

Feed in Tariffs: 2010/11 generation data

Introduction

DECC has published for the first time data on electricity generation and exports from installations registered on the Great Britain Feed in Tariff (FiT) scheme. These financial year data are based on payments received (for generation) during the first year of FiTs, 2010/11 (so will not cover all FiTs generation that has taken place in the year). These data can be found in table ET 5.7, available on DECC's FiTs statistics website:

www.decc.gov.uk/en/content/cms/statistics/energy_stats/source/fits/fits.aspx

This article provides a background to the source behind the electricity generation and exports data, as well as a brief summary of the outturn data for the first year of the FiT scheme. In addition, DECC has used the generation data to estimate load factors for each technology, to provide an indication of the availability rates of FiTs installations.

Data source

Ofgem have compiled aggregate data from reported payments made by electricity suppliers to FiT registered installations for generation during the first full year of the operation of the scheme (1 April 2010 to 31 March 2011). Additionally, Ofgem have collated data reported by suppliers on the amount of electricity exported by FiTs installations to the Great Britain public distribution system (PDS). Data on electricity generation and electricity exports are based on payments made to suppliers during the first FiTs year. The data are allocated by tariff band, including technology specific tariff bands¹ as well as the "ex-gen" tariff (of 9p per unit, for sub-50 kW installations commissioned prior to 15 July 2009, that have transferred from the Renewables Obligation scheme), which covers multiple technologies.

These data are also published, at a more aggregated level, in Ofgem's Feed in Tariff annual report, 2010-2011 available at:

www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=26&refer=Sustainability/Environment/fits

Data limitations

Since the data are based on payments made between 1 April 2010 and 31 March 2011, it is dependent on installation owners submitting meter readings to their supplier. Therefore, generation may be omitted where readings have not been submitted for all generation during this time period, particularly in the weeks leading up to 31 March 2011. This may be due to readings being submitted part way through the year, so only part of the generation has been captured; or where not all confirmed installations have been able to submit a reading.

The electricity suppliers reported to Ofgem that, as at 31 March 2011, 21,705 installations had received payments for generation. This compares with 30,100 installations that were confirmed on FiTs at this time, mainly retrofitted solar photovoltaic schemes. Therefore, the generation from over 8,000 confirmed installations would not have received any payments during the first year. This is most probably due to meter readings not being submitted for these sites before 31 March 2011. This 8,000 difference is approximately the number of installations confirmed on FiTs in February and March of 2011. Depending on the eligibility date of these installations, this 'missing' generation may be for just one day, but could even be for the whole of the first year of FiTs.

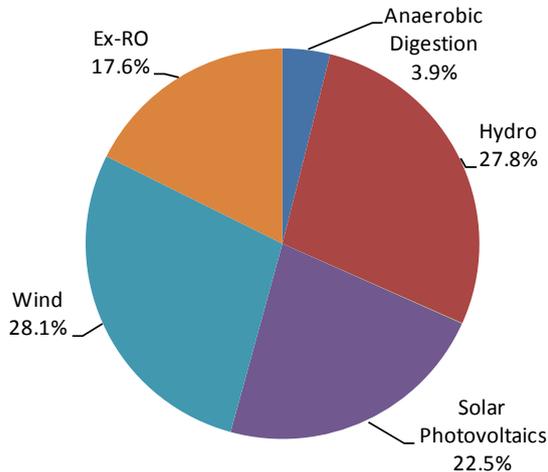
The generation data are allocated to the tariff code under which payments were made at the time. The FiTs register is continually being updated, and there are often retrospective revisions to installations' tariff bands (for example, if the installed capacity was initially mis-reported), so a scheme classed in a tariff band now, may have been previously classed in, and paid under, a different tariff band. There is also potential for error if generation has been mistakenly attributed to the wrong tariff band, for example 0-4 kW solar photovoltaic installations possibly being attributed to the new build tariff as opposed to the retrofit tariff.

¹ In cases where multiple technologies share a generation meter, a single tariff is paid.

