National Audit Office

BRIEFING FOR THE HOUSE OF COMMONS ENERGY AND CLIMATE CHANGE COMMITTEE AND ENVIRONMENTAL AUDIT COMMITTEE

NOVEMBER 2011

The modelling used to set Feed-in Tariffs for solar photovoltaics

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Introduction

1.1 This briefing has been prepared by the National Audit Office, at the request of the House of Commons Environmental Audit Committee and the Energy and Climate Change Committee, to inform their joint inquiry into the government's 31 October 2011 consultation on proposals for solar power Feed-in Tariffs (FiTs).[1]

1.2 The Department of Energy and Climate Change (the Department) launched the FiTs scheme on 1 April 2010 to encourage the installation of small-scale low carbon energy generation, which it defined as installations with an electricity generating capacity of up to five megawatts. The scheme provides for energy suppliers to pay low carbon generators based on the amount of electricity they generate and further payments for any energy they do not use and 'export' to the electricity grid. Payments vary by technology and the size of the installation. The cost to suppliers is adjusted in proportion to their share of the UK electricity supply market through a 'levelisation' process, managed by Ofgem, which requires suppliers that have made fewer FiTs payments relative to their market share to make payments to a fund administered by Ofgem. The fund is redistributed to suppliers that have made more FiTs payments relative to their market share. The cost of the scheme is ultimately passed on to all electricity customers in the form of higher electricity prices.

1.3 The Department estimated in February 2010 that the FiTs scheme would have a discounted net cost of £8.2 billion up to 2030,[2] although it was not subject to any budgetary limitations when it was launched. In the 2010 Spending Review, the government introduced a budgetary cap and, in March 2011, a supporting control framework.[3] The Department set a cumulative budget for the FiTs scheme of £867 million up to 2014-15[4] and, in line with a commitment made in the Spending Review, it plans to reduce the estimated annual cost of the scheme in 2014-15 by £40 million to £357 million.

1.4 Take-up of tariffs for solar photovoltaics, and therefore the gross cost to consumers of the FiTs scheme, has been considerably higher than predicted in the Department's original analysis. The Department took steps to limit the take-up of tariffs

[1] Department of Energy and Climate Change, *Feed-in tariffs scheme: consultation on Comprehensive Review Phase 1 – tariffs for solar PV*, October 2011. http://www.decc.gov.uk/assets/decc/11/consultation/fits-comp-review-p1/3364-fits-scheme-consultation-doc.pdf

[2] Department of Energy and Climate Change, *Impact assessment of Feed-in Tariffs for Small-scale, Low Carbon, Electricity Generation (URN10D/536)*, February 2010 http://www.decc.gov.uk/assets/decc/Consultations/Renewable%20Electricity%20Financial%20Incentives/2710-final-ia-feed-in-tariffs-small-scale.pdf

[3] HM Treasury, *Control framework for DECC levy-funded schemes*, March 2011 http://hm-treasury.gov.uk/d/control_framework_decc250311.pdf

[4] Department of Energy and Climate Change, *Comprehensive Review Phase 1 – Consultation on Feed-in Tariffs for solar PV – Impact Assessment*, November 2011 http://www.decc.gov.uk/assets/decc/11/consultation/fits-comp-review-p1/3416-fits-ia-solar-pv-draft.pdf

for larger photovoltaic installations by reducing tariff levels from August 2011, following a fast track review of tariffs for such installations. For smaller installations, the Department did not identify that take-up was significantly higher than expected until June 2011. Following further monitoring, it published a consultation on proposed changes to photovoltaic tariffs on 31 October 2011 (**Figure 1**), which constitutes 'Phase 1' of a Comprehensive Review of the FiTs scheme.

