

# Feed-in tariffs

## Policy and Markets Guide

- Feed-in tariffs (FITs) have been introduced to encourage the use of small-scale electrical renewables to meet the Government's renewables targets.
- FITs will make the business case for installing renewable energy more attractive.
- Under the scheme, if you generate your own renewable power you will be paid for the electricity produced and for the excess exported to the grid. You will also save money as you won't have to buy as much electricity from a supplier.
- FITs are available for a range of technologies and almost any type of organisation can get them.
- The Carbon Trust can support you throughout the process of receiving FITs.

### Why is the policy being introduced?

FITs came into effect on 1 April 2010. They have been introduced as part of the Government's efforts to increase the amount of electricity generated from renewable sources. The UK has to generate up to 40% of its electricity from renewable sources by 2020 if it is to meet the EU targets. This represents a ten-fold increase in the next ten years. The British Government is aiming for 2% of electricity to be generated from small-scale renewables by 2020. This equates to around 1 million solar PV installations (equivalent to 1 in 30 households) and more than 30,000 small wind turbines.

FITs have therefore been introduced to provide a financial incentive for businesses to make use of small-scale renewable technologies, and help the Government meet the UK's challenging targets.

### What are feed-in tariffs?

#### In practice

FITs will be available to a range of small-scale low carbon electricity generators (<5MW). There are three key components to the scheme:

**A generation tariff:** a payment for every kWh of electricity generated. The level of this tariff will vary depending on the size and type of technology and the date when it is installed (see *Figure 1*).

**An export tariff:** a payment for any electricity which is exported to the grid. This is paid over and above the generation tariff, either at a guaranteed flat rate of 3p/kWh or at the open market value.

**Reduced electricity bills:** you won't have to buy so much electricity from a supplier.

Tariffs will be exempt from income tax, but tariff income will be subject to Corporation Tax.

**Figure 1** Subset of generation tariffs for installations put in place April 2010 – March 2012  
(full details in appendix)

Energy Source	Scale	Generation tariff (p/kWh)	Duration (years)
Anaerobic digestion	≤500kW	11.5	20
Anaerobic digestion	>500kW	9	20
Hydro	≤15 kW	19.9	20
Hydro	>2MW–5MW	4.5	20
Micro-CHP	≤2 kW	10	10
Solar PV	≤4 kW new	36.1	25
Solar PV	≤4 kW retrofit	41.3	25
Solar PV	>100kW–5MW	29.3	25
Wind	≤1.5kW	34.5	20
Wind	>1.5MW–5MW	4.5	20
Existing generators transferred from RO		9	to 2027

Source: 'Feed-in Tariffs: Government's Response to the Summer 2009 consultation' DECC (February 2010).

The above table provides a subset of the generation tariffs available. (The full set, given in the appendix, shows the tariffs for every scale of generation between the extremes shown above, up to 2021.)

The FITs provide a long-term incentive – most technologies will receive support for 20 years. The timescale is 25 years for solar PV and 10 for micro CHP, after which the technology will be re-assessed.

The generation tariff is set at different levels for different technologies, according to costs and how much electricity is expected to be generated. Tariffs are set to deliver an approximate rate of return of 5%-8% for well-sited installations, for each technology. A higher tariff level, such as for smaller wind turbines compared with larger models, doesn't necessarily reflect a more favourable business case.

Technologies should become cheaper over time, so the generation tariffs for PV and wind will decrease from 2013 to 2020 to continue to provide the same rate of return.

You will be allocated the tariff level for the period when your equipment is installed. You will then be "locked into" this tariff level over the life of the installation or the life of the tariff (20-25 years), whichever is the shorter. The allocated tariff is index-linked to inflation – the Retail Price Index (RPI) – so it will increase in nominal terms to reflect inflation. For instance, if you install a system in 2013 you will receive less than if you install in 2010, but will keep the 2013 tariff level, index-linked to inflation, over its lifetime.

The rates illustrated will be reviewed in 2012 so could be subject to change. However, if you have already been accredited a certain rate you are likely to continue to receive it.

## FITs or the RO?

FITs will complement the existing incentive mechanism, the Renewables Obligation (RO). Generators will either be supported by the RO or the new FITs. The RO will continue to support large-scale renewable generation (5MW or greater), while all microgeneration (50kW or less) will be supported by FITs. Users of small generation (above 50kW and below 5MW) will be able to choose between FITs and the RO.

If you have an existing microgenerator and have historically received the RO, you will transfer to FITs. The tariff level and lifetime depends on when you applied for the RO:

- before 15 July 2009: you will receive an equivalent tariff and duration of support to the support you would have received under the RO: a generation tariff of 9p/kWh until 2027.
- on or after 15 July 2009 and before 1 April 2010: your tariff will be calculated according to the new FIT rates and timescales for your technology.