Generation summary

In 2010/11, 68.6 GWh of electricity was reported as being generated under the FiT scheme. Of this, 19.3 GWh was generated by wind installations, 19.0 GWh by hydro installations, and 15.4 GWh by solar photovoltaic installations, 2.7 GWh by anaerobic digestion installations and less than 0.1 GWh by micro CHP installations. Installations receiving the ex-gen tariff accounted for 12.1 GWh of generation. These data are shown in table 1, while the proportions accounted for by each technology are given in chart 1.

Chart 1: Feed in Tariffs generation: shares, by technology, 2010/11



One quarter (17.1 GWh) of the total generation in 2010/11 was from hydro schemes in the 100 kW to 2 MW tariff band. Whilst only nine installations in this band generated, these were high capacity schemes. Hydro is generally the least intermittent of the three weather dependent technologies covered by FiTs, so schemes on this tariff would be expected to contribute a large share.

Of generation under the wind tariffs, almost three-quarters (14.2 GWh) came from installations on the 500 kW to 1.5 MW tariff band. This was from just six schemes but, again, these were the largest wind installations on the FiT scheme.

The tariff band for 0-4 kW retrofitted solar photovoltaic installations represented over 90 per cent of all solar photovoltaic generation, with 14.1 GWh. Almost 18,000 of these installations (over 80 per cent of all generating schemes) generated in 2010/11. During 2010/11, there was no reported generation from the three larger-scale solar photovoltaic installations registered on the 100 kW to 5 MW tariff, while there was less than 0.1 GWh from the 11 stand alone schemes that generated during the year.

Exports summary

Over one fifth (14.9 GWh) of electricity generated under FiTs was exported (or deemed to be exported) to the PDS. Of this 14.9 GWh, 50 per cent was solar photovoltaic installations, with 31 per cent from ex-RO schemes, 15 per cent from wind and 4 per cent from hydro. No electricity was exported from anaerobic digestion schemes. Across the technologies, there was considerable variation in the proportion of generation exported in 2010/11, possibly due to the varying export arrangements across installations, and particularly between larger and small scale schemes.

The majority of solar photovoltaic installations, and the generation reported against them, is from retrofitted 0-4 kW schemes, which are typically domestic installations, which are deemed to export 50 per cent of their output. Therefore, the 49 per cent of generation exported by solar photovoltaic installations in 2010/11 is expected. Within this, however, stand alone schemes (that are not attached to buildings) exported only one quarter of their output. This could be down to many of

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these, often large, schemes negotiating their own export tariffs (in excess of the FiTs export tariff of 3p per unit), so much of the exports have not been captured in this data.²

For hydro and wind, respectively, just 3 per cent and 11 per cent of generation was exported. For both of these technologies, however, the majority of recorded generation was under the largest capacity tariff bands, where no corresponding exports were recorded. For smaller-scale schemes, export ratios ranged from 25 per cent to 60 per cent.

Derived load factors: methodology

The load factor of an installation (or a group of installations) is defined as the amount of electricity actually generated compared with the maximum possible that could have been generated given the amount of capacity and the number of hours available to run. In order to estimate load factors, for each technology, the actual generation figure (in MWh) is divided by the maximum possible generation (in MWh). DECC has utilised additional data provided by Ofgem (and used to produce FiTs capacity table ET 5.6), providing data on installed capacity, tariff band, eligibility and confirmation dates, at installation level, to produce estimates of maximum possible generation. Using this has allowed DECC to compare, for each tariff band, actual generation with maximum possible generation.

Deriving load factors from the 2010/11 generation data has presented some methodology issues, since the number of installations covered by the generation data is much less than the actual number confirmed on the FiT scheme during that time. Alongside the generation data reported to Ofgem, suppliers also reported the corresponding number of installations covered for each tariff band. Unfortunately, the exact installations covered by these numbers is unknown. Therefore, DECC has estimated maximum possible generation for each tariff band for those installations *most likely* to be included in Ofgem's actual generation data for 2010/11.

For each tariff band, DECC's sample has used the same number of installations, including only those that were confirmed on FiTs before 31 March 2011, and ranking them by eligibility date. So, for example, where 18,000 0-4 kW solar photovoltaic schemes reported generation in 2010/11, it is the first 18,000 eligible installations (confirmed on FiTs before 31 March 2011) that are included in the sample for calculating maximum possible generation, as these are the most likely to have reported generation.

