



Department for
Business, Energy
& Industrial Strategy

THE RENEWABLES OBLIGATION FOR 2020-21

Calculating the level of the Renewables
Obligation for 2020/21



OGL

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Any enquiries regarding this publication should be sent to us at: RO@beis.gov.uk

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Calculating the level of the Renewables Obligation for 2020/21

Summary of the calculation

The Renewables Obligation scheme places an annual obligation on UK electricity suppliers to present to Ofgem (the scheme's administrator) a specified number of Renewables Obligation Certificates (ROCs) per megawatt hour of electricity supplied to their customers during each obligation period (which runs from 1 April to 31 March).

The Renewables Obligation Order 2015 (ROO 2015) requires the Secretary of State to publish the level of the obligation (in ROCs per megawatt hour) six months before the start of each obligation period, i.e. by 1 October.

This note sets out the level of the obligation for the 2020/21 period and explains the underpinning methodology.

The total obligation

Setting the size of the total obligation requires two calculations:

- **For calculation A (fixed target)** we are required to estimate the total amount of electricity (MWh) expected to be supplied to customers during the 2020/21 obligation period, for both Great Britain and Northern Ireland. The overall obligation (in ROCs) is then obtained by multiplying these figures by the fixed targets specified in the ROO 2015. These are 0.154 ROCs per MWh for Great Britain and 0.063 ROCs per MWh for Northern Ireland;
- **For Calculation B (headroom)**, the expected number of ROCs to be issued in 2020/21 is estimated and then uplifted by 10 per cent. The projected number of ROCs is then used to calculate the level of the obligation for Calculation B.

The total obligation, which is then used to determine the level of the obligation, is set as one of these calculations, determined as:

- **Fixed target:** If the fixed target (Calculation A) is equal to or greater than headroom (Calculation B); or
- **Headroom:** If headroom (Calculation B) is greater than the fixed target (Calculation A).

Calculation A sets the total UK obligation at 42.2 million ROCs by applying BEIS's projected trend in sales from the Energy and Emissions Projections to Ofgem's outturn sales data for 2018/19¹.

¹ See page 8 for an explanation of the sales data

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Calculation B sets it at 112.9 million ROCs, excluding headroom, and taking account of the cap on biomass conversion stations². Including 10% headroom gives a total of 124.1m ROCs in the United Kingdom.

Calculation B is the higher of the two and must therefore be used.

The level of the obligation

The level of the obligation sets the number of ROCs that electricity suppliers are required to present to Ofgem per megawatt hour (MWh) of electricity that they supply during an obligation year.

Taking account of the exemption for Energy Intensive Industries in Great Britain (see below), the number of ROCs that electricity suppliers are required to produce during the 2020/21 obligation period will be:

- **0.471 ROCs per MWh in Great Britain** (England, Wales and Scotland); and
- **0.185 ROCs per MWh in Northern Ireland.**

An exemption for Energy Intensive Industries

Background

An exemption for Energy Intensive Industries (EII) from up to 85% of the indirect costs of the Renewables Obligation (RO) was implemented in England and Wales in 2017. This involved changing the methodology for calculating the level of the obligation and adjusting the scope of the obligation in the ROO 2015 so that the level of the obligation (ROCs/MWh rate) applies to:

- 100% of electricity supplied to non-EIIs;
- 15% or more of the electricity supplied to EIIs.

The details of the exemption methodology for England and Wales are set out in the Renewables Obligation (Amendment) (Energy Intensive Industries) Order 2017³.

The Scottish Government has devolved responsibility for setting the obligation in Scotland. It has made equivalent changes to the methodology for setting the level of the obligation and scope of the obligation in Scotland, as set out in the Renewables Obligation (Scotland) Amendment Order 2017⁴.

The exemption has not been introduced for the RO in Northern Ireland at this stage. As a devolved policy matter, this would be for a restored Northern Ireland Executive to take forward if it so decides. As a result, the level of the obligation for Northern Ireland does not make any adjustments for electricity supplied to EIIs.

² See page 6 for an explanation of the cap.

