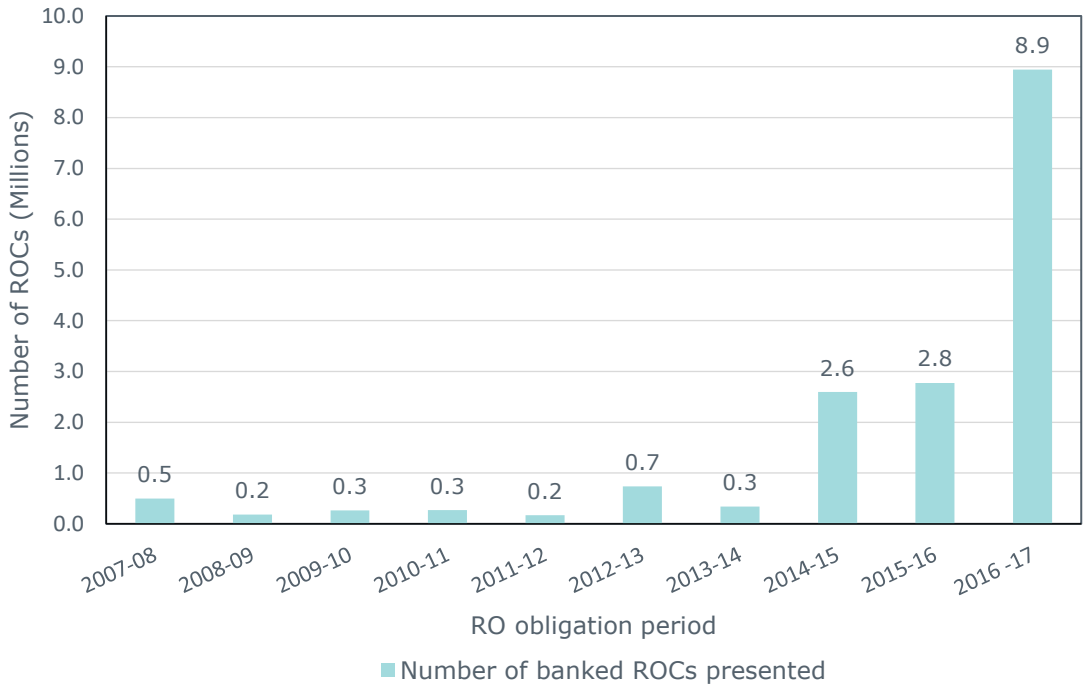
Table 5.1: Summary of ROCs presented towards each UK obligation in 2016-17

	RO	ROS	NIRO	UK total
Electricity supplied (MWh)	260,077,848	26,258,065	7,774,548	294,110,461
Obligation (ROCs)	90,507,092	9,137,807	1,103,986	100,748,885
ROCs presented	80,610,115	8,596,043	1,007,920	90,214,078
No. of obligations	88	75	9	172
Percentage of obligation met with ROCs	89.06%	94.07%	91.30%	89.54%

5.15 Suppliers are allowed to meet up to 25% of an obligation by presenting unused ROCs from the previous obligation period[57] (banked ROCs). Due to the high volume of ROCs issued in 2015-16, a large number of banked ROCs were available for suppliers to present to us in 2016-17. Suppliers presented around 8.9 million banked ROCs, a significant increase from the 2.8 million banked ROCs presented in the previous year. **Figure 5.2** shows that the number of banked ROCs presented in the 2016-17 obligation period was significantly higher than previous obligation periods.

[57] Defined in article 14(2) of the 2015 RO Order and articles 13(2) of the 2009 ROS and NIRO Orders

Figure 5.2: Number of banked ROCs presented each obligation period since 2007-08



5.16 Of the 86.2 million ROCs we issued in 2016-17, around 4.9 million were not presented by suppliers. These will be available as banked ROCs next year. This is currently significantly lower than the number of banked ROCs (~8.9m) that were presented by suppliers towards their 2016-17 Obligations. This number of available banked ROCs will continue to rise as we accredited and issue ROCs to stations commissioned in 2016-17.

5.17 There is a cap on ROCs from electricity generated from bioliquids[58] that can be presented by suppliers towards their obligations. This limits suppliers to meeting 4% of an obligation using bioliquid ROCs. Some bioliquid ROCs are exempt from the cap. Details of the exemptions are in section 4.5 of our supplier guidance document.[59]

5.18 In 2016-17 suppliers presented 87,290 bioliquid ROCs to us, across the obligations, which qualified under the cap. This is 0.09% of the total obligation, so well below the 4% cap. However, this is almost 48% greater than the qualifying bioliquid ROCs presented by suppliers last year. Suppliers also presented 1,707,067 cap-exempt bioliquid ROCs towards their 2016-17 obligation, a 26% increase on those presented by suppliers in the 2015-16 obligation period (1,352,131).

5.19 **Table 5.2** summarises all bioliquid ROCs presented by suppliers towards their obligations by RO year. This is effective from the 2013-14 RO year when the cap on the number of bioliquid ROCs a supplier can present towards its obligation was first introduced.

[58] The bioliquid cap described in article 14 (3) and (4) of the 2015 RO Order and in the 2013 amendments to articles 13 of the 2009 RO and NIRO Orders

[59] https://www.ofgem.gov.uk/sites/default/files/docs/ro_supplier_guidance_december_2015_finaldocx.pdf

Table 5.2: Qualifying and non-qualifying Bioliquid ROCs presented by suppliers towards their obligations since 2013-14 RO year

Compliance Period/ RO Year	No. of bioliquid ROCs submitted by suppliers which are exempt from the 4% cap	No. of bioliquid ROCs submitted by suppliers which are included in the 4% cap	Total qualifying and non-qualifying BL ROCs presented
CP12 - 2013/14	851,836	143,498	995,334
CP13 - 2014/15	874,999	29,301	904,300
CP14 - 2015/16	1,352,131	58,973	1,411,104
CP15 - 2016/17	1,707,067	87,290	1,794,357

Payments made

5.20 Suppliers who chose to make buy-out payments paid a total of £445,799,488.34 into the buy-out funds by the legislative deadline of 31 August.

5.21 Across the schemes, 16 suppliers covering 21 obligations[60] did not meet the deadline for making buy-out payments. All but one supplier complied with their obligations by making late payments by 31 October, totalling £18,510,142.63. The remaining supplier, Click Energy, did not make its late payment in full by 31 October and so did not comply with its obligation for 2016-17 (£324,946.28). It did, however, make a partial payment in full (£162,473.14) after the late payment period had closed.

5.22 **Table 5.3** summarises the payments suppliers made towards each UK obligation in 2016-17.

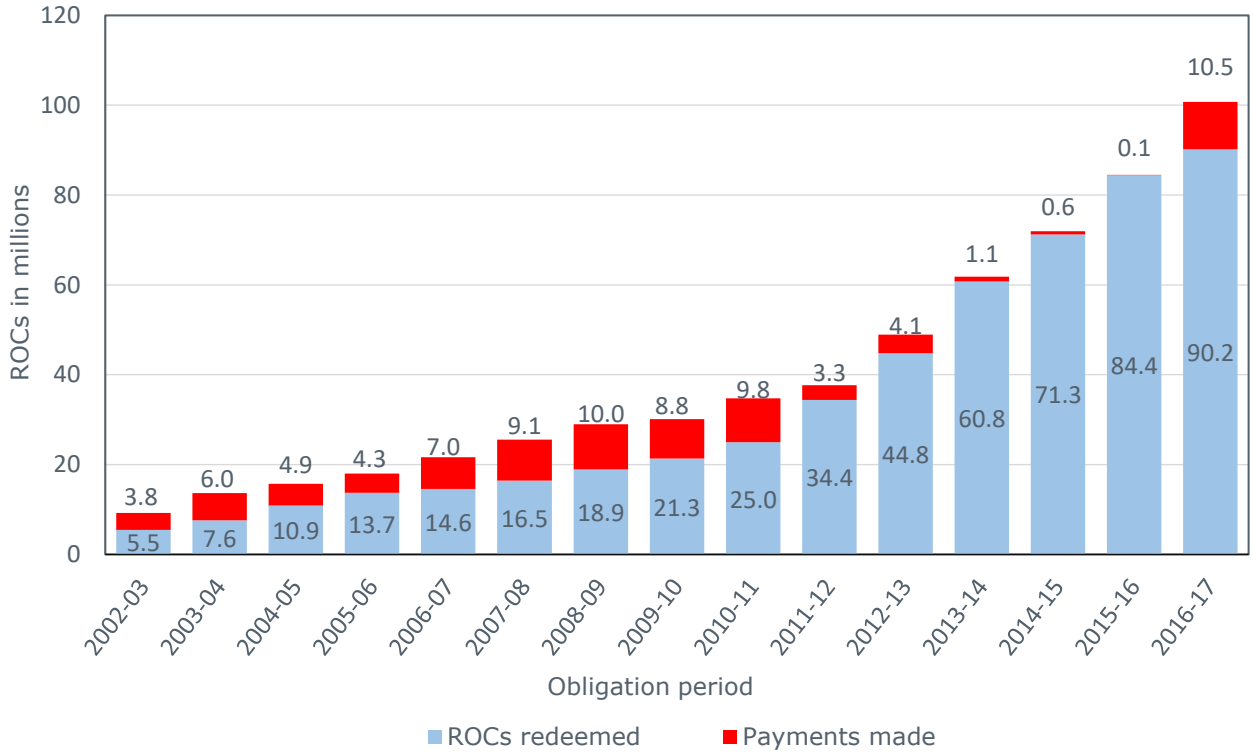
Table 5.3: Payments made towards each UK obligation in 2016-17

	RO	ROS	NIRO	UK total
Buy-out payments made	£420,464,816.88	£21,416,490.60	£3,918,180.86	£445,799,488.34
Late payments made	£16,583,895.66	£1,882,281.41	£43,965.56	£18,510,142.63

5.23 **Figure 5.3** shows the trend in total UK obligation and the proportions met through ROCs and payments respectively since the RO began in 2002-03. The height of the columns represents the total obligation each year. The blue sections represent the proportion of the obligation that suppliers met by presenting ROCs, the red sections represent the payments they made (both buy-out and late). This shows a significant drop in the proportion of the total obligation met by ROCs in 2016-17 in comparison to previous years.

[60] Five of these suppliers had to make late payments in both England & Wales and Scotland.

Figure 5.3: Trend in UK obligation and proportion met through ROCs and payments since 2002-03



Redistribution of the buy-out and late payment funds

5.24 We redistribute the buy-out and late payment funds to suppliers using the single recycling mechanism. This means that we pay out the aggregate of the funds across the three obligations to suppliers, in proportion to the amount of ROCs each supplier presented across the three Orders, regardless of the Order under which a supplier had its obligations.

Table 5.4 – Summary of buy-out and late payments

	RO	ROS	NIRO	UK total
Buy-out payments	£416,356,635	£21,207,146	£3,879,870	£441,443,651
Late payments	£16,587,041	£1,882,607	£43,971	£18,513,619
Totals	£432,943,676	£23,089,753	£3,923,841	£459,957,270

5.25 As shown in **Table 5.4**, the combined sum redistributed to suppliers from the buy-out and late payment funds was nearly £460 million for the 2016-17 obligation period. Full information on payments made to individual supply licenses is included in Appendix 4. We withdrew £4.4 million for our scheme administration costs[61] from the buy-out funds, accounted for interest accrued on the buy-out payments while in our accounts, and rounded the

[61] This includes UR's costs (£1,023,009m) and Ofgem's costs (£3,384,805m).

redistribution amounts down to the nearest whole pound. We then made the redistribution payments on 18 October 2017,[62] in advance of the legislative deadline of 1 November.

5.26 We redistributed £18.5 million from the late payment fund, on the same basis as the buy-out funds (though without the withdrawal of administration costs) on 20 November 2017.[63] This was in advance of the legislative deadline of 1 January 2018.

5.27 **Table 5.5** and **5.6** provide a detailed summary of the buy-out and late payments account activity.