Figure 1

Proposed revision to Feed-in Tariffs for solar photovoltaics

Band (kilowatts)	Current generation tariff (pence per kilowatt hour)	Proposed generation tariff (pence per kilowatt hour))
<4 (new build)	37.8	21.0
<4 (retrofit)	43.3	21.0
4-10	37.8	16.8
10-50	32.9	15.2
50-100	19.0	12.9
100-150	19.0	12.9
150-250	15.0	12.9
250-5,000	8.5	8.5
stand alone[1]	8.5	8.5

Notes [1] stand alone refers to installations on agricultural land

Figure Source: Department of Energy and Climate Change *Feed-in tariffs scheme: consultation on Comprehensive Review Phase 1 – tariffs for solar PV*, October 2011.

1.5 This briefing describes the:

- modelling that informed the current tariffs for solar photovoltaics, and the key inputs, assumptions, relationships between variables and uncertainties;
- Department's decision to bring forwards its planned review of tariff rates in the face of higher than expected demand; and
- further modelling that the Department used to determine the proposed changes to the tariffs.

1.6 The main sources of evidence for this briefing were the financial model and supporting documentation that the Department used to set the current and proposed tariffs, and interviews with the FiTs policy team and economists in the Department.

The modelling used to set existing tariffs

1.7 The tariffs currently in place are based on analysis that the Department carried out using a financial model developed in 2009 by Element Energy and Pöyry Energy.

Description of the FiTs model

1.8 The model takes the form of a set of excel spreadsheets that forecast the deployment of small-scale renewable energy generation under different Feed-in Tariff designs. It constructs renewable and low carbon electricity supply curves, based on a number of inputs and assumptions that can be set by the user, to determine the estimated amount of generating capacity in terawatt hours for each technology at a given generating cost. **Figure 2** summarises the main inputs to and outputs from the model.

Figure 2

Overview of the FiTs model

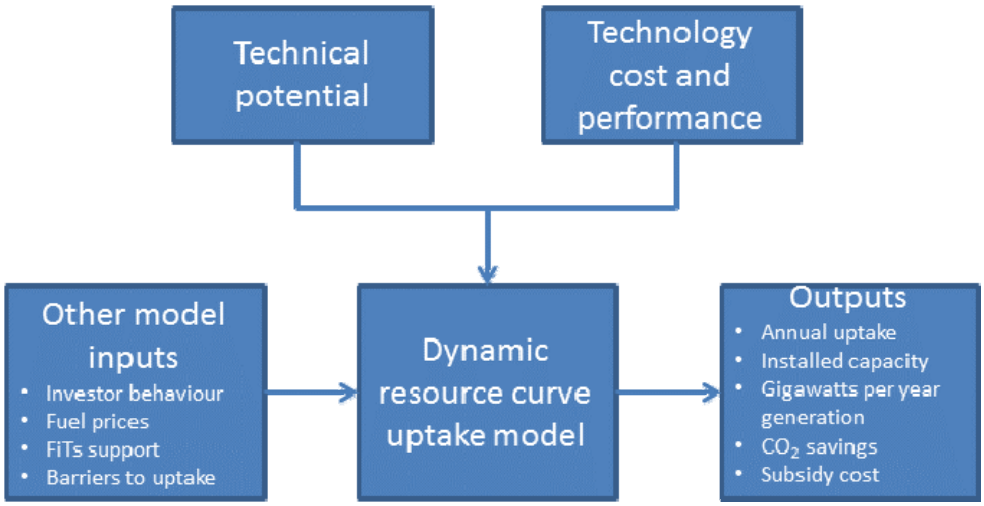


Figure Source: Element Energy, *Update to the feed-in tariff model,* March 2011

Key input variables and assumptions

1.9 The theoretical maximum level of take-up of solar photovoltaics allowed for in the model is based on:

- estimating the total capacity that could potentially be installed, which is 60 terawatt hours per year, based on measuring the amount of available roof

space in the commercial and domestic sectors,[6] and an assumption that 0.05 per cent of agricultural land could be used for solar photovoltaic generation;[7] and

- estimating the total capacity that could be installed in any given year, which for the first year was set at 50 megawatts to reflect constraints in available manufacturing and installation capacity. For subsequent years, the model assumed that the maximum possible growth in the number of photovoltaic installations would be 70 per cent a year, based mainly on experience in Germany.