Existing small generators fall into the following categories:

- All small generators that applied for the RO before 15 July 2009 will remain in the RO.
- If you applied for the RO between 15 July 2009 and 1 April 2010 and notified Ofgem by 31 August 2010 that you wanted to transfer to FITs, you will receive FITs from 1 April 2011, with a standard 18 months' reduction in support to reflect the support you have already received under the RO.
- If you commissioned on or after 15 July 2009 and have not applied for the RO, you can choose between FITs and the RO.

Further detail is given in the FAQs 'I already generate, do I get the FIT?'

## Does this affect me?

This section provides a brief overview to the types of technology which are applicable, the types of organisations which are eligible and the relationship to other schemes.

### Technologies

Not all technologies are eligible for FITs. Those which are eligible include:

- anaerobic digestion (AD) for biogas used in electricity production
- hydro-electric
- solar electric photovoltaic (PV)
- wind; and
- small-scale gas-powered combined heat and power (CHP) – up to 2kW.

The following technologies are not included:

- refurbished and second-hand equipment
- systems over 5MW
- biomass
- landfill gas
- waste-to-energy and power from liquid biofuels
- tidal and wave power
- geothermal energy and other 'innovative technologies'; and
- and installations made before 15 May 2009 unless registered for the renewables obligation.

### Organisations

FITs are available to all organisations, for systems with a capacity of up to 5MW. The amount of electricity this supports is quite significant compared to the energy used by the majority of organisations. If a community develops its own renewable energy generation scheme, this will also be eligible as long as the output is under 5MW.

If your organisation installs a technology and receives FITs, and you then sell the property, the FITs will remain with the installation and accrue to the new owner.

## Emissions

If your organisation reduces its emissions through low carbon generation and benefits from FITs, this reduction can be counted under Defra's company reporting guidelines. However the reduction doesn't count towards the Carbon Reduction Commitment (CRC). For further information on these schemes please see 'Emissions reporting' below.

### Emissions Reporting

#### Company emissions reporting

The Companies Act (2006), recently made changes to the narrative reporting requirements for UK companies. All companies, other than small, are already required to produce a business review. In the case of quoted companies, the directors will now be required to report on environmental matters, employees and social/community issues. The Government department Defra publishes guidelines on how emissions should be calculated for company reporting. These guidelines allow the use of emissions factors for each technology rather than the grid average rate.

#### CRC

If you are involved in the CRC energy efficiency scheme the energy generated by renewable systems which are registered for FITs will not be counted as zero emissions but must be accounted at the grid average. This is because the CRC is focused on delivering energy efficiency. If you want to use renewable technologies to gain CRC credit, you won't be able to receive FITs.

## How will this affect me?

### The business case

FITs will make the business case for installing renewables in your organisation more attractive. The new generation tariffs are generally higher than the equivalent incentives through the RO, though this depends on the capacity size and the market value of the ROC. In addition, your organisation will save money through a reduced need to buy electricity from suppliers. Where appropriate you will also be paid for any excess electricity generated.

### Illustrative calculation 1 – Solar

An office building installs 10 kW solar panels to the roof of a new building and generates 8,500 kWh/yr. Half of this is deemed to be exported to the grid.

Prices vary according to the type of installation, but will typically be about £4,700 per kWp . 10kW will cost about £47,000.

#### Generation tariff

- Tariff: 36.1 p/kWh
- Generation: 8,500 kWh/year
- Total generation tariff =  $8,500 \times 36.1 = \text{£}3,069/\text{year}$ .

#### Export tariff

- Tariff: 3p/kWh
- Export: 4.25MWh = 4,250kWh/year
- Total export tariff = £128/year.

#### Electricity savings

- Reduced electricity by 4.25 MWh/year =  $4,250 \times 6.8\text{p} = \text{£}289/\text{year}$ .

#### Simple payback

- Income per year = approximately £3,485
- Capital outlay = approximately £47,000
- Approximate simple payback less than 14 years.

Sources: AEA, Design of feed-in tariffs for sub-5MW electricity in Great Britain, Quantitative analysis for DECC, 2009.

## Illustrative calculation 2 – Wind

A farm which installs a small 6 kW wind turbine which generates 10.5 MWh/ year (for typical generations see the Carbon Trust wind tool [www.carbontrust.co.uk/windpowerestimator](http://www.carbontrust.co.uk/windpowerestimator)) – of this half is exported to the grid.