Table 5.5: Summary of buy-out fund account activity in 2016-17

	RO	ROS	NIRO
Buy-out payments made	£420,464,816.88	£21,416,490.60	£3,918,180.86
Interest accrued on Buy-out payments (10 July 17 to 11 Oct. 17)	£47,683.73	£3,927.20	£461.53
Amount withdrawn for Admin.costs	£4,157,319.58	£211,753.60	£38,740.81
Amount paid out from Buy-out funds to eligible suppliers	£416,356,635.00	£21,207,146.00	£3,879,870.00
Buy-out funds closing account balances after redistribution	£28.77	£33.80	£32.64

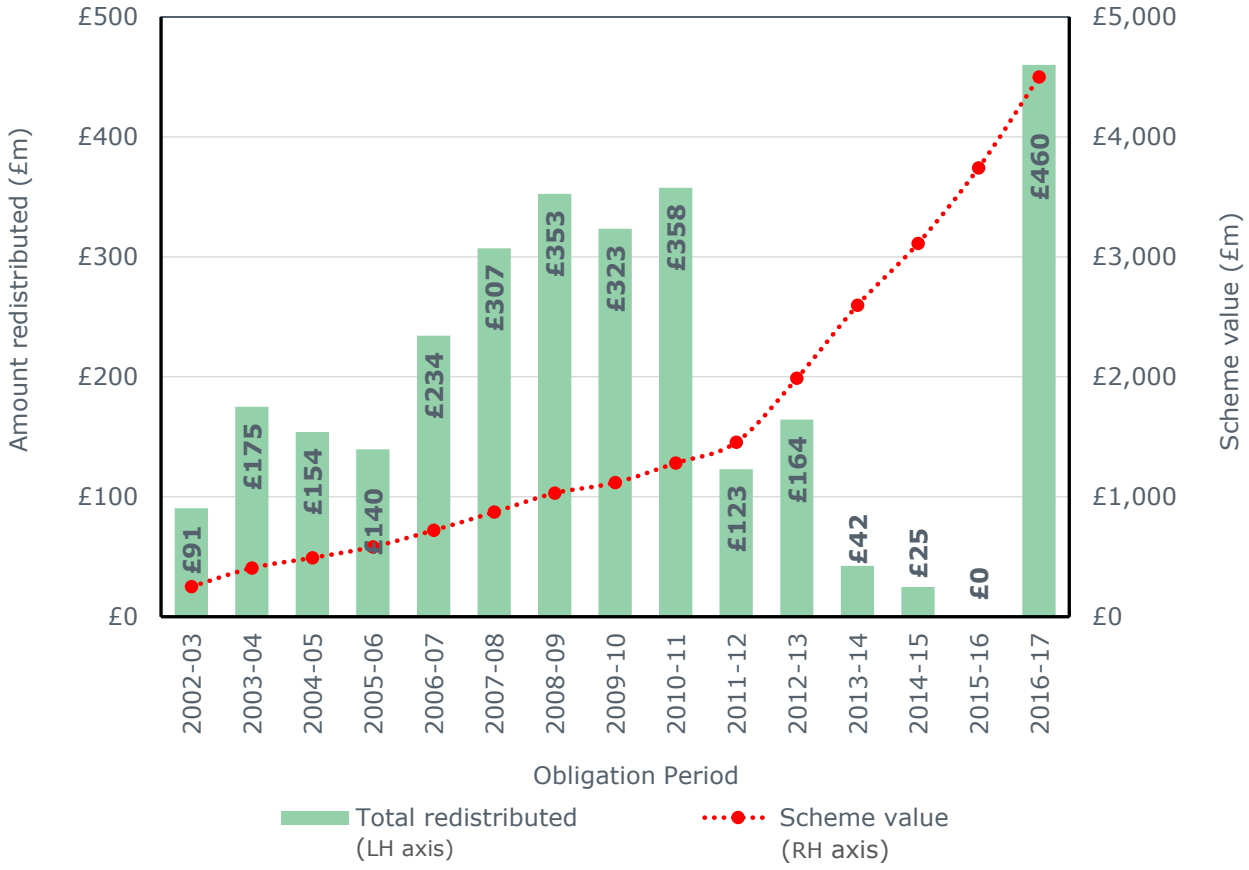
Table 5.6: Summary of late payments account activity in 2016-17

	RO	ROS	NIRO
Late payments made	£16,583,895.66	£1,882,281.41	£43,965.56
Interest accrued on Late payments (11 Sept. to 19 Nov. 2017)	£3,176.62	£369.70	£8.68
Amount paid out from Late-payment funds to eligible suppliers	£16,587,041.00	£1,882,607.00	£43,971.00
Late payment funds closing account balances after redistribution	£33.23	£31.17	£29.20

5.28 **Figure 5.4** shows the amounts we have redistributed each year and the growth in value of the scheme, since its introduction in 2002.

[62] https://www.ofgem.gov.uk/publications-and-updates/renewable-obligation-number-rocs-presented-towards-201617-uk-obligation
[63] https://www.ofgem.gov.uk/publications-and-updates/renewables-obligation-late-payment-distribution-2016-2017

Figure 5.4: Total payments redistributed to suppliers and scheme value since 2002-03



ROC recycle value

5.29 As suppliers presented 90.2m ROCs, the ROC recycle value (the amount that the supplier received back for each ROC they presented) for the 2016-17 obligation period was £5.10. When added to the buy-out price of £44.77 for each ROCs they presented, the total notional worth of a ROC for for this obligation period was was £49.87.

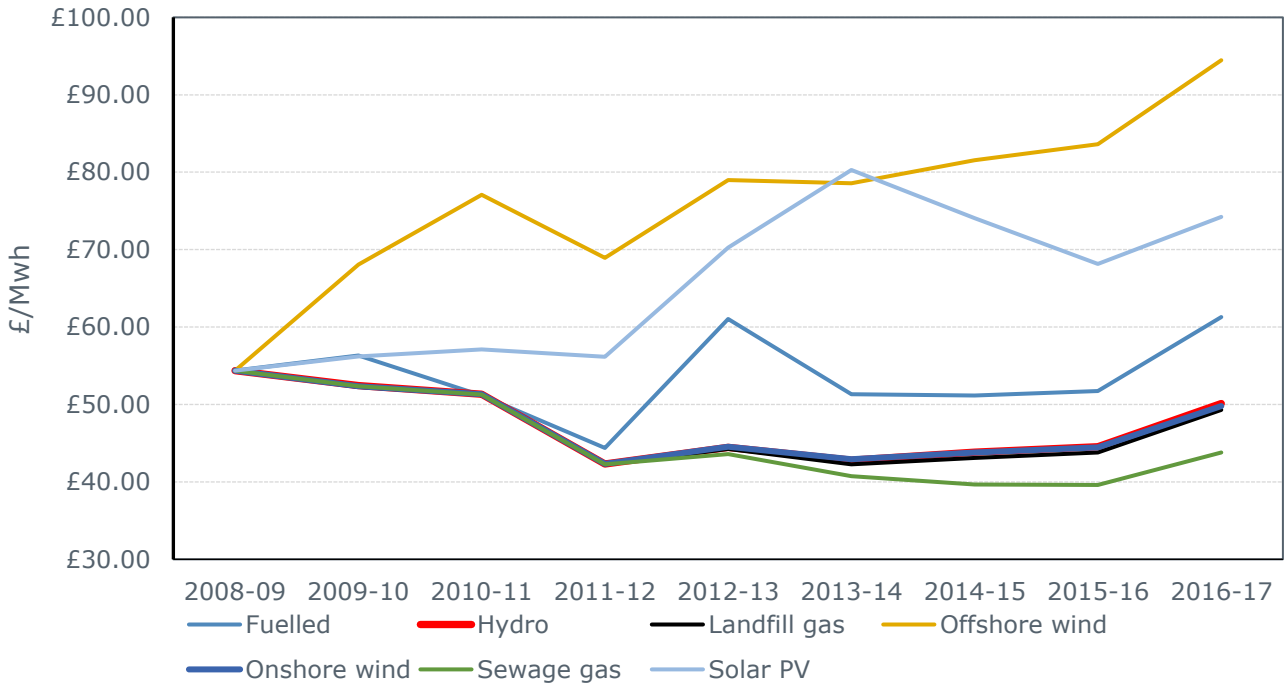
Table 5.7: Determination of ROC recycle value since 2008-09

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Total of buy-out and late payments redistributed	£353m	£324m	£358m	£123m	£164m	£42m	£25m	£0m	£460m
Total ROCs presented	18.9m	21.3m	25.0m	34.4m	44.8m	60.8m	71.3m	84.4m	90.2m
Recycle value per ROC presented	£18.61	£15.17	£14.35	£3.58	£3.67	£0.70	£0.35	£0.00	£5.10
Worth of a ROC to a supplier	£54.37	£52.36	£51.34	£42.27	£44.38	£42.72	£43.65	£44.33	£49.87
Average ROCs issued/MWh	1.00	1.04	1.07	1.12	1.27	1.27	1.28	1.31	1.32
Support per MWh supplied	£54.37	£54.45	£54.93	£47.34	£56.36	£54.25	£55.87	£58.07	£65.88

5.30 **Table 5.7** summarises the ROC recycle value and support per MWh supplied since 2008-09. The total value of the scheme in an obligation period is the worth of a ROC multiplied by the number of ROCs presented for compliance by suppliers. In 2016-17 suppliers presented 90.2 million ROCs each worth £49.87, giving a scheme value of £4.5 billion.

5.31 The average number of ROCs issued per MWh (see **Table 5.7**) multiplied by the worth of a ROC gives the support (in £) per MWh generated for an obligation period. There was a small increase in the ROCs per MWh ratio and a fairly notable increase in the worth of a ROC from 2015-16 to 2016-17. Correspondingly there was also a notable increase in the support per MWh generated, from £58.07 to £65.88. This is largely attributed to a decrease in the proportion of the obligation that was met through presenting ROCs compared with last year. Other than a sharp drop 2011-12 and increase in 2016-17, this value has remained fairly stable since 2008-09 (£55 ± £2.50).

Figure 5.5: Value of support per MWh for each technology since 2008-09



**Tidal and wave power are not included here due to the very small number of ROCs each technology has received*

5.32 **Figure 5.5** shows the cost of support in pound per MWh broken down by technology type. The chart begins in 2008-09, before banding, when all technologies received 1 ROC per MWh generated. In 2016-17 the level of support has increased across all technology groups when compared to the preceding reporting year (2015-16). This was due to an increase in the ROC recycle value (£5.10), which was zero in 2015-16 RO year.

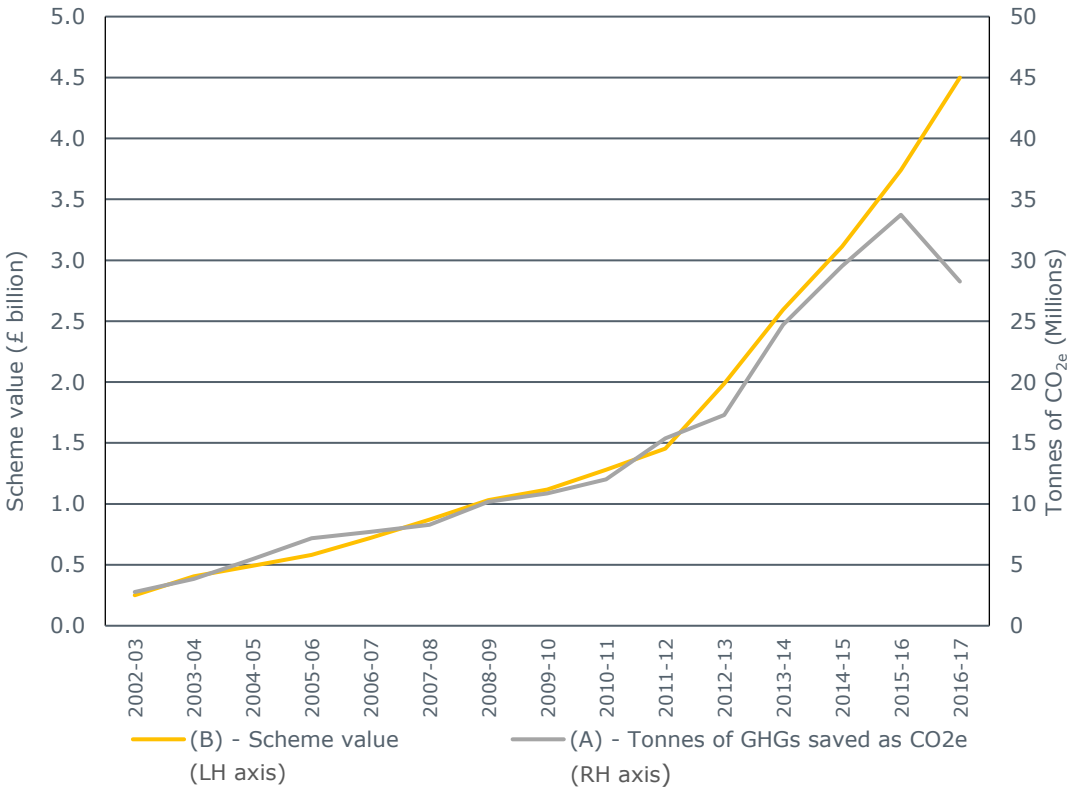
The most obvious change on last year is the increase in the cost of support per MWh for each technology type. This is due to the significant rise in support per MWh across the entire scheme as noted in paragraph 5.30.