1.10 The three key assumptions in the model that influence the predicted take-up of photovoltaics and cost of the scheme are:

- technology costs;
- the financial returns that investors expect; and
- the level of the tariff.

Various other inputs and assumptions such as forecast electricity prices and carbon costs also have an impact on the take-up and cost of the scheme.

Technology costs

1.11 Capital costs used in the model were based on estimates that Element Energy and Pöyry Energy obtained from photovoltaic installers.[8] The smallest installations were assumed to have a fixed cost of £2,000 and additional variable costs of up to £4,500 per kilowatt. For larger systems, the model assumed that costs vary directly in proportion to power output.[9] It also assumed that costs for all installations would reduce over time using a factor derived from learning curve analysis contained in a 2005 study of the potential for micro-generation (**Figure 3**).[10]

[6] This was based on floor space data available from the Valuation Office Agency, and conversion factors for available roof space from an International Energy Agency study in 2002.
[7] In the absence of available evidence, the model assumed that take-up would be constrained to 0.05 per cent of total agricultural land to reflect the alternative uses of the land and the difficulty of obtaining grid connection.
[8] Element Energy and Pöyry Energy, *Design of Feed-in Tariffs for Sub-5MW Electricity in Great Britain: quantitative analysis for DECC*, July 2009 http://www.decc.gov.uk/assets/decc/consultations/renewable%20electricity%20financial%20incentives/1_20090715135352_e_@@_relateddocelementpoyryreportonquantitativeissuesinfitsdesignfinal.pdf
[9] Element Energy and Pöyry Energy, *Design of Feed-in Tariffs for Sub-5MW Electricity in Great Britain: quantitative analysis for DECC*, July 2009 http://www.decc.gov.uk/assets/decc/consultations/renewable%20electricity%20financial%20incentives/1_20090715135352_e_@@_relateddocelementpoyryreportonquantitativeissuesinfitsdesignfinal.pdf
[10] Energy Saving Trust, Element Energy and EConnect, *Potential for Microgeneration: Study and Analysis*. 2005 http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file27559.pdf

Figure 3

Capital cost estimates for solar photovoltaics

Band (kilowatts)	2009	2015	2020
<4 (retrofit)	£2,000 fixed £4,500 per kW	£2,000 fixed £2,530 per kW	£2,000 fixed £1,987 per kW
<4 (new build)	£1,500 fixed £3,983 per kW	£1,500 fixed £2,240 per kW	£1,500 fixed £1,759 per kW
4-10	£4,800 per kW	£2,699 per kW	£2,120 per kW
10-100	£4,300 per kW	£2,420 per kW	£1,900 per kW
100-5,000	£4,000 per kW	£2,250 per kW	£1,765 per kW
Standalone	£4,000 per kW	£2,250 per kW	£1,765 per kW

Figure Source: National Audit Office, based on Element Energy and Pöyry Energy, *Design of Feed-in Tariffs for Sub-5MW Electricity in Great Britain: quantitative analysis for DECC*, July 2009

Investor behaviour

1.12 The model assumes that take-up of the scheme will only occur if tariffs are set at a rate that provides potential investors with a rate of return that exceeds their 'hurdle rate', which is the minimum return that they require before they will invest. The model uses different hurdle rates for households investing in smaller-scale installations and investors in larger-scale installations up to five megawatts.

1.13 The original model assumes that the hurdle rate for households ranges from 3 per cent to 20 per cent. Some domestic households were expected to require a minimum rate of return of 3 per cent to invest in photovoltaics. Element Energy and Pöyry Energy adopted this rate to align broadly with the 3.5 per cent social cost of capital rate that the Treasury recommends departments use in their investment appraisal decisions.[11] At the other end of the scale the model assumes that some households would require as much as a 20 per cent return to participate in the scheme, which was based on a review of the literature on the uptake of energy efficiency measures.[12] The model assumes that the higher the rate of return, given the tariff rate and actual costs in the market, the greater the take-up of the scheme. The upper rate is intended to show the rate at which there would be 100 per cent take-up of the scheme, subject to technical and market constraints. The wide range reflects