³ Renewables Obligation (Amendment) (Energy Intensive Industries) Order 2017 at: <https://www.legislation.gov.uk/ukdsi/2017/9780111159170/contents>

⁴ The Renewables Obligation (Scotland) Amendment Order 2017 at: <https://www.legislation.gov.uk/sdsi/2017/9780111036433/contents>

Estimates of exempt electricity

BEIS's latest estimate of exempt electricity to be supplied to eligible EIs in 2020/21 is 10.4TWh (i.e. 85% of 12.2TWh).

However, BEIS has laid legislation to add the flour milling sector to the list of exempt EIs⁵. The change, when made, will apply across Great Britain. That will increase our estimate of exempt electricity in GB in 2020/21 to 10.8TWh (85% of 12.7TWh).

Taking the EI exemption into account in the 2020/21 RO calculation

As the estimated 0.4TWh of EI excluded electricity due to the flour milling sector is very small compared to total GB electricity sales, it does not materially affect the level of the Obligation for 2020/21. The obligation is given to three decimal places and whether or not the exemption for the flour-milling sector comes into force in 2020/21, the calculation of the level of the obligation for GB remains at 0.471 ROCs/MWh due to rounding.

Caps on the ROCs received by certain biomass conversion stations

The Renewables Obligation (Amendment) Order 2018 inserts a new Schedule 6 into the Renewables Obligation Order 2015 which provides for the introduction of annual flexible caps on the number of ROCs that certain RO eligible biomass co-firing and conversion stations and units not protected by grandfathering⁶ can receive. That Schedule defines two types of generating stations to which the flexible cap mechanisms will apply:

- Capped generating stations, which comprise only non-grandfathered 'capped' units': and
- Mixed generating stations, which comprise non-grandfathered 'capped' units and grandfathered 'exempt' units.

At **capped generating stations**, there is a cap on the number of ROCs the station can be issued in each Obligation year. This is equal to 125,000 ROCs for each unit at the station. Stations will be able to optimise generation across units, up to the level of their station cap.

For **mixed generating stations**, an overall station cap will be calculated by first estimating the number of ROCs likely to be issued for generation at the exempt units during the Obligation year (the "exempt combustion unit estimate"). An allowance of 125,000 ROCs is then added for each of the station's capped units. If generators choose to exceed their capped unit allowance, further ROCs will only be issued for generation at any of the station's RO eligible units up to the level of the flexible station cap. If generators choose to stay within their allowance at their capped units, there will be no cap on the number of ROCs issued to their exempt units.

The following RO accredited generating station meets the definition of **mixed generating station** in 2020/21, based on Ofgem's records:

⁵ The Electricity Supplier Obligations (Excluded Electricity) (Amendment) Regulations 2019 are available at: <http://www.legislation.gov.uk/id/ukdsi/2019/9780111189856>.

⁶ Grandfathering is a policy commitment that projects will receive no less support under the RO than they have received historically. Stations or units which generated at the biomass conversion band on or before 12 December 2014 are grandfathered. Stations or units which generated at the biomass conversion band after this date are not grandfathered.

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- Drax Power Station, Selby, YO8 8PH

The station comprises two RO eligible exempt units (Unit #2 and Unit #3) and one RO eligible capped unit (Unit #4).

Overall station cap for Drax

The 2020/21 exempt combustion unit estimate for Drax Unit #2 and Unit #3 will be set as follows, together with the capped unit allowance for Unit #4:

Type of unit	Unit number	No. of ROCs for 2020/21 obligation year	
Drax RO eligible exempt (grandfathered) units	Unit #2	Estimate of number of ROCs likely to be issued in respect of relevant electricity generated during the 2020/21 obligation year	4,605,114
	Unit #3		4,605,114
Drax RO eligible capped (non-grandfathered) unit	Unit #4	Capped unit allowance for 2020/21 obligation year	125,000
Overall station cap			9,335,228

Further information on the calculation

Detailed information on calculation A and B is provided in the Annex to this notice.