Carbon emissions

5.33 Using the scheme value of £4.5 billion and the estimated GHG emissions saved under the scheme of 28.3 million tonnes (as explained in paragraph 3.23), the cost of GHG emissions saved in 2016-17 was £159.24 per tonne (CO_2e). This is significantly higher than last year's value of £111.08. Whilst the number of tonnes of GHG emissions saved decreased from 33.7 million tonnes to 28.3 million tonnes, the scheme value increased from £3.7 billion to £4.5 billion. This was due to the lower greenhouse gas (GHG) conversion factor in 2016-17.

5.34 We have used the methodology described in paragraphs 3.22 – 3.24 in Chapter 3, and Defra's figures for each year since 2002, to plot GHG emissions saved against scheme value in **Figure 5.6**.

Figure 5.6: Scheme value and yearly GHG savings since 2002-03



Mutualisation

5.35 If a supplier is unable to meet its obligation under the RO or ROS – for example, if it has gone into administration – there may be a shortfall in the buy-out fund. The mutualisation provision in RO legislation[64] is designed to account for this. Mutualisation is triggered above a certain threshold, known as relevant shortfall.[65] Mutualisation does not apply in NI.

5.36 If mutualisation is triggered, all suppliers with an obligation under the RO and ROS must make additional payments to make up the shortfall. These payments are capped at the mutualisation ceiling, an amount we publish every year before the start of the obligation period. We adjust this in the same way as the buy-out price, in line with the change in RPI from the previous calendar year.

5.37 The mutualisation ceilings for 2016-17 were approximately £270 million in England and Wales and £27 million in Scotland.

5.38 Mutualisation payments would be redistributed to suppliers on the same basis as the buy-out and late payment funds, using the single recycling mechanism. However, even though mutualisation does not apply in NI, NI suppliers will receive a share of any mutualisation funds from the RO and ROS.

5.39 Despite one supplier with an obligation under the RO and ROS was being unable to meet its obligation, the shortfall in the buyout funds was well below the threshold for triggering

[64] Mutualisation is described in articles 72 – 77 of the 2015 RO Order and articles 48 – 52 of the 2009 ROS Order.
[65] Article 72 in the 2015 RO Order and Schedule 3 in the 2009 ROS Order define the amount of relevant shortfall.

mutualisation in 2016-17. Mutualisation has never been activated in any previous obligation period.

Trends in compliance

5.40 We have developed a Supplier Performance Report (SPR), where incidents of non-compliance are recorded and scored consistently across the schemes. The SPR provides transparency to consumers and aims to increase accountability around energy companies' performance on the scheme and help them improve their compliance. The first SPR, covering the period 1 January 2016 – 31 December 2016 was published on our website in September 2017.[66]

5.41 During the 2016-17 compliance round, we recorded 32 incidents, including minor administrative issues. The main incidents involved late payments to the buy-out or late payment fund, late submission of supply data in respect of the 1 June and 1 July deadlines, inaccuracies of the information provided to Ofgem, ROCs retired incorrectly and erroneous payments made. Click Energy also failed to make its late payment in full and therefore, did not comply with its obligation.

5.42 As this is the first year we have published Supplier Performance Report (SPR) figures we cannot comment on any existing trends. However, these baseline figures will enable us to do so in future scheme years. We would expect to see the number of incidents logged on the SPR decreasing in future years as suppliers improve their compliance.

[66] https://www.ofgem.gov.uk/environmental-programmes/e-serve/maps-and-data/supplier-performance-report-government-environmental-programmes

6. Audits and Counter Fraud under the RO

Chapter summary

Our auditors carried out 47 audits of large generators across a range of technology types and audited 113 Northern Ireland micro generators. Our auditors also audited four licensed suppliers on their supply volume submission processes. We rated the majority of generator and all supplier audits as Good or Satisfactory.

Audits of generating stations

6.1 We expect all generating stations accredited under the Renewable Obligation (RO) to submit correct information to us when applying for accreditation. They also need to inform us of any changes that might affect their accreditation and to submit accurate, non-fraudulent data when claiming Renewable Obligation Certificates (ROCs). As set out in our published guidance, each year we carry out a programme of audits of generating stations to verify this.

6.2 The objectives of our generator audit programme are to:

- verify output data submissions (based on which we issue ROCs),
- provide assurance that the accreditation information is correct,
- detect fraud and non-compliance,
- deter the fraudulent or careless submission of inaccurate data, and
- detect departures from good practice.

6.3 We give each audit a rating depending on the findings. These ratings are:

- **Good** (no issues identified at audit),
- **Satisfactory** (minor issues or instances where the generator is not following best practice),
- **Weak** (the audit identified moderate issues of non-compliance), and
- **Unsatisfactory** (major instances of non-compliance or suspected fraud identified).

6.4 We receive a full report of the auditor's findings after each site visit. Once we have approved them, we share a copy with the operator of the generating station asking them to comment on the findings and to rectify all problems. We only close an audit once we are sure that all corrective action has been taken to address all problems identified. In some cases, we may temporarily suspend the issue of ROCs while we wait for a station to provide outstanding information or take corrective actions.

2016-17 generator audits

6.5 In 2016-17 we contracted Black & Veatch to carry out technical audits of 47 large-scale (>50kW) generating stations. 37 of these generators are situated in England or Wales, four in Scotland and six in Northern Ireland. The generating stations that we selected for audit consisted predominantly of those about which we had specific concerns, together with a small number which were randomly selected or representative examples of a particular class of generator (for example of technology type). **Table 6.1** shows the breakdown of the audits by generating technology type and the rating given by the auditor.

Table 6.1: Technologies audited in 2016-17

Technology	Stations audited	Rating awarded by auditor			
		Good	Satisfactory	Weak	Unsatisfactory
Fuelled	8	0	3	4	1
Hydro	2	0	2	0	0
Landfill Gas	3	0	2	1	0
Offshore Wind	1	0	1	0	0
Onshore Wind	7	0	6	0	1
Onshore Wind (pre-accreditation)	2	1	1	0	0
Solar PV	13	0	5	3	5
Solar PV (pre-accreditation)	11	0	7	0	4
TOTALS	47	1	27	8	11

6.6 Across all the audits this year, we rated one as "good" and 27 "satisfactory"; eight were rated "weak" and 11, "unsatisfactory". By comparison, the respective figures for the previous year (2015-16) were five, 22, 12 and six. Overall, the 2016-17 results can be considered broadly similar to those in 2015-16. The proportion of generators selected for audit on the basis of existing concerns was also very similar.

6.7 Among the 47 audits we carried out pre-accreditation audits of 11 solar PV and two onshore wind generating stations where we wanted additional assurance that they had commissioned on the claimed date. In most cases, this was just before additional scheme eligibility requirements to satisfy grace period criteria and a drop in the ROC banding rate took effect.

6.8 Four of the solar PV audits were rated "unsatisfactory", principally due to possible inaccuracies in the proposed commissioning date. In two cases, it was determined that the commissioning dates of the generating stations were later than originally claimed and they subsequently had to re-apply for accreditation under the RO grace period provisions. Both have now been accredited and have accordingly received the correct (lower) ROC bandings. In another case the operator of the the generating station was able to produce further evidence to verify the proposed commissioning date and the audit is now closed. The final of these "unsatisfactory" audits remains open and the station concerned has not yet received accreditation and hence it has not received any ROCs either.

6.9 In addition, the pre-accreditation audit of one of the onshore wind generators found that although it had commissioned by the relevant date, and was therefore rated "satisfactory", the TIC of the generating station was significantly lower that that put forward in the accreditation application. In this instance the TIC of the generating station was reduced prior to accreditation being granted.

6.10 Audits of accredited generators produced a further seven "unsatisfactory" ratings. Five resulted from uncertainties about the commissioning date of solar PV stations, suggesting these may have been after key legislative dates affecting eligibility and ROC banding. We are currently engaged in a detailed examination of evidence relating to these stations to determine the correct commissioning date in each case.

6.11 The audit of one biomass fuelled generator gave rise to significant concerns around its Fuel Measurement and Sampling (FMS) processes. These were largely addressed before the generator ceased ROC claims in April 2017. One onshore wind generator in Northern Ireland

was found to have a Declared Net Capacity (DNC) apparently slightly in excess of 250kW which would have affected the applicable ROC banding if maintained. The station implemented measures to permanently constrain the output of its turbine such that its DNC was limited to 250kW and this value was maintained within its accreditation application.

6.12 Our follow-up of one small hydro generator audit showed that not all commissioning tests had been successfully completed at the stated time. This was not rectified until we highlighted the matter to the operator. As a result we decided to set back the generator's effective accreditation date by over three years. It was not possible to revoke the 1,386 ROCs issued during this period because all the ROCs had been passed on to a licensed supplier and presented for compliance. Therefore, as provided for by Article 41A of NIRO Order[67] we are currently withholding the issue of the same number of ROCs against the generator's reported generation.

6.13 Taking a more general view of the audit findings, as in previous years, for a large proportion of the audits the operator did not provide all the information requested by the auditor before completion of the audit report. In such cases we always request the outstanding information. Inaccuracies in accreditation information were relatively common. Incorrect commissioning dates were identified in more nearly two-thirds of the audits, and inaccurate figures for DNC and/or TIC were also identified in more than half of the audits. In most cases these were small discrepancies without impact on ROC banding. Inaccurate single line diagrams and incorrect meter details were also found in about one third of cases.

6.14 Other fairly common findings were of errors in some reported generation figures, although these did not always significantly affect ROCs claimed. In one instance the audit found evidence to suggest that the generating station might not be separate from a neighbouring RO accredited installation. However, following further assessment, Ofgem upheld the original determination that the stations were separate. **Table 6.2** lists the most common issues identified in the 2016-17 generator audits.

Table 6.2: Issues identified during the 2016-17 generator audits

Issues identified by audits	No. of instances
Requested documents/information not provided at audit	32
Commissioning date discrepancy in application for accreditation	30
DNC and/or TIC incorrect in application for accreditation	20
Incomplete or inaccurate Single Line Diagram submitted with application for accreditation	18
Meter details incorrect in application for accreditation	19
Other minor errors in application for accreditation	21
Fossil fuel/standby generator not shown/details incorrect in for accreditation	2
Over-claim of ROCs	6
Under-claim of ROCs	10
Minor discrepancies in reported volumes (not affecting ROC claims)	3
Generating station possibly not separate	1
Minor FMS discrepancy	4
FMS procedures not being followed	3

6.15 Arising from the audits, there were 10 cases in which we found that a small number of ROCs had been under-claimed. Leaving aside stations for which ROC banding was revised as a result of the audit, there were six instances of ROCs having been over-claimed. We addressed all over- and under-claims by revoking, withholding or issuing additional ROCs as appropriate.

[67] http://www.legislation.gov.uk/nisi/1977/2157/article/41A

2016-17 audits of Northern Ireland microgenerators

6.16 Under the NIRO, solar PV generators with capacities below 50kW that commissioned and applied for accreditation in the period 1 October 2015 to 30 September 2016 receive three ROCs/MWh, whereas those commissioned 1 October 2016 – 31 March 2017 receive two ROCs/MWh. The NIRO closed to new generation capacity from 1 April 2017. In view of the significance of the banding drop and closure dates, we asked Black & Veatch to visit a sample of 107 solar PV micro generators during March 2017, to verify accreditation information provided to us.

6.17 The site audits showed some inaccuracies in information provided to us for the majority (97) of the generating stations. These were mostly in respect of TIC or DNC values, or metering information, which did not affect eligibility. One generator was found not to have commissioned at the time of the visit and as a result accreditation has not been approved.

6.18 In addition we asked Black & Veatch to audit four solar PV and two onshore wind micro generators which are all situated on the same private wire network in Northern Ireland. The main focus of these audits was to determine whether the stations should be considered as separate. The audits confirmed that this was the case.

Audits of suppliers

6.19 Given the large financial sums involved in the RO and the critical importance of suppliers reporting accurate supply volumes for us to determine their obligations, we carry out an annual programme of audits of licensed suppliers. These take place in July and early August, soon after suppliers have submitted their annual electricity supply figures for the purposes of RO compliance.

6.20 The objectives of our supplier audit programme are to gain assurance on the accuracy of electricity supply figures submitted to us to deter the fraudulent or careless submission of inaccurate data and to detect departures from good practice.

6.21 We use the following criteria, as part of a risk-based approach, to select the suppliers to audit:

- any of the big six suppliers not audited in the previous two years,
- new suppliers (those for which the 2016-17 obligation period was the first complete year they held a supply licence, and had supplied electricity during the period),
- suppliers who do not (or cannot) use our recommended methodology for reporting supply volumes,
- any suppliers whose figures had given cause for concern in the present or previous obligation periods, including follow-up audits from the previous year.