Typical costs: Between £11,000 and £19,000, including installation

### Generation tariff

- Tariff: 26.7p/kWh
- Generation: 10.5 MWh = 10,500 kWh/year
- Total Generation tariff =  $10,500 \times 26.7 = £2,804/\text{year}$

### Export tariff

- Tariff: 3p/kWh
- Export: 5.25MWh = 5,250 kWh/year
- Total Export tariff = £158/year

### Electricity savings:

- Reduced electricity by 5.25 MWh/year =  $5,250 \times 6.8\text{p} = £357/\text{year}$

### Simple payback

- Income = £3,318/year
- Operating costs = £100/year
- Capital outlay = approximately £15,000
- Approximate simple payback less than 5 years

Sources: AEA, DECC, Quarterly Energy Statistics (March 2010-average manufacturers prices of electricity), Carbon Trust analysis.

FITs will also make small-scale renewables more bankable. Unlike ROCs which vary in value due to market forces, FITs are fixed and index-linked. This is expected to make financing projects easier and cheaper.

## The marketplace

FITs will make the market for small-scale renewables more attractive for the supply chain. This could in turn drive further development of the technology.

## What do I do next, and how can the Carbon Trust help?

### Step 1: Consider energy efficiency before investing in renewables

If your business is considering installing small-scale generation, you should first make sure that you have considered all energy efficiency measures. Simple low- and no-cost energy efficiency measures cut 10%-20% from your energy bill and carbon footprint. If you have reduced your energy use through efficiency, the size of renewable generation you need will be reduced.

We have a range of support to help you identify and implement carbon saving measures. Contact us on 0800 085 2005 to see how we can help.

### Step 2: Identify the most appropriate renewable technology and size of generation capacity

Should you decide to go ahead with small-scale renewables, there are several technology options to consider. The best choice for you will depend on your circumstances, and the size you go for will also depend on the space available, as well as financial considerations. We can help you to make these choices. For example, our [Wind Estimator Tool](#) will help you to see whether wind power might be an option.

The installation will need to comply with planning consents, connection requirements and other regulatory and legal obligations.

Our advisors will be able to point you towards support or other projects. To talk through your options, call us on 0800 085 2005.

**Figure 2 Comparison of RO and FIT values for small generation: 50kW – 5MW**

Generation technology	RO incentive (p/kWh)*	FIT generation tariffs (1/4/10-31/3/11)**
Anaerobic digestion	9	9.0 – 11.5
Hydro	4.5	4.5 – 17.8
PV	9	29.3 – 31.4
Wind	4.5	4.5 – 24.1
Micro CHP pilot	N/A	10

\* Assuming 4.5p/kWh ROC price and full value of ROC passed to generator.

\*\* Generation tariffs for PV and wind “degress” up to 2020. Ranges based on size of capacity – see *Figure 1* for breakdown.

Source: DECC, Carbon Trust analysis.

### Step 3: If generation is between 50kW – 5 MW, you’ll need to decide whether to apply for FITs or ROCs

The new FIT generation tariffs are generally higher than the equivalent incentives through the RO, though this depends on the capacity size (as shown in *Figure 2*) and the market value of the ROC. The incentive through the RO is the combination of the ROC value and the number of ROCs that technology receives (“ROC bands”). The ROC value is set by a market mechanism and therefore varies – ROC values at auction have varied from 3.8p/kWh to 5.2p/kWh; the ROC value at auction as of January 2010 was 4.6p/kWh.<sup>1</sup>

Under both the RO and FIT schemes, you can sell the electricity you export to the grid on the open market. Only the FIT provides the option of a guaranteed export tariff of 3p/kWh.

Further information on the Renewables Obligation can be found at on the [Carbon Trust website](#).

### Step 4: Finance the capital cost

The Carbon Trust offers interest-free loans and Enhanced Capital Allowances:

[Interest-free loans](#) are available to potential generators to help finance energy saving projects.

[Enhanced Capital Allowances scheme](#) (ECAs) enable a business to claim 100% first-year capital allowances on their spending on qualifying plant and machinery.

### Step 5: Pick an installer

The process depends on whether you are installing microgeneration (50kW or less) or small-scale generation:

#### Microgeneration systems up to 50kW

- These will need to be certified under the Microgeneration Certification Scheme (MCS). This needs to be done by a certified installer. More information on this can be found at [www.microgenerationcertification.org](http://www.microgenerationcertification.org)

#### Small-scale generation (50kW – 5MW and anaerobic digestion units of any size up to 5MW).

- These are accredited ROO-FIT, an alternative process based on the RO accreditation. Apply to Ofgem for accreditation through the Renewable and CHP Register: [www.ofgem.gov.uk/Sustainability/Environment/RCHPreg](http://www.ofgem.gov.uk/Sustainability/Environment/RCHPreg)
- Further guidance on the ROO-FIT process is available in the RO: Guidance for Generators.

<sup>1</sup> NFPA eROC online auction, 19 January 2010.

### Step 6: Install a meter

You'll need meters at three places: generation, import and export. The import is already measured as this is what your current electricity bills are based on. A generation meter will be supplied with your renewable electricity technology. Export readings will be covered in the future as the country moves over to smart metering. In the interim it's possible to 'deem' the level of exports from generators of 30kW or less as follows:

- 50% of generation for solar PV, wind and AD installations; and
- 75% of generation for hydro installations.