For each installation included in DECC's maximum possible generation calculations, the installed capacity (in kW) is multiplied by the number of hours eligible to generate under FiTs.³ In the case of FiTs, many installations have not been eligible for all of the year, being commissioned at various points throughout the year. Therefore, only generation from the date of eligibility will be included in the actual generation figure. When calculating the amount of hours available to run, for each installation, DECC has therefore only considered the time between the date of eligibility and the end of the FiTs year (31 March 2011).

Drawbacks to this methodology are that some of the installations included in DECC's estimations of maximum possible generation may not have reported actual generation, while some omitted may have reported actual generation. In addition, some of these installations may not have reported actual generation for the entire time period between the date of eligibility and the 31 March 2011, perhaps covering only until January or February (particularly as meter readings for domestic installations are often given on a quarterly basis). Further issues may be that the actual generation data within each technology may be subject to misclassification across the tariff bands, particularly around the borders of eligibility for tariff bands. Load factors by tariff band may, therefore, be erratic in certain cases.

² All exports made to the public distribution system, including those made under feed in tariffs, will be included under 'transfers' in DECC's electricity statistics (for example, DUKES 5.3).

³ The total number of hours is calculated using 24 hours in a day. Solar photovoltaic installations are not able to generate during the night, so the load factor will be expected to be lower than other technologies.

On account of the above limitations, DECC has presented load factors considering maximum possible generation up to 31 January 2011 (a point to which most confirmed installations would be expected to have submitted generation readings) and 31 March 2011, and on a technology, rather than tariff band basis ⁴.

Derived load factors: results

The resultant load factors for each technology for 2010/11 are given in Table 1.

Table 1: Feed in Tariffs generation and load factors by technology, 2010/11

Technology aggregated tariff bands	Actual generation (as reported by Ofgem) – 2010/11 (MWh)	Number of sites corresponding to actual generation	Number of sites as percentage of number confirmed on FiTs at 31 March 2011	Maximum possible generation to 31 January 2011		Maximum possible generation to 31 March 2011	
				Generation from eligibility date (MWh)	Load Factor (%)	Generation from eligibility date (MWh)	Load Factor (%)
Anaerobic Digestion	2,671	2	67%	3,284	81%	4,269	63%
Hydro	19,048	58	71%	50,798	37%	61,542	31%
Micro CHP	29	49	49%	128	23%	193	15%
Solar Photovoltaics	15,439	18,435	72%	176,505	8.7%	244,506	6.3%
Wind	19,294	466	79%	62,118	31%	76,631	25%
Ex-RO	12,079	2,695	73%	62,811	19%	74,961	16%
Total	68,559	21,705	72%	355,643	19%	462,103	15%

As shown in table 1, technologies that are predominantly domestic installations (solar photovoltaics and micro CHP), at the end of March, had a low coverage of schemes that had submitted generation readings. When comparing with just those schemes eligible at the end of January, the coverage increased greatly - solar photovoltaics to 89 per cent, and micro CHP to 83 per cent - so the load factors presented for installations eligible at the end of January, 8.7 per cent and 23 per cent respectively, may be closest to reality. ⁵

Technologies that are more commonly utilised by non-domestic FiTs installations (that may submit more frequent generation meter readings) may be more likely to have load factors based on generation right up to 31 March 2011, as the coverage did not increase markedly when comparing against those schemes eligible at the end of January. For anaerobic digestion and hydro, the coverage at both points in time was much the same, resulting in a significant increase in the respective load factors when comparing against the end of January.

User feedback

DECC would welcome views on the methodologies employed in producing these load factors, and in the estimated load factors themselves. If you would like to comment, please contact James Hemingway or Laura Williams, using the contact details below.

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⁴ This has been carried out by aggregating actual generation figures for the tariff bands covered by the technology, and dividing by corresponding maximum possible generation.

⁵ Load factors will also be influenced by the time of year when installations were commissioned. For example, much solar photovoltaic capacity was installed towards the end of the year, so generation would have taken place in winter months, lowering the load factor.