2016-17 supplier audits

6.22 Before suppliers submit their annual supply figures by 1 July, we receive data flows from Elexon which enable us to estimate likely supply figures for most suppliers. This means we identify many anomalies and address them with suppliers before the annual audits. This reduces the scope for the auditors to find undetected discrepancies in reported supply volumes. However, the audits remain useful in helping to determine the source of these discrepancies and in identifying weaknesses in suppliers' internal assurance processes.

6.23 Following our analysis of Elexon data flows, we decided to audit four suppliers in 2016-17, the same number as in 2015-16, although fewer than in earlier years. As in previous

years, we contracted Grant Thornton UK LLP to carry out the audits for 2016-17. We apply the same audit ratings to the supplier audits as we do to the generator audits.

6.24 We rated one of the suppliers as "good", two as "satisfactory" and one "unsatisfactory". The primary reason for the "unsatisfactory" audit rating was that the supplier's supply volumes could not be reconciled with the relevant Elexon dataflows, nor was it supported by accurate underlying data. We worked with the supplier concerned to establish the causes for their incorrect submission. Their submission was then recalculated using a correct methodology and re-submitted so that their obligation could be determined in line with legislative requirements.[68]

6.25 Other weaknesses identified by the unsatisfactory audit included deficient internal guidance notes on the RO compliance process and no formal plans in the event of the sole account user's unavailability. These, or similar, weaknesses were also noted in some of the other three good and satisfactory audits. One supplier was found not to have followed our recommended method for calculating its annual supply volume – although only a small error had resulted. There were also instances of suppliers who were not managing their Register accounts appropriately, in particular where lists of registered users were out of date or where passwords were being shared between users. For data security and counter fraud reasons, we strongly discourage sharing of usernames and passwords – this is included within the terms and conditions of use of the Renewables & CHP Register. If we identify that personal login details have been shared with another party, we may lock the account(s) in question.

6.26 Three of the four suppliers have now addressed the respective audit findings to our satisfaction and we have closed these audits. However, one supplier has not fully addressed all audit findings and the audit remains open.

Counter Fraud on the RO

6.27 Ofgem has a dedicated Counter Fraud team which provides fraud prevention, detection and investigation support to all schemes we administer.

6.28 During the 2016-17 obligation period, the team received 16 concerns of suspected fraud on the RO involving 32 sites. These were raised by our operational staff and other sources. There are on-going investigations into a large number of these sites.

6.29 There were no referrals in relation to the NIRO scheme.

[68] This is likely discussed the supplier compliance chapter of the report.

7. Changes in legislation

Chapter summary

BEIS and the devolved administrations in Scotland and NI introduced a number of amendments in 2016 and 2017. The amendments in 2016 related to the closure of the RO to on-shore wind across the UK. The RO closed to all other technologies in 2017. Grace periods are available for all technologies in certain circumstances. In 2017, there have been a few further amendments in relation to the Indirect Land Use Directive (ILUC) and RO exemption for Energy Intensive Industries.

Context: RO closure

7.1 In July 2011, the UK government announced its intention to close the RO to new generating capacity from 31 March 2017. To continue to support low-carbon electricity generation, the government has introduced the Contracts for Difference (CFD) scheme, which opened for applications on 16 October 2014.

7.2 In 2014, DECC (now BEIS), the Scottish Government and the Department of Enterprise Trade and Investment Northern Ireland (DETINI), now the Department for the Economy (DfE), made a number of amendments to the RO setting out the transitional arrangements from the RO to Contracts for Difference (CFD).

7.3 In the 2015-16 obligation year, the UK governments introduced further amendments relating to sustainability criteria, the early closure of the RO to large-scale and small-scale solar PV and the closure of the NIRO.

7.4 In the 2016-17 obligation year, the UK governments closed the RO scheme early to on-shore wind. This is detailed below.

RO, ROS and NIRO closures in 2016

Closure of RO to onshore wind

7.5 The Energy Act 2016 amended the Electricity Act 1989 to close the RO schemes for new onshore wind generating capacity in England, Scotland and Wales from 13 May 2016. The amendments introduced five grace periods. Subject to one or more of three specified conditions being met, the grace periods enable onshore wind generating capacity to be accredited on or after 13 May 2016:

- approved development condition: for stations where a grid connection agreement, land rights and the planning permission were in place on or before 18 June 2015,[69]
- grid or radar delay condition: for generating stations that have been subject to grid connection or radar works delays that were not because of a breach by a developer,
- investment freezing condition: for generating stations where required finance could not be obtained, as a result of legislative uncertainty before the Energy Act 2016 became law.

[69] http://www.parliament.uk/documents/commons-committees/energy-and-climate-change/Leadsom-to-chair-231115.pdf

7.6 We published guidance[70] on this early closure and the associated grace periods available.

Closure of NIRO to onshore wind

7.7 The Renewables Obligation Closure Order (Northern Ireland) 2016 closed the NIRO scheme for new large (>5MW) onshore wind generating capacity from 1 April 2016. This Order also introduced five grace periods. Subject to one or more of three specified conditions being met, the grace periods enable large onshore wind generating capacity to be accredited after 1 April 2016.

7.8 Subsequently, the Renewables Obligation Closure (No. 2) Order (Northern Ireland) 2016 closed the NIRO scheme for new small (≤5MW) onshore wind generating capacity from 1 July 2016. This Order also introduced five grace periods enabling stations to be accredited after this date, also subject to one or more of three specified conditions being met.

7.9 The grace period conditions in both cases were:

- approved development condition: for stations where a grid connection agreement, land rights and the planning permission were in place on or before the relevant eligibility date,[71]
- grid or radar delay condition: for generating stations that have been subject to grid connection or radar works delays that were not because of a breach by a developer,
- investment freezing condition: for generating stations where required finance could not be obtained as a result of legislative uncertainty before the relevant order was made.

7.10 In June 2017, we consulted on amending the templates for the "Declaration of grid or radar delay condition" and the "Declaration of investment freezing condition" in our three published guidance documents on the closure of the RO to onshore wind. We published our consultation response,[72] along with the final versions of these guidance documents, in December 2017.

RO amendments in 2017

RO exemption for Energy Intensive Industries (EIIs)

7.11 In early 2016, the government announced that it would provide an exemption for eligible EIIs from the indirect costs of the RO and FIT schemes, to ensure that they have long-term certainty and remain competitive.

7.12 In April 2016, the government published a consultation setting out how this exemption might be implemented in practice. This considered territorial scope and looked in detail at the changes that would need to be made to the operation and administration of the RO scheme.

7.13 Both BEIS and the Scottish Government published consultation responses in July 2017, and both the Renewables Obligation (Amendment) (Energy Intensive Industries) Order 2017

[70] https://www.ofgem.gov.uk/publications-and-updates/renewables-obligation-closure-scheme-onshore-wind-england-scotland-and-wales
[71] The 'relevant eligibility date' is 30 September 2015 for non-cluster connecting generating stations and 30 October 2015 for cluster connecting stations.
[72] https://www.ofgem.gov.uk/publications-and-updates/response-consultation-ofgem-e-serve-guidance-renewables-obligation-closure-scheme-onshore-wind-england-scotland-wales-and-northern-ireland-investment-freezing-declarations

and the Renewables Obligation (Scotland) Amendment Order 2017 were laid in the respective parliaments. The legislation came into force in December 2017, as an amendment to the RO Orders, and the exemption will be implemented from 1 April 2018.

7.15 We have published draft guidance[73] on these changes, which involve amending the way suppliers' obligation levels are set and placing an obligation on suppliers to provide additional data. The additional data will enable us to validate the volume of EII excluded electricity supplied.

Indirect Land Use Directive

7.16 In 2017, HM Government with BEIS as contact department consulted on new rules for bioliquids, wastes and residues under the RO in response to the European Union (EU) Directive on reducing indirect land-use change. The Renewables Obligation (Amendment) Regulations 2017 were laid on 11 December 2017 and came into force on 1 January 2018 for England, Wales, Scotland and Northern Ireland.

7.17 We have published updates to our guidance documents[74] in response to these changes. The changes include adding or amending some definitions (such as for starch-rich crops, waste and residues), amending the requirement for certain bioliquids to meet 60% minimum GHG emission savings compared to fossil fuel to be eligible under the RO, changes on the use of default values and amendments to the data-gathering requirements so that generators above 50kW provide Ofgem with information on bioliquids sourced from starch-rich crops, sugars, oil crops and other crops grown as a main crop primarily for energy purposes on agricultural land.

Biomass Cost Control

7.18 In September 2017, BEIS consulted on options for controlling the costs of biomass conversion and co-firing under the Renewables Obligation, and so controlling costs under the levy control framework (LCF). The two options proposed in the consultation were a generator cap and a re-banding of support levels. BEIS published a government response to the consultation[75] in January 2018, in which they set out their decision to implement an amended version of the generator cap through amendments to the Renewables Obligation Orders.

[73] https://www.ofgem.gov.uk/publications-and-updates/draft-renewables-obligation-guidance-suppliers
[74] https://www.ofgem.gov.uk/publications-and-updates/draft-guidance-changes-bioliquids-wastes-and-residues-under-ro
[75] https://www.gov.uk/government/consultations/controlling-the-costs-of-biomass-conversion-and-co-firing-under-the-renewables-obligation

8. Implementation and improvement update

Chapter summary

In 2016-17, we made changes to the Renewables and CHP Register to reflect changes to legislation and to our internal procedures. Guidance documents were published or updated and our Operational Excellence programme continued to make improvements for our internal processes and external stakeholders.

Renewables and CHP Register

8.1 During 2016-17, we made significant changes to the Register to reflect legislative changes that were introduced. This included the closure of the RO for new and additional capacity and associated grace periods, amending the bioliquid sustainability threshold, and updating the data submission process for licenced suppliers. In addition, we upgraded our production environment to improve the day to day running of the Register.

Guidance documents

8.2 We regularly publish guidance on aspects of the RO to inform scheme participants of changes in legislation or revised processes.

8.3 Since the publication of the 2015-16 annual report we have published the following new documents:

Guidance

- "Micro generator Advanced Conversion Technology (ACT) FMS questionnaire" (November 2016).[76]
- "How to create an account on the Renewables and CHP Register" (January 2017).[77]
- "How to submit an application on the Renewables and CHP Register" (January 2017).[78]
- "How to agree declarations on the Renewables and CHP Register" (January 2017).[79]
- "Applying for the Northern Ireland Renewables Obligation: a step-by-step guide" (January 2017, updated February 2017).[80]
- "Renewables Obligation (RO) buy-out price and mutualisation ceilings for 2017-18" (February 2017).[81]
- "Renewables Obligation: Guidance on closure of the scheme in England, Scotland and Wales" (March 2017).[82]
- "Northern Ireland Renewables Obligation: Guidance on closure of the scheme" (March 2017).[83]

[76] https://www.ofgem.gov.uk/publications-and-updates/microgenerator-advanced-conversion-technology-act-fms-questionnaire

[77] https://www.ofgem.gov.uk/publications-and-updates/how-create-account-renewables-and-chp-register
[78] https://www.ofgem.gov.uk/publications-and-updates/how-submit-application-renewables-and-chp-register
[79] https://www.ofgem.gov.uk/publications-and-updates/how-agree-declarations-renewables-and-chp-register
[80] https://www.ofgem.gov.uk/publications-and-updates/applying-northern-ireland-renewables-obligation-step-step-guide
[81] https://www.ofgem.gov.uk/publications-and-updates/renewables-obligation-ro-buy-out-price-and-mutualisation-ceilings-2017-18
[82] https://www.ofgem.gov.uk/publications-and-updates/renewables-obligation-guidance-closure-scheme-england-scotland-and-wales
[83] https://www.ofgem.gov.uk/publications-and-updates/northern-ireland-renewables-obligation-guidance-closure-scheme

- "Renewables Obligation Certificate (ROC) Issue Schedule 2017-2018" (March 2017).[84]
- "Renewables Obligation and Feed-in Tariffs: Fuel Classification Flow Diagram" (May 2017).[85]
- "Supplier performance report: Further data and information" (September 2017).[86]