[11] HM Treasury, *The Green Book – appraisal and evaluation in central government*, 2003 http://www.hm-treasury.gov.uk/d/green_book_complete.pdf

[12] Element Energy and Pöyry Energy, *Design of Feed-in Tariffs for Sub-5MW Electricity in Great Britain: quantitative analysis for DECC*, July 2009 http://www.decc.gov.uk/assets/decc/consultations/renewable%20electricity%20financial%20incentives/1_20090715135352_e_@@_relateddocelementpoyryreportonquantitativeissuesinfitsdesignfinal.pdf

the diversity of attitudes among householders and the barriers to take-up they might face.

1.14 The hurdle rates used in the model for commercial investors in installations of up to 5 megawatts ranged from 6 per cent to 15 per cent. These rates were based on the outcome of telephone discussions with investors in different sectors conducted by Pöyry Energy in early 2009, and an examination of the weighted average cost of capital for regulated power networks and power generation.[13]

Tariff levels

1.15 The tariff levels have an important influence on the rate of return that investors can receive and therefore the level of take-up of the scheme. The model predicted that if tariff rates were to remain the same over time, the rate of return on new photovoltaic installations would gradually increase due to falling capital costs. To compensate for this, the model incorporated an annual reduction in the tariff rates for new installations – known as degression – using a rate for solar photovoltaics of 9 per cent, which was based on the results of the Department's 2009 consultation on the FiTs scheme.[14]

Other inputs

1.16 The model also uses a range of other inputs, including forecasts for carbon prices, based on the Department's guidance on the value of avoided carbon dioxide emissions, to quantify the financial value of the predicted carbon savings; and forecasts of future electricity prices, which affects the income potential for participants.

Outputs

1.17 The main outputs of the model are the take-up, capacity installed, subsidy costs, electricity generated and carbon dioxide emissions avoided. The model can show tariff designs that minimise the cost to the economy and electricity consumers for a given electricity generation target, or more complex approaches that are designed to encourage a wide range of technologies and scale or deliver a certain rate of return for investors. The model also shows how rates of return vary by location, depending on their average level of sunshine.

1.18 The Department set the tariff rates for photovoltaic technologies to give investors with well-sited installations a rate of return of around 5 per cent. The Department adopted this rate of return following its 2009 consultation and a review by Element

[13] Element Energy and Pöyry Energy, *Qualitative Issues in the design of the GB Feed-in Tariffs*, June 2009. The sectors comprised commercial developers, pension funds, project finance banks, utilities, communities / cooperative, industrial companies, and farmers.
http://www.decc.gov.uk/assets/decc/Consultations/Renewable%20Electricity%20Financial%20Incentives/1_20090714182339_e_@@_RelateddocElementPoyryFINALreportonqualitativeissuesinFITsdesign.pdf

[14] Department of Energy and Climate Change, *Impact assessment of Feed-in Tariffs for Small-scale, Low Carbon, Electricity Generation (URN10D/536)*, February 2010
http://www.decc.gov.uk/assets/decc/Consultations/Renewable%20Electricity%20Financial%20Incentives/2710-final-ia-feed-in-tariffs-small-scale.pdf

Energy and Pöyry Energy of experiences of FiTs in other European countries. The Department accepted that this rate of return would vary by location. The Department provided for an annual increase in the tariff to reflect inflation and, from April 2012, reductions in the tariff rate to reflect its assumptions about reductions in capital costs. It also announced its intention to put in place a programme of reviews that would allow changes to be made to FiTs, and that the first major review would be implemented in 2013.

1.19 The Department's February 2010 impact assessment showed that there was some uncertainty as to the scheme outcomes from these tariff rates. It analysed the impact of changing fossil fuel prices, discount rates on the scheme and, in its assessment of options, the impact of varying the rate of return on generation and costs. Take-up and the discounted net resource cost of the scheme were particularly sensitive to the minimum hurdle rate assumed and variations in the predicted rate of return. The Department also analysed the impact of providing a rate of return of 8 per cent for all technologies, which increased its estimate of the net present cost of the scheme up to 2030 from £8.2 billion to £20 billion.