Annex

Calculation A

Calculation A requires an estimate of the total amount of electricity (MWh) expected to be supplied to customers during the 2020/21 obligation period, for both Great Britain and Northern Ireland.

In previous years' RO calculations, the estimate of the total amount of electricity was based on BEIS's forward projection of electricity sales in the Energy and Emissions Projections (EEP)⁷. These projections are made on the same basis as table 5.5 of the Digest of UK Energy Statistics (DUKES)⁸.

To improve forecasts of estimated electricity sales for the 2020/21 RO calculation, we have applied BEIS's projected trend in sales from the 2018 EEP (published in May 2019) to Ofgem's outturn sales data for 2018/19, derived from their publication "Renewables Obligation: Total obligation for 2018/19"⁹. Ofgem's data was published in August 2019 and was not available at the time of the EEP. Ofgem use their outturn data when they calculate the actual number of Renewables Obligation Certificates (ROCs) that each supplier must present to fulfil their obligation.

Ofgem's published data on the total obligation for 2018/19 sets figures of:

- 114,579,143 ROCs in England and Wales and 11,611,524 ROCs in Scotland (which gives a total of 126,190,667 ROCs in Great Britain (GB)); and
- 1,433,328 ROCs in Northern Ireland (NI).

Dividing these total obligations by the relevant level of the obligation set by BEIS for 2018/19 (i.e. the number of ROCs that electricity suppliers are required to present to Ofgem per MWh of electricity that they supplied during an obligation year)¹⁰ gives the following outturns for sales in 2018/19:

- $126,190,667 \text{ ROCs in GB} \div 0.468 \text{ ROCs per MWh} = 269.6 \text{ TWh in GB in 2018/19}$; and
- $1,433,328 \text{ ROCs in NI} \div 0.185 \text{ ROCs per MWh} = 7.7 \text{ TWh in NI in 2018/19}$.

The Ofgem figure excludes exempt electricity supplied to eligible energy intensive industries in GB (there is no EII exemption in NI). The BEIS estimate of 10.4TWh for exempt electricity is added to the Ofgem figure to give a total of 280.1TWh in GB in 2018/19 (the small difference in

⁷ BEIS's Energy and Emissions Projections are available at: <https://www.gov.uk/government/collections/energy-and-emissions-projections>

⁸ DUKES is available at: <https://www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes>

⁹ Ofgem's "Renewables Obligation: Total obligation for 2018/19" is available at: <https://www.ofgem.gov.uk/publications-and-updates/renewables-obligation-total-obligation-201819>

¹⁰ The level of the Obligation for 2018/19 is available at: <https://www.gov.uk/government/publications/renewables-obligation-level-calculations-201819>

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the total compared to adding up the figures is due to rounding). This produces a total electricity sales figure for GB & NI of 287.8TWh.

Applying the EEP trend to the 2018/19 GB & NI sales figure decreases the figure in 2020/21 by 3.1% to give a forecast of 278.9 TWh. Looking at the forward trend since the RO started in 2002 gives a split of 97.2% of UK electricity sales in Great Britain, and 2.8% in Northern Ireland. Applying these to the 278.9TWh gives a figure of 271.1TWh for Great Britain and 7.8TWh for Northern Ireland.

The overall obligation (in ROCs) for Calculation A is obtained by multiplying these electricity sales forecasts by the fixed targets specified in the ROO 2015 to give the following:

- 271.1TWh x 0.154 ROCs per MWh for GB = 41.8 million ROCs; and
- 7.8TWh x 0.063 ROCs per MWh for NI = 0.5 million ROCs.

This gives a UK total of 42.2 million ROCs for Calculation A (the small difference in the total compared to adding up the figures is due to rounding).

Calculation B

Calculation B estimates the number of ROCs to be issued to stations expected to be operational during 2020/21, for both existing and forthcoming stations.

For each installation, generation is estimated by multiplying the capacity by the number of hours in the year, and the expected load factor. The expected ROCs are then calculated by applying the banding level for that technology to the generation.