Consultations and requests for comment

- "Consultation on Ofgem E-Serve Guidance - Renewables Obligation: Closure of the scheme to onshore wind in England, Scotland, Wales and Northern Ireland Investment Freezing Declarations" (May 2017).[87]
- "Request for comment on "Draft Renewables Obligation: Guidance for suppliers - (EII exemption from RO updates)" (September 2017).[88]
- "Request for comment on Renewables Obligation: Sustainability Criteria" (December 2017).[89]
- "Request for comment on Renewables Obligation: Sustainability Reporting Guidance" (December 2017).[90]
- "Request for comment on Renewables Obligation: Fuel Measurement and Sampling Guidance" (December 2017).[91]
- "Request for comment on Renewables Obligation: Fuel Classification Diagram" (December 2017).[92]
- "Request for comment on Guidance for generators: Co-location of electricity storage facilities with renewable generation supported under the Renewables Obligation or Feed-in Tariff schemes" (December 2017).[93]
- "Request for comment on Draft guidance changes: Bioliquids, wastes and residues under the RO" (December 2017).[94]

Frequently asked questions and factsheets

- "Frequently Asked Questions - closure of the Renewables Obligation (RO) to onshore wind in England, Scotland and Wales" (October 2016).[95]
- "ITAR Presentation for off-grid and zero export stations" (October 2017).[96]

8.4 In addition, since the last annual report we have published updates to the following guidance documents:

[84] https://www.ofgem.gov.uk/publications-and-updates/renewables-obligation-certificate-roc-issue-schedule-2017-2018
[85] https://www.ofgem.gov.uk/publications-and-updates/renewables-obligation-and-feed-tariffs-fuel-classification-flow-diagram
[86] https://www.ofgem.gov.uk/publications-and-updates/supplier-performance-report-further-data-and-information
[87] https://www.ofgem.gov.uk/publications-and-updates/consultation-ofgem-e-serve-guidance-renewables-obligation-closure-scheme-onshore-wind-england-scotland-wales-and-northern-ireland-investment-freezing-declarations
[88] https://www.ofgem.gov.uk/publications-and-updates/draft-renewables-obligation-guidance-suppliers
[89] https://www.ofgem.gov.uk/system/files/docs/2017/12/appendix_1_ro_sustainability_criteria_0.pdf
[90] https://www.ofgem.gov.uk/system/files/docs/2017/12/appendix_2_ro_sustainability_reporting_guidance_0.pdf
[91] https://www.ofgem.gov.uk/system/files/docs/2017/12/appendix_3_ro_fms_guidance.pdf
[92] https://www.ofgem.gov.uk/system/files/docs/2017/12/appendix_4_ro_fuel_classification_diagram.pdf
[93] https://www.ofgem.gov.uk/publications-and-updates/guidance-generators-co-location-electricity-storage-facilities-renewable-generation-supported-under-renewables-obligation-or-feed-tariff-schemes
[94] https://www.ofgem.gov.uk/publications-and-updates/draft-guidance-changes-bioliquids-wastes-and-residues-under-ro
[95] https://www.ofgem.gov.uk/publications-and-updates/frequently-asked-questions-closure-renewables-obligation-ro-onshore-wind-england-scotland-and-wales
[96] https://www.ofgem.gov.uk/publications-and-updates/itar-presentation-grid-and-zero-export-stations

- "Renewables Obligation: Guidance for Generators" (March 2017).[97]
- "Renewables Obligation: Closure of the scheme to onshore wind in England, Scotland and Wales" (March 2017).[98]
- "Renewables Obligation (RO): Guidance on the closure of the scheme to large-scale solar PV" (March 2017).[99]

Operational Excellence

8.5 Building on the successful implementation of output data validation processes in previous years, additional assurance was provided by the addition of data covering small scale grid-connected generators in Northern Ireland, accredited under the NIRO. This data, provided to Ofgem through an agreement with NIE, increased the percentage of electricity generated by RO accredited generators covered by the validation work by 8.1%, bringing the total coverage to 90% of total generation.

8.6 We undertook a number of activities focussed on setting and managing customer expectations, and ensuring scheme participants are sufficiently informed in terms of scheme changes and ongoing obligations. This initiative included the following activities:

- RO staff organised and ran a number of well attended webinars focussed on specific aspects of the RO application and output data submission processes.
- Members of the RO fuelling team ran FMS workshops, providing guidance on the completion of FMS questionnaires, and providing responses to stakeholder queries.
- We developed a series of late data reminders, sent to scheme participants to remind them of output data submission deadlines. Additional FMS reminders for operators of fuelled generators were also developed and have resulted in marked improvements in engagement.

8.7 As part of our continued focus on customer service,[100] we published a number of updated or additional guidance documents and FAQs, as well as providing additional guidance and information directly to new RO applicants via a new page on the Renewables & CHP Register. The newly published guidance documents included:

- streamlined Renewables & CHP Register user guides, and
- a bespoke Renewable Electricity applicant welcome pack.

[97] https://www.ofgem.gov.uk/publications-and-updates/renewables-obligation-guidance-generators
[98] https://www.ofgem.gov.uk/publications-and-updates/renewables-obligation-closure-scheme-onshore-wind-england-scotland-and-wales
[99] https://www.ofgem.gov.uk/publications-and-updates/renewables-obligation-ro-guidance-closure-scheme-large-scale-solar-pv
[100] Customer service satisfaction results https://www.ofgem.gov.uk/environmental-programmes/e-serve/our-performance

Appendix 1: Renewables Obligation legislation

England and Wales

The Renewables Obligation Order 2009
http://www.legislation.gov.uk/uksi/2009/785/contents/made

The Renewables Obligation (Amendment) Order 2010
http://www.legislation.gov.uk/uksi/2010/1107/contents/made

The Renewables Obligation (Amendment) Order 2011
http://www.legislation.gov.uk/uksi/2011/984/contents/made

The Renewables Obligation (Amendment) Order 2013
http://www.legislation.gov.uk/uksi/2013/768/contents/made

The Renewables Obligation (Amendment) Order 2014
http://www.legislation.gov.uk/uksi/2014/893/contents/made

The Renewables Obligation Order 2015
http://www.legislation.gov.uk/uksi/2015/1947/contents/made

The Renewables Obligation (Amendment) (Energy Intensive Industries) Order 2017/1289
http://www.legislation.gov.uk/uksi/2017/1289/made

Scotland

The Renewables Obligation (Scotland) Order 2009
http://www.legislation.gov.uk/ssi/2009/140/contents/made

The Renewables Obligation (Scotland) Amendment Order 2010
http://www.legislation.gov.uk/ssi/2010/147/contents/made

The Renewables Obligation (Scotland) Amendment Order 2011
http://www.legislation.gov.uk/ssi/2011/225/contents/made

The Renewables Obligation (Scotland) Amendment Order 2013
http://www.legislation.gov.uk/ssi/2013/116/contents/made

The Renewables Obligation (Scotland) Amendment Order 2014
http://www.legislation.gov.uk/ssi/2014/94/contents/made

The Renewables Obligation (Scotland) Amendment Order 2015
http://www.legislation.gov.uk/ssi/2015/384/contents/made

Renewables Obligation (Scotland) Amendment Order 2017/432 (Scottish SI)
http://www.legislation.gov.uk/ssi/2017/432/made

Applicable to England, Wales and Scotland

The Renewables Obligation Closure Order 2014
http://www.legislation.gov.uk/uksi/2014/2388/contents/made

The Renewables Obligation Closure (Amendment) Order 2015
http://www.legislation.gov.uk/uksi/2015/920/contents/made

The Renewables Obligation Closure Etc. (Amendment) Order 2016
http://www.legislation.gov.uk/ukdsi/2016/9780111142943/pdfs/ukdsi_9780111142943_en.pdf

The Renewables Obligation (Amendment) Regulations 2017/1234
http://www.legislation.gov.uk/uksi/2017/1234/made

Renewables Obligation Closure Etc. (Amendment) Order 2016/457
http://www.legislation.gov.uk/uksi/2016/457/contents/made

Northern Ireland

The Renewables Obligation Order (Northern Ireland) 2009
http://www.legislation.gov.uk/nisr/2009/154/contents/made

The Renewables Obligation (Amendment) Order (Northern Ireland) 2010
http://www.legislation.gov.uk/nisr/2010/134/contents/made

The Renewables Obligation (Amendment) Order (Northern Ireland) 2011
http://www.legislation.gov.uk/nisr/2011/169/contents/made

The Renewables Obligation (Amendment) Order (Northern Ireland) 2013
http://www.legislation.gov.uk/nisr/2013/116/contents/made

The Renewables Obligation (Amendment No. 2) Order (Northern Ireland) 2013
http://www.legislation.gov.uk/nisr/2013/174/contents/made

The Renewables Obligation (Amendment) Order (Northern Ireland) 2014
http://www.legislation.gov.uk/nisr/2014/146/contents/made

The Renewables Obligation Closure Order (Northern Ireland) 2015
http://www.legislation.gov.uk/nisr/2015/346/contents/made

The Renewables Obligation (Amendment) Order (Northern Ireland) 2015
http://www.legislation.gov.uk/nisr/2015/287/contents/made

Renewables Obligation Closure (No.2) Order (Northern Ireland) 2016/252
http://www.legislation.gov.uk/nisr/2016/252/contents/made

Renewables Obligation Closure Order (Northern Ireland) 2016/174
http://www.legislation.gov.uk/nisr/2016/174/contents/made

Renewables Obligation (Amendment) Order (Northern Ireland) 2016/84
http://www.legislation.gov.uk/nisr/2016/84/made

Appendix 2: Accredited stations

Table A2.1 - Accreditation and capacity of renewable technologies across the UK at the end of 2016-17

Generation Technology	England		Scotland		Wales		Northern Ireland		Total	
	Quantity	Capacity (MW)	Quantity	Capacity (MW)	Quantity	Capacity (MW)	Quantity	Capacity (MW)	Quantity	Capacity (MW)
Fuelled	284	5367.92	48	198.091	28	50.413	70	250.663	430	5867.09
Hydro	49	22.2863	147	615.909	31	77.155	61	5.3112	288	720.662
Landfill gas	381	755.816	39	85.73	17	24.899	10	15.263	447	881.708
Offshore wind	24	4110	4	189.529	3	720.24	0	0	31	5019.77
Onshore wind	236	2577.73	228	6299.1	53	878.331	1031	987.138	1,548	10742.3
Sewage gas	151	182.148	6	6.8423	16	12.198	0	0	173	201.188
Solar PV	761	5,050	15	41.1027	75	472.93	21374	208.84	22,225	5773.33
Tidal stream	0	0	7	11.851	1	0.38	1	1.2	9	13.431
Wave power	0	0	5	3.353	0	0	0	0	5	3.353
Total	1886	18066	499	7451.5	224	2236.5	22547	1468.4	25156	29223

Table A2.2 - Number of accreditations in 2016-17 by country and technology (excluding micro NIRO)

Countries	Fuelled	Onshore wind	Solar PV	Sewage gas	Landfill gas	Hydro	Tidal stream	Wave power	Total
England	70	27	109	8	3	0	0	0	217
Northern Ireland	14	174	8	0	0	4	0	0	200
Scotland	18	28	4	0	0	0	4	1	55
Wales	11	7	23	0	0	0	0	0	41
Total	113	236	144	8	3	4	4	1	513

Table A2.3 - Number of generating stations (excluding micro NIRO) with accreditations effective from RO Years 2012-13 to 2016-17

Month-year	Monthly totals	Cumulative totals
	All gens (ex. Micro NIRO) Monthly total	All Gens (incl. Micro NIRO) (cumulative)
Apr-12	5	948
May-12	7	954
Jun-12	6	963
Jul-12	5	971
Aug-12	10	981
Sep-12	16	993
Oct-12	7	997
Nov-12	13	1001
Dec-12	11	1008
Jan-13	20	1021
Feb-13	15	1025
Mar-13	103	1038
Apr-13	15	1049
May-13	15	1058
Jun-13	12	1068
Jul-13	11	1071
Aug-13	12	1081
Sep-13	23	1089
Oct-13	7	1098
Nov-13	11	1109
Dec-13	15	1122
Jan-14	17	1134
Feb-14	18	1143
Mar-14	130	1147
Apr-14	21	1156
May-14	14	1164
Jun-14	16	1167
Jul-14	30	1176
Aug-14	16	1184
Sep-14	30	1189
Oct-14	32	1194
Nov-14	20	1201
Dec-14	29	1214

Month-year	Monthly totals	Cumulative totals
	All gens (ex. Micro NIRO) Monthly total	All Gens (incl. Micro NIRO) (cumulative)
Jan-15	28	1223
Feb-15	23	1231
Mar-15	183	1239
Apr-15	21	1247
May-15	9	1256
Jun-15	16	1266
Jul-15	15	1278
Aug-15	18	1285
Sep-15	13	1290
Oct-15	29	1295
Nov-15	23	1307
Dec-15	47	1320
Jan-16	27	1324
Feb-16	31	1331
Mar-16	207	1340
Apr-16	18	1349
May-16	17	1352
Jun-16	35	1359
Jul-16	22	1366
Aug-16	23	1372
Sep-16	33	1382
Oct-16	36	1394
Nov-16	37	1400
Dec-16	42	1406
Jan-17	30	1411
Feb-17	42	1418
Mar-17	178	1424