Comparison of predicted and actual take-up

1.20 The Department's intention when it launched the scheme in April 2010 was that the first major review of the scheme would be undertaken to enable the results to be implemented in 2013, but that it would, if necessary, carry out earlier reviews. The Department decided to carry out early reviews of the tariffs for solar photovoltaics, initially for larger installations and then, in the consultation launched in October 2011, for all tariffs. This was a reaction to take-up of tariffs for solar photovoltaics significantly exceeding the Department's forecasts. It attributed this to unanticipated reductions in the price of solar panels during 2010 and the consequent increase in rates of return available to investors.

Model projections and actual take-up

1.21 When the FiTs scheme was designed and launched, there was no specific budgetary constraint. The Spending Review 2010 introduced a cap on the combined cost of schemes funded through levies on energy consumers, including FiTs, with effect from April 2011. The Department set a cumulative budget for the FiTs scheme of £867 million up to 2014-15[15] and, in line with a commitment made in the Spending Review, plans to reduce the estimated annual cost of the scheme in 2014-15 by £40 million to £357 million. These developments increased the importance of monitoring the total cost of the scheme as well as rates of return.

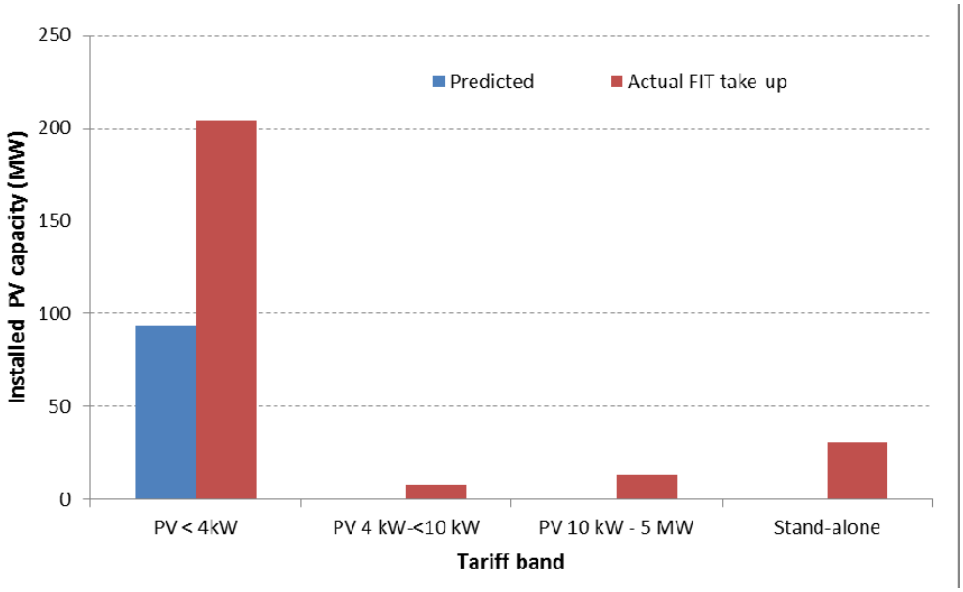
[15] Department of Energy and Climate Change, *Comprehensive Review Phase 1 – Consultation on Feed-in Tariffs for solar PV – Impact Assessment*, November 2011
http://www.decc.gov.uk/assets/decc/11/consultation/fits-comp-review-p1/3416-fits-ia-solar-pv-draft.pdf

1.22 The Department initially monitored take-up using the central register of FiTs applications maintained by Ofgem, which administered the scheme. During the first half of 2010, the take-up of FiTs was broadly in line with what the model had predicted. However, in October 2010, the Department became aware of a significant number of applications for large-scale solar photovoltatics. This was something which the model had not predicted in the early years of the scheme. The Department carried out research among planning authorities to quantify the extent of such applications, and launched a Fast Track Review, as the first stage of a wider comprehensive review, in February 2011. At the same time, it announced that it would conduct a Comprehensive Review of the scheme to be completed by the end of 2011. The Fast Track Review led to a large reduction in tariffs for installations with a capacity of more than 50 kilowatts, with the aim of providing a rate of return on capital of approximately 5 per cent. The tariffs for installations between 250 kilowatts and 5 megawatts and for stand alone installations was not based on the model, but on reducing them to a level consistent with those for offshore wind under the Renewables Obligation. The tariff for installations between 150 and 250 kilowatts was set between the tariff for the band below this size, which was based on the model, and the tariff for larger installations.