The list of existing sites was taken from Ofgem's RO accredited stations database¹¹. Only those expected to generate in 2020/21 have been included.

As the RO is now closed to all new applications, the only new additions will be stations that have already applied for accreditation but have not yet been processed by Ofgem. A list of these potential new build stations was sourced from internal information from Ofgem. Only those predicted to generate in 2020/21 have been included.

BEIS's calculations give a total of 112.9 million ROCs before headroom. With headroom, this gives a total of 124.1 million ROCs.

The calculation used for 2020/21 (A or B)

Calculation B is higher than Calculation A. In accordance with the Renewables Obligation Order 2015, Calculation B must be used to set the level of the Obligation in 2020/21.

The details of the assumptions used in calculation B are set out below.

¹¹ Ofgem's accredited stations database is available at:

<https://www.renewablesandchp.ofgem.gov.uk/Public/ReportViewer.aspx?ReportPath=/Renewables/Accreditation/AccreditedStationsExternalPublic&ReportVisibility=1&ReportCategory=1>

Assumptions used for Calculation B

Capacity of UK stations by technology

The following table sets out the breakdown of capacity (in GW) by technology for new and existing UK stations in 2020/21:

Technology	Capacity (GW)
Biomass and waste technologies	3.9
Hydro, Tidal and Wave	0.7
Landfill gas and Sewage gas	1.0
Offshore wind	6.6
Onshore wind	12.5
Photovoltaics (Solar PV)	7.3
Total	32.0

Biomass and waste technologies include advanced conversion technologies, anaerobic digestion, dedicated biomass, biomass CHP, biomass conversions, co-firing of biomass, and energy from waste with CHP.

Estimated number of UK Renewables Obligation Certificates (ROCs) to be issued by technology

The following table sets out the breakdown of the estimated number (in millions) of UK ROCs to be issued in 2020/21 by technology. The total is the number of ROCs before the 10% headroom is added:

Technology	Existing stations	New build stations	Total
Biomass and waste technologies	22.0	1.2	23.3
Hydro, Tidal and Wave	2.6	0.0	2.6
Landfill gas and Sewage gas	3.1	0.0	3.1
Offshore wind	43.3	1.4	44.7
Onshore wind	28.8	0.3	29.1
Photovoltaics (Solar PV)	10.1	0.0	10.1
Total	109.9	2.9	112.9

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The small difference in some of the totals compared to adding up the figures is due to rounding to the nearest decimal place.

Load Factors

Load factors are used to calculate generation from the capacity for each technology. The load factors presented below are net of availability, expressed on a total installed capacity (TIC) basis.

Load factor categorisation

We have maintained a load factor for 'existing' stations and one for 'new build' stations to reflect that the latter may achieve higher load factors. This reflects that new build plants are, in general, likely to be more efficient, reflecting updated technology used in the plants and learning from previous experience.

The definition of the two categories is as follows:

- 'Existing' sites which commissioned up to and including 2017/18;
- 'New build' sites which will commission in 2018/19 and later.

Load factor methodology

Similar to last year, we have based load factors on data derived from actual generation and capacities, as published by Ofgem¹².

To derive the load factors for 'existing sites', we have used monthly generation and capacity data (on an unchanged configuration basis) based on ROCs issued from April 2010 up to 31 March 2019.

Unchanged configuration load factors express average hourly quantity of electricity generated by plants operational the entire year (in the same configuration), as a percentage of capacity operational the entire year (from the same plants). As such, it removes bias from changes in capacity during the year (e.g. because of sites beginning operation at the beginning or end of the year).

To inform 'new build' sites, we have used actual generation data, supplemented by external benchmarks, including BEIS's internal databases and industry intelligence.

For biomass conversions and co-firers, given the small numbers of projects involved, we have used plant specific load factors based on actual generation data and discussions with industry experts.

Load factors for each technology

The two tables below set out the load factors for each technology and explain the data used to calculate the figures.