Table A2.4 - Number of micro NIRO generating stations with accreditations effective from RO Years 2012-13 to 2016-17

Month-year	Monthly totals	Cumulative totals
	Micro NIRO Monthly total	Micro NIRO Cumulative total
Apr-07	6	60
May-07	7	67
Jun-07	5	72
Jul-07	5	77
Aug-07	4	81
Sep-07	8	89
Oct-07	10	99
Nov-07	16	115
Dec-07	21	136
Jan-08	26	162
Feb-08	36	198
Mar-08	1	199
Apr-08	18	217
May-08	30	247
Jun-08	30	277
Jul-08	21	298
Aug-08	22	320
Sep-08	17	337
Oct-08	31	368
Nov-08	25	393
Dec-08	19	412
Jan-09	7	419
Feb-09	8	427
Mar-09	5	432
Apr-09	7	439
May-09	6	445
Jun-09	19	464
Jul-09	4	468
Aug-09	17	485
Sep-09	5	490
Oct-09	10	500
Nov-09	11	511
Dec-09	0	511

Month-year	Monthly totals	Cumulative totals
	Micro NIRO Monthly total	Micro NIRO Cumulative total
Jan-10	12	523
Feb-10	5	528
Mar-10	1	529
Apr-10	17	546
May-10	10	556
Jun-10	10	566
Jul-10	8	574
Aug-10	14	588
Sep-10	12	600
Oct-10	4	604
Nov-10	10	614
Dec-10	1	615
Jan-11	6	621
Feb-11	4	625
Mar-11	10	635
Apr-11	1	636
May-11	1	637
Jun-11	19	656
Jul-11	4	660
Aug-11	7	667
Sep-11	8	675
Oct-11	4	679
Nov-11	37	716
Dec-11	28	744
Jan-12	12	756
Feb-12	35	791
Mar-12	34	825
Apr-12	19	844
May-12	17	861
Jun-12	14	875
Jul-12	22	897
Aug-12	24	921
Sep-12	53	974

Table A2.4 (continued) - Number of micro NIRO generating stations with accreditations effective from RO Years 2012-13 to 2016-17

Month-year	Monthly totals	Cumulative totals
	Micro NIRO Monthly Total	Micro NIRO Cumulative Total
Oct-12	28	1,002
Nov-12	72	1,074
Dec-12	71	1,145
Jan-13	203	1,348
Feb-13	119	1,467
Mar-13	100	1,567
Apr-13	175	1,742
May-13	60	1,802
Jun-13	262	2,064
Jul-13	251	2,315
Aug-13	203	2,518
Sep-13	201	2,719
Oct-13	253	2,972
Nov-13	328	3,300
Dec-13	330	3,630
Jan-14	445	4,075
Feb-14	534	4,609
Mar-14	850	5,459
Apr-14	193	5,652
May-14	223	5,875
Jun-14	587	6,462
Jul-14	326	6,788
Aug-14	449	7,237
Sep-14	311	7,548
Oct-14	853	8,401
Nov-14	921	9,322
Dec-14	567	9,889

Month-year	Monthly totals	Cumulative totals
	Micro NIRO Monthly Total	Micro NIRO Cumulative Total
Jan-15	576	10,465
Feb-15	610	11,075
Mar-15	624	11,699
Apr-15	286	11,985
May-15	294	12,279
Jun-15	903	13,182
Jul-15	573	13,755
Aug-15	568	14,323
Sep-15	2,433	16,756
Oct-15	115	16,871
Nov-15	333	17,204
Dec-15	214	17,418
Jan-16	234	17,652
Feb-16	423	18,075
Mar-16	255	18,330
Apr-16	416	18,746
May-16	468	19,214
Jun-16	270	19,484
Jul-16	380	19,864
Aug-16	406	20,270
Sep-16	1,038	21,308
Oct-16	8	21,316
Nov-16	17	21,333
Dec-16	26	21,359
Jan-17	37	21,396
Feb-17	23	21,419
Mar-17	416	21,835

Table A2.5 - Capacity of generators accredited by obligation year and country since 2012-13 (MW)

Technology	2012-13	2013-14	2014-15	2015-16	2016-17
England	1679	1875	2987	1493	886
Northern Ireland	106	60	155	98	394
Scotland	845	575	138	448	888
Wales	107	625	238	135	409

Table A2.6 - Total capacity accredited by generation technology and obligation period since 2007-08 (MW)

Technology	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Onshore wind	694	603	495	499	1231	1485	853	390	739	1885
Offshore wind	190	90	352	1063	645	882	1024	420	50	0
Fuelled	90	25	79	32	55	66	77	205	149	77
Solar PV	1	0	0	0	6	285	1170	2485	1233	592
Landfill gas	37	28	23	32	0	8	0	4	0	1
Other	14	124	11	15	1	12	11	14	3	23

Table A2.7 - Total capacity accredited under the RO by generation technology (MW)

Technology	Total Capacity
Fuelled	5867
Hydro	721
Landfill gas	882
Offshore wind	5020
Onshore wind	10742
Sewage gas	201
Solar PV	5773
Tidal stream	13
Wave power	3

Table A2.8: Capacity amendments in 2015-16 (MW)

Technology	Capacity change	No. of capacity changes
Solar PV	17.1	57.0
Sewage gas	0.1	11.0
Onshore wind	3.1	32.0
Fuelled	-11.0	26.0
Landfill gas	-34.6	39.0
Hydro	0.2	4.0
Offshore wind	-5.9	1.0

Appendix 3: ROCs issued

Table A3.1: ROCs issued in 2016-17 by country and generation technology

Technology	ROCs issued				
	England	Scotland	Wales	Northern Ireland	Total
Fuelled	16,481,409	2,220,936	370,044	942,758	20,015,147
Hydro	52,779	2,043,187	129,893	22,384	2,248,243
Landfill gas	3,445,880	388,269	106,662	80,320	4,021,131
Offshore wind	26,014,451	889,969	3,849,157	0	30,753,577
Onshore wind	4,857,969	11,420,133	1,351,766	2,177,923	19,807,791
Sewage gas	602,025	30,757	37,710	0	670,492
Solar	7,708,057	34,923	586,789	322,503	8,652,272
Tidal power	0	1,698	0	0	1,698
Wave power	0	0	0	0	0
Total	59,162,570	17,029,872	6,432,021	3,545,888	86,170,351

Appendix 4: Compliance by licensed suppliers

Table A4.1: Supplier groups and their licences

Company (Supplier Group)	Licence
British Gas Trading Limited	British Gas Trading Limited
	Electricity Direct (UK) Limited
Co-Operative Energy Limited	Co-Operative Energy Limited
	Energy COOP Limited
Culzean Power Ltd	Holborn Energy Limited
	Barbican Power Limited
	Paddington Power Limited
Dyball Associates	Hartree Partners Supply (UK) Limited
	Switch Business Gas and Power Ltd
E.ON UK Plc	E.ON Energy Solutions Limited
	E.ON UK Plc
Economy Energy	VAVU Power Ltd
	Economy Energy Trading Limited
	Economy Energy Supply Limited
EDF Energy plc	British Energy Direct Limited
	EDF Energy Customers Plc
	SEEBOARD Energy Limited
ENGIE Power Limited	ENGIE Power Limited
	IPM Energy Retail Limited
ENSEK Ltd	Golding Energy Limited
	Newport Energy Limited
	Saphir Energy Limited
	Satus Energy Limited
	Spalt Energy Limited
Extra Energy Supply Limited	Addito Supply Limited
	Extra Energy Supply Limited
I Supply Energy Limited	I Supply Electricity 2 Limited
	I Supply Electricity Limited
	Simply Electricity Limited
	Supply Energy Limited
	I Supply Energy Limited
npower group plc	Electricity Plus Supply Limited
	Npower Direct Limited
	Npower Limited
	Npower Northern Limited
	Npower Northern Supply Limited
	Npower Yorkshire Limited
	Npower Yorkshire Supply Limited

Table A4.1 (continued): Supplier groups and their licences

Company (Supplier Group)	Licence
Opus Energy Limited	Opus Energy Renewables Limited
	Donnington Energy Limited
	Farmoor Energy Limited
	Opus Energy (Corporate) Limited
	Opus Energy Limited
OVO Electricity Limited	OVO Electricity Limited
	ONI Electricity Ltd
Pioneer Energy Limited	Igloo Energy Supply Limited
	Pioneer Energy Limited
Santiam Energy Limited	Nabuh Energy Ltd
	Santiam Energy Limited
SSE Energy Supply Limited	South Wales Electricity Limited
	SSE Energy Supply Limited
	SSE Airtricity Energy Supply Limited
Utilisoft Ltd	Oneselect Limited
	Daisy Energy Supply Limited
	Snowdrop Energy Supply Limited
	ESB Energy Limited
	Rockfire Energy Limited
	Rose Energy Supply Limited
	Pure Planet Limited
	Sunflower Energy Supply Limited
	Marigold Energy Supply Limited
	Bluebell Energy Supply Limited
	Daffodil Energy Supply Limited
	Cornflower Energy Supply Limited
	Tailwind Energy Supply Limited
	Tornado Energy Supply Limited
	Daisy Energy Supply Limited
	Lavender Energy Supply Limited
	Mint Energy Supply Limited
	Tulip Energy Supply Limited
Utiliteam	Edgware Energy Limited
	Farringdon Energy Limited
	Covent Energy Limited
Verastar Limited	Sinq Power Limited
	Verastar Limited

Table A4.2: Summary of compliance by supplier group in 2016-17 (all schemes)

Supplier Group	Total Obligation (ROCs)	Total ROCs presented	Total Payments	Total redistributed
Avro Energy Limited	38,075	0	£1,704,617.75	£0.00
Axis Telecom Limited	14,697	95	£655,105.66	£482.00
AXPO UK Limited	311,801	206,856	£4,698,387.65	£1,054,654.00
BES Commercial Electricity Limited	164,818	144,733	£899,205.45	£737,920.00
BP Energy Europe Limited	480	0	£21,508.29	£0.00
Bristol Energy Technology & Services (Supply) Limited	23,334	23,334	£0.00	£118,966.00
British Gas Trading Limited	11,902,301	9,976,798	£86,204,769.31	£50,866,810.00
Brook Green Trading Limited	1,295	38	£56,275.89	£190.00
Bruntwood Energy Services Limited	14	0	£627.77	£0.00
Bulb Energy Ltd	14,414	1,250	£589,352.28	£6,370.00
Business Power and Gas Limited	7,056	0	£315,897.12	£0.00
Clear Assets Limited	43	0	£1,929.31	£0.00
Co-Operative Energy Limited	470,872	160,025	£13,916,620.19	£815,887.00
Copper Energy Supply Limited	7,742	0	£346,609.34	£0.00
Corona Energy Retail 5 Limited	80,829	80,829	£0.00	£412,104.00
Coulomb Energy Supply Limited	19,889	9,013	£486,918.52	£45,950.00
Dong Energy Power Sales UK Limited	428,922	71,074	£16,020,854.96	£362,368.00
Dual Energy Direct Limited	271,863	271,863	£0.00	£1,386,094.00
Dyball Associates	84	0	£3,760.68	£0.00
E (Gas and Electricity) Limited	139,409	81,922	£2,573,692.99	£417,677.00
E.ON UK Plc	12,406,957	12,062,839	£15,406,162.86	£61,502,511.00
Eco Green Management Ltd	13	0	£582.01	£0.00
Economy Energy	182,098	160,325	£974,777.21	£817,416.00
Ecotricity Group Limited	213,291	213,291	£0.00	£1,087,465.00
EDF Energy plc	15,900,846	13,872,525	£90,807,931.17	£70,729,217.00
Effortless Energy Ltd	1,219	0	£54,574.63	£0.00
Electraphase Ltd	830	263	£25,384.59	£1,338.00
Eneco energy Trade BV	139,929	139,735	£8,685.38	£712,438.00
ENGIE Power Limited	3,293,721	3,277,607	£721,423.78	£16,710,912.00
EPG Energy Limited	10,426	0	£466,772.02	£0.00
Eversmart Energy Ltd	257	0	£11,527.49	£0.00
Extra Energy Supply Limited	668,010	450,000	£9,760,307.70	£2,294,327.00
F & S Energy Limited	28,373	28,373	£0.00	£144,657.00
First Utility Limited	1,210,263	1,208,617	£73,691.42	£6,162,144.00
Fischer Energy	115	0	£5,148.55	£0.00
Flow Energy Limited	195,052	113,000	£3,705,698.61	£576,129.00
Future Energy Utilities Ltd	4,911	0	£219,865.47	£0.00
Galena Energy Limited	2	0	£89.61	£0.00
Gazprom Marketing & Trading Retail Limited	527,666	527,666	£0.00	£2,690,307.00
GB Energy Supply Limited	159,546	0	£0.00	£0.00
GEN4U Ltd	3	0	£134.31	£0.00