1.23 The Department discovered in June 2011 that its monitoring of the central FiTs database had not accurately identified increases in the rate of take-up for small-scale installations because it could take up to three months for registrations of these installations on an industry database, the Microgeneration Certification Scheme, to be recorded on Ofgem's central FiTs register. The Department therefore prepared a further spreadsheet model to use Microgeneration Certification Scheme data to forecast the growth in the number of installations on a month by month basis and to estimate the resulting financial commitments. In July and August 2011, the Department estimated that the substantial rise in applications for smaller-scale photovoltaics installations meant that by the end of 2011-12 take-up of photovoltaics would be more than double the level predicted by the model, and by the end of September this capacity had already been reached (**Figure 4**). In response, the Department brought forward part of the comprehensive review of the scheme, by launching the Phase 1 consultation on photovoltaics, which it published on 31 October 2011.

Figure 4

Predicted and actual take up of solar photovoltaic FiTs as at 30 September 2011 (installed capacity in megawatts)



Notes: The Department predicted that take up of installations over four kilowatts would be negligible in the initial years of the scheme as a result of commercial investors having higher hurdle rates.

Figure Source: Department of Energy and Climate Change, *Comprehensive Review Phase 1 – Consultation on Feed-in Tariffs for solar PV – Impact Assessment*, November 2011

1.24 The Department considered that the main reason for the higher than forecast take-up was a significant reduction in the global price of solar panels during 2010. This had resulted in the Feed-in Tariff offering rates of return well above the 5 per cent assumed in the model, with exact rates varying according to the size of the installation. The Department attributed this to economies of scale, technical improvements and, most significantly, a global excess of production capacity.

1.25 Although take-up to date has been higher than planned, some suppliers made fewer FiTs payments relative to their market share and, in line with the levelisation process (paragraph 1.2), contributed to a fund managed by Ofgem. The total value of payments into that fund in 2010-11 was £14.4 million, and the balance was redistributed to suppliers whose FiTs payments were higher relative to their market share.

The modelling used to set the proposed tariff revisions

1.26 In May 2011, the Department commissioned Parsons Brinckerhoff and Cambridge Economic Policy Associates to review and update the model developed by Element Energy and Pöyry Energy. The review covered all technologies, and was used to determine the changes to tariffs for photovoltaics that the Department proposed in its October 2011 consultation. The only changes to the structure of the model were the addition of the new banding structure introduced by the Fast Track Review and the incorporation of bandings for 'aggregators', which are social housing projects or businesses that, for solar photovoltaics, effectively rent roofs from homeowners, and install solar panels on them and receive the associated FiTs payments, with the householder receiving the electricity generated.

Revised assumptions

The review of the model resulted in changes to several inputs and assumptions. The most significant were to the capital costs and hurdle rates (**Figure 5**).

Figure 5

Key differences between inputs, assumptions and outputs when the scheme was launched, and at October 2011

	Original estimates	Updated estimates
Average installation cost for a 2.6 kilowatt installation (£s per kilowatt)	13,000	9,000
Hurdle rates for domestic households (per cent)	3 – 20	1 – 12
Take-up as at 30 September 2011 (megawatts)	94	256
Cost of support for photovoltaics through to 2014-15 on existing tariffs (£ billions, undiscounted nominal)	650	2,100

Figure Source: National Audit Office, based on data supplied by the Department

Capital costs

1.27 The capital costs of installing solar photovoltaics in the revised model were on average 40 per cent lower than the costs used in the original model, although this varied by the size of the installation (**Figure 6**). These revised costs are designed to reflect reductions resulting from economies of scale, technical improvements and a global excess of production capacity. The updated estimates were based on data

collected by Parsons Brinckerhoff and Cambridge Economic Policy Associates through discussions with industry, their own project experience and a review of other existing sources.