If you believe your exports are substantially higher than this you can install suitable export meters and be paid on the metered level of exports. You can also ask your electricity supplier to install smart meters.

Under the roll-out mandated by the Government, which is due to be completed by the end of 2020, suppliers will probably have to cover the cost of smart meters. But if a FIT generator needs a smart meter before this planned roll-out, the generator may need to pay.

### Step 7: Apply for FIT

Once the installation has been commissioned you can contact a FIT supplier to get yourself accredited and registered. A list of participating suppliers is available at [www.ofgem.gov.uk/fits](http://www.ofgem.gov.uk/fits). It includes the largest utility companies.

Before a FIT supplier can make payments, you will need to agree a Statement of FIT Terms which sets out the basic rights and responsibilities between you and the FIT supplier.

### How do I transfer from ROCs to FITs?

See section, 'FITs or the RO'. Full information is given in the FAQs 'I already generate, do I get the FIT?'

## Where to go for further information

More detail on FITs can be found from DECC in *Feed-in Tariffs. Government's Response to the Summer 2009 Consultation*.

Visit: [www.decc.gov.uk/en/content/cms/consultations/elec\\_financial/elec\\_financial.aspx](http://www.decc.gov.uk/en/content/cms/consultations/elec_financial/elec_financial.aspx)

For more general enquiries or for further information on FITs you can also contact the Department of Energy and Climate Change at [enquiries@decc.gsi.gov.uk](mailto:enquiries@decc.gsi.gov.uk) or by telephone on 0300 060 4000.

Ofgem provides information at: [www.ofgem.gov.uk/Sustainability/Environment/fits/Pages/fits.aspx](http://www.ofgem.gov.uk/Sustainability/Environment/fits/Pages/fits.aspx)

More useful information may be found in our other FITs information available on our website.

Call the Carbon Trust for advice on: 0800 085 2005.

**Figure 3 Full list of FITs**

Technology	Scale	Tariff level for new installations in period (p/kWh)											Tariff lifetime (years)	
		Scheme year	1 1/4/10 – 31/3/11	2 to 31/3/12	3 to 31/3/13	4 to 31/3/14	5 to 31/3/15	6 to 31/3/16	7 to 31/3/17	8 to 31/3/18	9 to 31/3/19	10 to 31/3/20		11 to 31/3/21
Anaerobic digestion	≤500kW		11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	20
Anaerobic digestion	≤500kW		9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	20
Hydro	≤15kW		19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	20
Hydro	>15–100kW		17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8	20
Hydro	>100kW–2MW		11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	20
Hydro	>2MW–5MW		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	20
MicroCHP pilot*	≤2kW*		10*	10*	10*	10*	10*	10*	10*	10*	10*	10*	10*	10
PV	≤4kW (new build**)		35.1	36.1	33.0	30.2	27.6	25.1	22.9	20.8	19.0	17.2	15.7	25
PV	<4kW (retrofit**)		41.3	41.3	37.8	34.6	31.6	28.8	26.2	23.8	21.7	19.7	18.0	25
PV	>4–10kW		36.1	36.1	33.0	30.2	27.6	25.1	22.9	20.8	19.0	17.2	15.7	25
PV	>10–100kW		31.4	31.4	28.7	26.3	24.0	21.9	19.9	18.1	16.5	15.0	13.6	25
PV	>100kW–5MW		29.3	29.3	26.8	24.5	22.4	20.4	18.6	16.9	15.4	14.0	12.7	25
PV	Standalone system**		29.3	29.3	26.8	24.5	22.4	20.4	18.6	16.9	15.4	14.0	12.7	25
Wind	≤1.5kW		34.5	34.5	32.6	30.8	29.1	27.5	26.0	24.6	23.2	21.9	20.7	20
Wind	>1.5–15kW		26.7	26.7	25.5	24.3	23.2	22.2	21.2	20.2	19.3	18.4	17.6	20
Wind	>15–100kW		24.1	24.1	23.0	21.9	20.9	20.0	19.1	18.2	17.4	16.6	15.9	20
Wind	>100–500kW		18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	20
Wind	>500kW–1.5MW		9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	20
Wind	>1.5MW–5MW		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	20
Existing microgenerators transferred from the RO			9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	to 2027

\*Note the micro CHP pilot will support up to 30,000 installations with a review to start when the 12,000th installation has occurred.

\*\*'Retrofit' means installed on a building which is already occupied; 'New build' means where installed on a new building before first occupation; 'Standalone' means not attached to a building and not wired to provide electricity to an occupied building.

Source: 'Feed-in Tariffs: Government's Response to the Summer 2009 consultation' DECC (February 2010).