Table A4.2 (continued): Summary of compliance by supplier group in 2016-17 (all schemes)

Supplier Group	Total Obligation (ROCs)	Total ROCs presented	Total Payments	Total redistributed
Gilmond Consulting	140,031	116,939	£1,033,828.85	£596,212.00
Gnergy Limited	15,436	0	£697,034.64	£0.00
Good Energy Limited	145,817	145,817	£0.00	£743,447.00
Green Energy (UK) plc	31,611	31,611	£0.00	£161,166.00
Green Network Energy Limited	1,674	0	£74,944.98	£0.00
Haven Power Limited	5,106,800	5,106,800	£0.00	£26,037,072.00
Hudson Energy Supply UK Limited	698,561	698,561	£0.00	£3,561,617.00
Iresa Limited	17,713	0	£793,011.01	£0.00
Limejump Energy Ltd	423	423	£0.00	£2,154.00
MA Energy Limited	34,761	0	£1,565,669.51	£0.00
Marble Power Limited	22,662	0	£1,014,577.74	£0.00
MVV Environment Services Limited	4,202	1,050	£141,115.04	£5,350.00
NEAS Energy Limited	18	18	£0.00	£90.00
npower group plc	14,477,087	13,852,889	£27,945,344.46	£70,629,091.00
Octopus Energy Limited	43,150	8,328	£1,558,980.94	£42,458.00
Opus Energy Limited	1,614,249	1,614,249	£0.00	£8,230,257.00
OVO Electricity Limited	978,791	325,451	£29,250,031.80	£1,659,311.00
PFP Energy Supplies Limited	55,879	55,879	£0.00	£284,898.00
Power4All Limited	409,746	3,060	£18,207,332.22	£15,598.00
Pozitive Energy Ltd	169	0	£7,566.13	£0.00
Robin Hood Energy Limited	48,145	7,883	£1,802,529.74	£40,189.00
Scottish Power Energy Retail Limited	7,544,674	6,774,280	£34,490,539.38	£34,538,737.00
Sembcorp Utilities (UK) Limited	58,838	0	£2,634,177.26	£0.00
SmartestEnergy Limited	2,542,352	2,542,352	£0.00	£12,962,206.00
SO Energy Trading Limited	28,502	28,355	£6,581.19	£144,565.00
Solarplicity Supply Limited	28,816	10,775	£814,782.55	£54,933.00
Spark Energy Supply Limited	197,644	0	£8,924,885.68	£0.00
Squeaky Clean Energy Limited	189	189	£0.00	£961.00
SSE Energy Supply Limited	13,283,545	11,597,960	£75,463,640.45	£59,132,319.00
Statkraft Markets GmbH	225	0	£10,073.25	£0.00
Symbio Energy Limited	303	0	£13,565.31	£0.00
Tempus Energy Supply Limited	4,123	3,760	£16,380.31	£19,167.00
Tonik Energy Limited	943	943	£0.00	£4,805.00
Total Gas & Power Limited	2,924,218	2,924,218	£0.00	£14,909,154.00
TOTO Energy Limited	1,922	0	£86,047.94	£0.00
Tradelink Solutions Limited	151	151	£0.00	£767.00
UK Power Reserve Limited	1,257	0	£56,275.89	£0.00
Utilita Energy Limited	526,535	526,535	£0.00	£2,684,542.00
Verastar Limited	7,865	0	£352,116.05	£0.00
Yu Energy	57,449	0	£2,587,295.00	£0.00
Our Power Energy Supply Limited	1,055	0	£47,239.20	£0.00

Table A4.2 (continued): Summary of compliance by supplier group in 2016-17 (all schemes)

Supplier Group	Total Obligation (ROCs)	Total ROCs presented	Total Payments	Total redistributed
Together Energy Supply Limited	291	0	£13,028.07	£0.00
Budget Energy Ltd	32,940	30,661	£102,030.83	£156,321.00
Click Energy	7,195	0	£0.00	£0.00
ESB Independent Energy (NI) Ltd	110,783	109,807	£43,965.56	£559,850.00
LCC Power Limited	234,648	151,670	£3,714,925.06	£773,288.00
Open Electric Limited	377	0	£0.00	£0.00
Power NI Energy Ltd	358,497	358,497	£0.00	£1,827,798.00
Vayu Ltd	2,261	0	£101,224.97	£0.00
Viridian Energy Supply Ltd	102,896	102,896	£0.00	£524,614.00
Totals	100,748,885	90,214,078	£464,309,630.98	£459,957,270.00

Table A4.3: Compliance by licence with the RO (England and Wales)

Licence	RO Obligation (ROCs)	Total ROCs presented	Bioliquid ROCs presented	Banked ROCs presented	Buy-out Payment Made by Supplier	Late Payment Made by Supplier
Avro Energy Limited	36,028	0	0	0	£1,612,973.56	£0.00
Axis Telecom Limited	13,955	95	0	95	£300,000.00	£321,886.32
AXPO UK Limited	295,892	203,076	0	73,657	£4,155,372.32	£0.00
BES Commercial Electricity Limited	149,008	128,923	0	0	£899,205.45	£0.00
BP Energy Europe Limited	480	0	0	0	£0.00	£21,508.29
Bristol Energy Technology & Services (Supply) Limited	22,631	22,631	0	11	£0.00	£0.00
British Gas Trading Limited	10,939,077	9,169,400	40,171	145,230	£79,228,439.29	£0.00
Brook Green Trading Limited	1,275	38	0	0	£55,380.49	£0.00
Bruntwood Energy Services Limited	14	0	0	0	£0.00	£627.77
Bulb Energy Ltd	13,235	73	0	0	£589,262.74	£0.00
Business Power and Gas Limited	6,659	0	0	0	£298,123.43	£0.00
Breeze Energy Supply Limited	43	0	0	0	£0.00	£1,929.31
Co-Operative Energy Limited	445,283	134,436	0	75,037	£13,916,620.19	£0.00
Affect Energy Limited	7,719	0	0	0	£345,579.63	£0.00
Corona Energy Retail 5 Limited	75,546	75,546	428	11,358	£0.00	£0.00
Coulomb Energy Supply Limited	19,889	9,013	795	3,212	£486,918.52	£0.00
Dong Energy Power Sales UK Limited	376,375	71,074	0	71,074	£13,668,325.77	£0.00
Dual Energy Direct Limited	242,854	242,854	5,128	60,399	£0.00	£0.00
Switch Business Gas and Power Ltd	84	0	0	0	£3,760.68	£0.00
E (Gas and Electricity) Limited	133,933	76,446	1,593	0	£2,573,692.99	£0.00
E.ON Energy Solutions Limited	6,807,953	6,645,993	0	770,344	£7,250,949.20	£0.00
E.ON UK Plc	4,999,130	4,816,972	0	0	£8,155,213.66	£0.00
Eco Green Management Ltd	12	0	0	0	£537.24	£0.00
Economy Energy Trading Limited	170,448	151,655	0	0	£841,362.61	£0.00
The Renewable Energy Company Limited	203,866	203,866	0	2,401	£0.00	£0.00
EDF Energy Customers Plc	14,238,958	12,210,637	130	751,734	£90,807,931.17	£0.00
Effortless Energy Ltd	1,152	0	0	0	£51,575.04	£0.00

Table A4.3 (continued): Compliance by licence with the RO (England and Wales)

Licence	RO Obligation (ROCs)	Total ROCs presented	Bioliquid ROCs presented	Banked ROCs presented	Buy-out Payment Made by Supplier	Late Payment Made by Supplier
Electraphase Ltd	819	263	0	0	£24,892.12	£0.00
Eneco energy Trade BV	137,822	137,822	0	34,455	£0.00	£0.00
ENGIE Power Limited	3,081,200	3,065,086	87	627,636	£721,423.78	£0.00
EPG Energy Limited	10,219	0	0	0	£457,504.63	£0.00
Eversmart Energy Limited	257	0	0	0	£0.00	£11,527.49
Extra Energy Supply Limited	606,004	450,000	0	0	£6,984,299.08	£0.00
F & S Energy Limited	25,723	25,723	0	1,277	£0.00	£0.00
First Utility Limited	1,144,066	1,144,066	0	251,098	£0.00	£0.00
Foxglove Energy Supply Limited (T/A Fischer Energy)	100	0	0	0	£4,477.00	£0.00
Flow Energy Limited	171,747	113,000	0	0	£0.00	£2,653,179.49
Future Energy Utilities Ltd	4,722	0	0	0	£211,403.94	£0.00
Planet 9 Energy Limited	2	0	0	0	£0.00	£89.61
Gazprom Marketing & Trading Retail Limited	497,709	497,709	0	43,033	£0.00	£0.00
GB Energy Supply Limited	137,850	0	0	0	£0.00	£0.00
GEN4U Ltd	3	0	0	0	£134.31	£0.00
I Supply Energy Limited	133,914	116,939	0	2,020	£759,970.75	£0.00
Gnergy Limited	14,987	0	0	0	£0.00	£676,768.10
Good Energy Limited	138,045	138,045	0	8,203	£0.00	£0.00
Green Energy (UK) plc	30,313	30,313	0	1,272	£0.00	£0.00
Green Network Energy Limited	1,493	0	0	0	£66,841.61	£0.00
Haven Power Limited	4,738,212	4,738,212	0	107	£0.00	£0.00
Hudson Energy Supply UK Limited	637,176	637,176	1,757	146,502	£0.00	£0.00
Iresa Limited	16,468	0	0	0	£737,272.36	£0.00
Limejump Energy Ltd	423	423	0	0	£0.00	£0.00
MA Energy Limited	32,988	0	0	0	£171,000.00	£1,315,292.30

Table A4.3 (continued): Compliance by licence with the RO (England and Wales)

Licence	RO Obligation (ROCs)	Total ROCs presented	Bioliquid ROCs presented	Banked ROCs presented	Buy-out Payment Made by Supplier	Late Payment Made by Supplier
Marble Power Limited	21,552	0	0	0	£964,883.04	£0.00
MVV Environment Services Limited	4,202	1,050	0	1,050	£141,115.04	£0.00
NEAS Energy Limited	18	18	0	0	£0.00	£0.00
Electricity Plus Supply Limited	705,631	673,104	0	0	£0.00	£0.00
Npower Direct Limited	653,802	623,664	0	41,114	£1,349,267.30	£0.00
Npower Limited	9,715,313	9,272,088	7,148	736,976	£21,299,434.98	£0.00
Npower Northern Supply Limited	2,266,450	2,161,975	0	212,500	£4,677,328.73	£0.00
Npower Yorkshire Supply Limited	300,095	286,262	0	0	£619,313.45	£0.00
Octopus Energy Limited	41,136	8,328	0	0	£1,468,814.16	£0.00
Farmoor Energy Limited	168,958	168,958	0	40,328	£0.00	£0.00
Opus Energy (Corporate) Limited	649,587	649,587	0	150,000	£0.00	£0.00
Opus Energy Limited	660,750	660,750	75	90,250	£0.00	£0.00
OVO Electricity Limited	933,351	325,451	0	74,247	£27,215,683.00	£0.00
PFP Energy Supplies Limited	52,454	52,454	0	0	£0.00	£0.00
Power4All Limited	360,970	3,060	0	3,060	£16,023,630.70	£0.00
Pozitive Energy Ltd	167	0	0	0	£7,476.59	£0.00
Robin Hood Energy Limited	46,195	7,883	0	512	£1,715,228.24	£0.00
Scottish Power Energy Retail Limited	5,999,414	5,229,020	0	95,292	£34,490,539.38	£0.00
Wilton Energy Limited	58,838	0	0	0	£2,634,177.26	£0.00
SmartestEnergy Limited	2,362,205	2,362,205	2,281	542,156	£0.00	£0.00
SO Energy Trading Limited	26,969	26,969	1,078	52	£0.00	£0.00
Solarplicity Supply Limited	26,756	8,715	0	0	£0.00	£814,782.55
Spark Energy Supply Limited	183,543	0	0	0	£0.00	£8,288,135.91
Squeaky Clean Energy Limited	187	187	0	0	£0.00	£0.00
SSE Energy Supply Limited	11,218,054	9,609,405	1,743	2,146,461	£72,019,215.73	£0.00
Statkraft Markets GmbH	2	0	0	0	£89.54	£0.00
Symbio Energy LLP (TA Symbio Energy Ltd)	303	0	0	0	£13,565.31	£0.00