Figure 6

Comparison of capital costs

Type of installation	Size of installation (kilowatts)	Capital Cost of 2010 installation (£s, 2010 prices)	Capital Cost of 2011 installation (£s, 2010 prices)	Percentage change
Building Mounted	2.6	13,000	9,000	-30
	5.5	25,000	16,000	-35
	20	82,000	54,000	-35
	80	327,000	194,000	-40
	200	761,000	486,000	-35
	350	1,332,000	788,000	-40
Standalone	200	761,000	450,000	-40
Average		471,571	285,286	-40

Figure Source: Department of Energy and Climate Change, *Comprehensive Review Phase 1 – Consultation on Feed-in Tariffs for solar PV – Impact Assessment*, November 2011

1.28 The revised model assumes that installation costs will fall further, by up to 41 per by 2015 compared to 2010, with further reductions at a lower rate thereafter (**Figure 7**), but fixed costs for smaller installations are assumed to remain broadly constant.[16] For installations of less than four kilowatts, the rate of decline is broadly consistent with the rates used in the original model. For larger scale photovoltaic installations of up to five megawatts, the revised model assumes that costs will reduce more rapidly, to £973 per kilowatt in 2020, which is 44 per cent less than assumed in the original model.

[16] Cambridge Economic Policy Associates Ltd. and Parsons Brinckerhoff, *Updates to the Feed-in Tariffs model: documentation of changes for solar PV consultation*, October 2011 http://www.decc.gov.uk/assets/decc/11/consultation/fits-comp-review-p1/3365-updates-to-fits-model-doc.pdf

Figure 7

Projected falls in marginal capital costs (£ per kilowatt)

Band (kilowatts)	2010 £ per kilowatt	2015 £ per kilowatt	2020 £ per kilowatt
New build domestic (<=4)	3,250	2,261	1,750
New build 4–10	3,200	1,890	1,245
New build 10–50	3,000	1,771	1,168
New build 50–150	2,700	1,594	1,051
New build 150–250	2,700	1,594	1,051
New build 250–5000	2,500	1,476	973
Stand alone system	2,500	1,476	973
Aggregators<4	2,000	1,391	968
Aggregators>4	2,250	1,565	1,089

Figure Source: Cambridge Economic Policy Associates Ltd. and Parsons Brinckerhoff, *Updates to the Feed-in Tariffs model: documentation of changes for solar PV consultation*, October 2011

Investor behaviour (hurdle rates)

1.29 The other main change in the revised model is a reduction in hurdle rates. The lower rate for households was reduced from 3 per cent to 1 per cent. This was based on the assessment of Cambridge Economic Policy Associates and Parsons Brinckerhoff that some households are willing to accept very low rates of return, and others may choose to invest in photovoltaic technology for non-financial reasons. Cambridge Economic Policy Associates and Parsons Brinckerhoff also reduced the upper rate from 20 per cent to 12 per cent to reflect the low rates of return from common financial savings products such as pensions and index-linked National Savings Bonds, which are significantly below the estimated rate of return available through the current Feed-in Tariff for solar photovoltaics.

1.30 For commercial investors, the lower hurdle rate was reduced from 6 per cent to 5 per cent, and the upper rate from 15 per cent to 8 per cent. These revisions were based on a review of the weighted average cost of capital for a range of companies, such as supermarket chains, which might be interested in investing in the FiTs scheme. The consultants estimated that the cost of capital for these companies ranged from 5 per cent to 11 per cent, with an average of 8.8 per cent for all UK-based companies quoted on the FTSE. They also cited other factors that could reduce hurdle rates, such as the desire to improve environmental performance or credentials, and the benefits of certainty of financial returns for energy intensive firms.