¹² Ofgem's certificate database is available at:

<https://www.renewablesandchp.ofgem.gov.uk/Public/ReportViewer.aspx?ReportPath=/DatawarehouseReports/CertificatesExternalPublicDataWarehouse&ReportVisibility=1&ReportCategory=2>

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The load factors for onshore wind are divided into territorial categories:

Technology	Category	Load factor for existing stations	Load factor for new build	Source
Onshore wind	England	27.4%	30.9%	Existing build category load factors have been based on actual generation with a wind speed factor correction.
	Wales	28.6%	30.9%	
	Scotland	26.5%	35.2%	Industry reports and benchmarks and internal evidence have been used to inform the load factor for the new build category.
	Northern Ireland	25.4%	32.4%	

For all other technologies, the same load factor applies across the UK:

Technology	Load factor for existing stations	Load factor for new build	Source
Advanced Conversion Technologies	76.1%	83.2%	<p>A capacity weighted average of actual generation data from 1 April 2010 to 31 March 2019, on an unchanged configuration basis, has been used to inform the existing build category, pre-applying 50% Renewable Qualifying Multiplier (RQM).</p> <p>The load factor for new build stations is based on industry benchmarks and reports, pre-applying a 50% RQM.</p>
Anaerobic Digestion	43.6%	79.1%	<p>A commissioning year weighted average of actual generation data from 1 April 2010 to 31 March 2019, on an unchanged configuration basis, has been used to inform the existing build category. This method has been used as there is a clear upward trend in load factors over time.</p> <p>The significant increase in the load factor compared to last year is due to projects with low load factors being excluded from the calculation as they are not expected to be generating in 2020/21.</p> <p>Industry reports and benchmarks and internal evidence have been used to inform the load factor for the new build category.</p>

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Technology	Load factor for existing stations	Load factor for new build	Source
Biomass CHP	66.6%	80.3%	A commissioning year weighted average of actual generation data from 1 April 2010 to 31 March 2019, on an unchanged configuration basis, has been used to inform the existing build category. This method has been used as more recent years had a higher load factor. Industry reports and benchmarks and internal evidence have been used to inform the load factor for the new build category.
Dedicated Biomass	45.9%	67.4%	A capacity weighted average of actual generation data from 1 April 2010 to 31 March 2019, on an unchanged configuration basis, has been used to inform the existing build category. Industry reports and benchmarks and internal evidence have been used to inform the load factor for the new build category.
Energy from Waste with CHP	21.5%	81.5%	A capacity weighted average of actual generation data from 1 April 2010 to 31 March 2019, on an unchanged configuration basis, has been used to inform the existing build category, pre-applying 50% Renewable Qualifying Multiplier. Industry reports and benchmarks and internal evidence have been used to inform the load factor for the new build category.
Hydro	39.4%	29.5%	A capacity weighted average of actual generation data from 1 April 2010 to 31 March 2019, on an unchanged configuration basis, has been used to inform the existing build category. Industry reports and benchmarks and internal evidence have been used to inform the load factor for the new build category.
Landfill Gas	33.0%		Existing build category load factors have been based on the declining trend of generation from 1 April 2010 to 31 March 2019.
Offshore wind	40.8%	40.8%	Existing build category load factors have been based on actual generation with a wind speed factor correction.
Photovoltaics (Solar PV)	10.8%	12.0%	Existing build category load factors have been based on actual generation with a radiation factor correction. Industry reports and benchmarks and internal evidence have been used to inform the load factor for the new build category.

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Technology	Load factor for existing stations	Load factor for new build	Source
Sewage Gas	45.1%		A capacity weighted average of actual generation data from 1 April 2012 to 31 March 2019, on an unchanged configuration basis, has been used to inform the existing build category.
Tidal	24.1%		For the existing category, there is limited data available to estimate load factors. The load factor is based on internal discussions on the projects in the RO, their weighted capacity and likely individual load factors.
Wave	2.9%		For the existing category, there is no data available to estimate load factors. Based on the stations in the RO and internal discussions, the historic assumption seemed reasonable.

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This publication is available from: <https://www.gov.uk/government/publications/renewables-obligation-level-calculations-2020-21>

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