Table A4.3 (continued): Compliance by licence with the RO (England and Wales)

Licence	RO Obligation (ROCs)	Total ROCs presented	Bioliquid ROCs presented	Banked ROCs presented	Buy-out Payment Made by Supplier	Late Payment Made by Supplier
Tempus Energy Supply Limited	3,931	3,760	0	274	£0.00	£7,716.22
Tonik Energy Limited	924	924	0	0	£0.00	£0.00
Total Gas & Power Limited	2,731,213	2,731,213	13,845	387,136	£0.00	£0.00
TOTO Energy Limited	1,848	0	0	0	£82,734.96	£0.00
Tradelink Solutions Limited	151	151	0	0	£0.00	£0.00
UK Power Reserve Limited	1,257	0	0	0	£56,275.89	£0.00
Utilita Energy Limited	485,429	485,429	189	121,357	£0.00	£0.00
Sinq Power Limited	6,826	0	0	0	£305,600.02	£0.00
Kensington Power Limited	54,850	0	0	0	£0.00	£2,470,452.31
Totals	90,507,092	80,610,115	76,448	7,722,920	£420,464,816.88	£16,583,895.66

Table A4.4: Compliance by licence with the ROS (Scotland)

Licence	ROS Obligation (ROCs)	Total ROCs presented	Bioliquid ROCs presented	Banked ROCs presented	Buy-out Payment Made by Supplier	Late Payment Made by Supplier
Avro Energy Limited	2,047	0	0	0	£91,644.19	£0.00
Axis Telecom Limited	742	0	0	0	£33,219.34	£0.00
AXPO UK Limited	15,909	3,780	0	3,780	£543,015.33	£0.00
BES Commercial Electricity Limited	15,810	15,810	0	0	£0.00	£0.00
Bristol Energy Technology & Services (Supply) Ltd	703	703	0	0	£0.00	£0.00
British Gas Trading Limited	963,224	807,398	6,915	0	£6,976,330.02	£0.00
Brook Green Trading Limited	20	0	0	0	£895.40	£0.00
Bulb Energy Ltd	1,179	1,177	0	0	£89.54	£0.00
Business Power and Gas Limited	397	0	0	0	£17,773.69	£0.00
Co-Operative Energy Limited	25,589	25,589	0	6,397	£0.00	£0.00
Affect Energy Limited	23	0	0	0	£1,029.71	£0.00
Corona Energy Retail 5 Limited	5,283	5,283	0	0	£0.00	£0.00
Dong Energy Power Sales UK Limited	52,547	0	0	0	£2,352,529.19	£0.00
Dual Energy Direct Limited	29,009	29,009	467	0	£0.00	£0.00
E (Gas and Electricity) Limited	5,476	5,476	0	280	£0.00	£0.00
E.ON Energy Solutions Limited	373,754	373,754	0	10,687	£0.00	£0.00
E.ON UK Plc	226,120	226,120	0	0	£0.00	£0.00
Eco Green Management Ltd	1	0	0	0	£44.77	£0.00
Economy Energy Trading Limited	11,650	8,670	0	278	£133,414.60	£0.00
The Renewable Energy Company Limited	9,425	9,425	0	0	£0.00	£0.00
EDF Energy Customers Plc	1,661,888	1,661,888	0	309,374	£0.00	£0.00
Effortless Energy Ltd	67	0	0	0	£2,999.59	£0.00
Electraphase Ltd	11	0	0	0	£492.47	£0.00
Eneco energy Trade BV	2,107	1,913	0	526	£8,685.38	£0.00
ENGIE Power Limited	212,521	212,521	0	6,881	£0.00	£0.00
EPG Energy Limited	207	0	0	0	£9,267.39	£0.00

Table A4.4 (continued): Compliance by licence with the ROS (Scotland)

Licence	ROS Obligation (ROCs)	Total ROCs presented	Bioliquid ROCs presented	Banked ROCs presented	Buy-out Payment Made by Supplier	Late Payment Made by Supplier
Extra Energy Supply Limited	62,006	0	0	0	£2,776,008.62	£0.00
F & S Energy Limited	2,650	2,650	0	0	£0.00	£0.00
First Utility Limited	66,197	64,551	0	0	£73,691.42	£0.00
Foxglove Energy Supply Limited (T/A Fischer Energy)	15	0	0	0	£671.55	£0.00
Flow Energy Limited	23,305	0	0	0	£0.00	£1,052,519.12
Future Energy Utilities Ltd	189	0	0	0	£8,461.53	£0.00
Gazprom Marketing & Trading Retail Limited	29,957	29,957	0	0	£0.00	£0.00
GB Energy Supply Limited	21,696	0	0	0	£0.00	£0.00
I Supply Energy Limited	6,117	0	0	0	£273,858.10	£0.00
Gnergy Limited	449	0	0	0	£0.00	£20,266.54
Good Energy Limited	7,772	7,772	0	0	£0.00	£0.00
Green Energy (UK) plc	1,298	1,298	0	324	£0.00	£0.00
Green Network Energy Limited	181	0	0	0	£8,103.37	£0.00
Haven Power Limited	368,588	368,588	0	6,808	£0.00	£0.00
Hudson Energy Supply UK Limited	61,385	61,385	137	0	£0.00	£0.00
Iresa Limited	1,245	0	0	0	£55,738.65	£0.00
MA Energy Limited	1,773	0	0	0	£79,377.21	£0.00
Marble Power Limited	1,110	0	0	0	£49,694.70	£0.00
Electricity Plus Supply Limited	32,805	32,805	0	0	£0.00	£0.00
Npower Direct Limited	41,114	41,114	0	0	£0.00	£0.00
Npower Limited	650,591	650,591	0	104,641	£0.00	£0.00
Npower Northern Supply Limited	111,228	111,228	0	0	£0.00	£0.00
Npower Yorkshire Supply Limited	58	58	0	0	£0.00	£0.00
Octopus Energy Limited	2,014	0	0	0	£90,166.78	£0.00
Farmoor Energy Limited	25,762	25,762	0	4,672	£0.00	£0.00
Opus Energy (Corporate) Limited	45,727	45,727	0	3	£0.00	£0.00

Table A4.4 (continued): Compliance by licence with the ROS (Scotland)

Licence	ROS Obligation (ROCs)	Total ROCs presented	Bioliquid ROCs presented	Banked ROCs presented	Buy-out Payment Made by Supplier	Late Payment Made by Supplier
Opus Energy Limited	63,465	63,465	0	15,000	£0.00	£0.00
Our Power Energy Supply Limited	1,055	0	0	0	£0.00	£47,239.20
OVO Electricity Limited	45,440	0	0	0	£2,034,348.80	£0.00
PFP Energy Supplies Limited	3,425	3,425	0	0	£0.00	£0.00
Power4All Limited	48,776	0	0	0	£2,183,701.52	£0.00
Pozitive Energy Ltd	2	0	0	0	£89.54	£0.00
Robin Hood Energy Limited	1,950	0	0	0	£87,301.50	£0.00
Scottish Power Energy Retail Limited	1,545,260	1,545,260	0	386,315	£0.00	£0.00
SmartestEnergy Limited	180,147	180,147	661	44,736	£0.00	£0.00
SO Energy Trading Limited	1,533	1,386	61	0	£6,581.19	£0.00
Solarplicity Supply Limited	2,060	2,060	0	0	£0.00	£0.00
Spark Energy Supply Limited	14,101	0	0	0	£0.00	£636,749.77
Squeaky Clean Energy Limited	2	2	0	0	£0.00	£0.00
SSE Energy Supply Limited	1,811,102	1,734,166	1,037	253,274	£3,444,424.72	£0.00
Statkraft Markets GmbH	223	0	0	0	£9,983.71	£0.00
Tempus Energy Supply Limited	192	0	0	0	£0.00	£8,664.09
Together Energy Supply Limited	291	0	0	0	£13,028.07	£0.00
Tonik Energy Limited	19	19	0	0	£0.00	£0.00
Total Gas & Power Limited	193,005	193,005	1,412	0	£0.00	£0.00
TOTO Energy Limited	74	0	0	0	£3,312.98	£0.00
Utilita Energy Limited	41,106	41,106	0	1,918	£0.00	£0.00
Sinq Power Limited	1,039	0	0	0	£46,516.03	£0.00
Kensington Power Limited	2,599	0	0	0	£0.00	£116,842.69
Totals	9,137,807	8,596,043	10,690	1,155,894	£21,416,490.60	£1,882,281.41

Table A4.5: Compliance by licence with the NIRO (Northern Ireland)

Licence	NIRO Obligation (ROCs)	Total ROCs presented	Bioliquid ROCs presented	Banked ROCs presented	Buy-out Payment Made by Supplier	Late Payment Made by Supplier
Budget Energy Ltd	32,940	30,661	0	626	£102,030.83	£0.00
Click Energy	7,195	0	0	0	£0.00	£0.00
Electric Ireland	110,783	109,807	0	161	£0.00	£43,965.56
Go Power	234,648	151,670	152	7,078	£3,714,925.06	£0.00
Open Electric Limited	377	0	0	0	£0.00	£0.00
Power NI	358,497	358,497	0	36,184	£0.00	£0.00
SSE Airtricity Energy Supply Limited	254,389	254,389	0	0	£0.00	£0.00
Vayu Energy	2,261	0	0	0	£101,224.97	£0.00
Energia	102,896	102,896	0	20,691	£0.00	£0.00
Totals	1,103,986	1,007,920	152	64,740	£3,918,180.86	£43,965.56

Table A4.6: Suppliers with an obligation who did not meet the 1 June 2017 deadline to submit estimated supply volumes

Supplier Group
Extra Energy Supply Limited

Table A4.7: Suppliers with an obligation who did not meet the 1 July 2017 deadline to submit final supply volumes

Supplier Group
Eversmart Energy Ltd
Viridian Energy Supply Ltd

Appendix 5: Associated documents

The annual reports for all previous obligation periods are published on the Publications library: RO page within the RO section of our website:

https://www.ofgem.gov.uk/environmental-programmes/ro/contacts-publications-and-data/publications-library-renewables-obligation-ro

More up-to-date data on scheme activity is published on the Public reports and data: RO page within the RO section of our website:

https://www.ofgem.gov.uk/environmental-programmes/ro/contacts-publications-and-data/public-reports-and-data-ro

A variety of data reports are available to download from the Renewables and CHP Register: https://renewablesandchp.ofgem.gov.uk/

Information for generators accredited (or those who wish to become accredited) under the RO is available here:

https://www.ofgem.gov.uk/environmental-programmes/ro/applicants

Information for licensed UK electricity suppliers on how to comply with the RO is available from our website here:

https://www.ofgem.gov.uk/environmental-programmes/renewables-obligation-ro/information-suppliers

Appendix 6: Glossary of terms

A

ACT - Advanced Conversion Technology
AD - Anaerobic digestion
Authority - Gas and Electricity Markets Authority

B

BEIS - Department for Business, Energy and Industrial Strategy

C

CHPQA - Combined Heat and Power Quality Assurance
CfD - Contracts for Difference
CO_2e - Carbon Dioxide equivalent

D

DECC - Department for Energy and Climate Change
Defra - Department of Environment and Rural Affairs
DETINI - Department of Enterprise Trade and Investment Northern Ireland
DfE - Department for the Economy Northern Ireland
DNC - Declared Net Capacity

F

FIT - Feed-in-Tariffs
FMS - Fuel Measurement and Sampling

G

GB - Great Britain
GHG - Greenhouse Gas
GW - Gigawatt

I

ISAE - International Standard on Assurance Engagements

L

LCF - Levy Control Framework

M

MW - Megawatt
MWh - Megawatt hour

N

NFFO - Non-Fossil Fuel Obligation
NFPA - Non-Fossil Fuel Purchasing Agency
NI - Northern Ireland

NI - NFFO Northern Ireland Non-Fossil Fuel Obligation
NIE - Northern Ireland Electricity Networks
NIRO - Northern Ireland Renewables Obligation
NIROC - Northern Ireland Renewables Obligation Certificate
NMO - National Measurements Office

O

Ofgem - Office of Gas and Electricity Markets

P

PES - Public Electricity Suppliers
PV - Photovoltaic

R

Register - Renewables and CHP Register
RO - Renewables Obligation
ROC - Renewables Obligation Certificate
ROO - Renewables Obligation Order
ROS - Renewables Obligation Scotland
RPI - Retail Price Index

S

SEMO – Single Electricity Market Operator
SRO - Scottish Renewables Obligation
SROC - Scottish Renewables Obligation Certificates

T

TIC - Total Installed Capacity
TWh - Terawatt hour

U

UK - United Kingdom
UR - Utility Regulator Northern Ireland