Use of modelling results in the consultation

1.31 The Department has forecast the take-up and cost of the scheme up to April 2012 based on extrapolating observed take-up since April 2011 and, for future years, projections based on the revised FiTs model. It has estimated that the undiscounted cost to consumers between 2011-12 and 2014-15 of continuing with current tariffs would be just over £2.1 billion (or £1.8 billion discounted). This would exceed planned spend through the FiTs scheme over this period, within the context of the overall levy cap set in the 2010 Spending Review, by £1.2 billion (**Figure 8**). The Department estimates that the revised rates it has proposed would reduce the cost to consumers up to 2014-15 to £866 million, if participation in the scheme is linked to a Green Deal energy efficiency requirement, or to £811 million if eligibility is conditional on properties having an Energy Performance Certification rating of level C or above.

Figure 8

The Department's analysis of the impact of varying tariff levels on the cost to consumers of the FiTs scheme, 2011-12 to 2014-15 (£ millions)

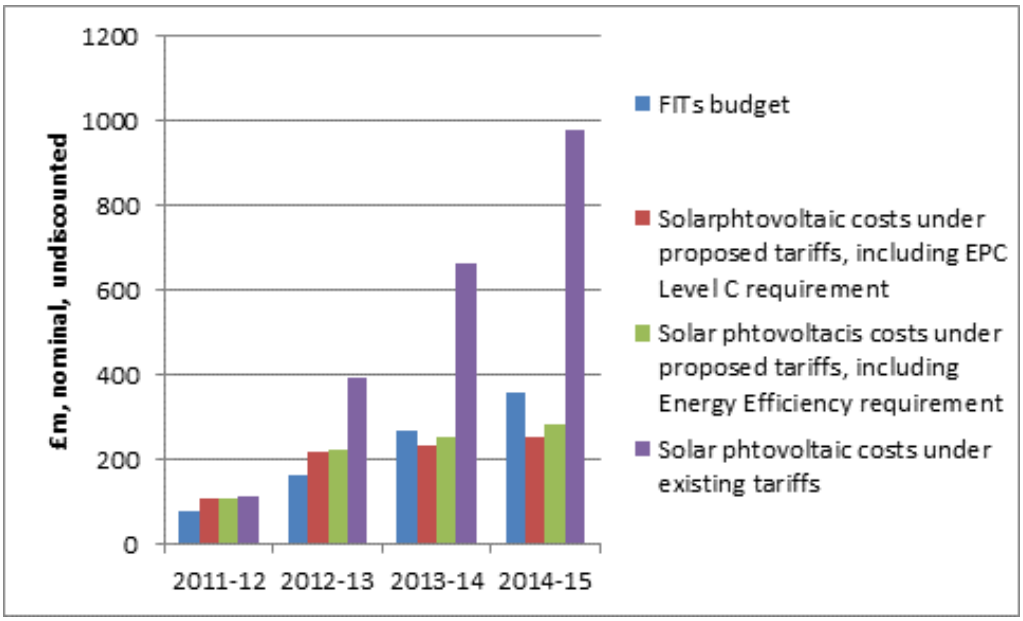


Figure Source: National Audit Office analysis of Department of Energy and Climate Change, *Comprehensive Review Phase 1 – Consultation on Feed-in Tariffs for solar PV – Impact Assessment*, November 2011

1.32 The Department's forecasts of future take-up and costs under existing and the proposed tariffs are subject to various uncertainties. The impact of linking the scheme to energy efficiency requirements is not certain, and take-up will also be affected by future trends in electricity prices. Photovoltaic capital costs have undergone significant changes over the last 18 months, and costs in future years are uncertain, particularly if the market conditions change in the United Kingdom and the rest of Europe.

1.33 The revised rates that the Department has proposed are based on its analysis using the revised model to achieve a rate of return of around 4.5 per cent for solar photovoltaic installations of less than four kilowatts and a 5 per cent return for other bands. The estimates of hurdle rates carried out by Parsons Brinckerhoff and Cambridge Economic Policy Associates suggests that this will give some households a return that substantially exceeds their minimum hurdle rate, and so will continue to incentivise investment by these households. This will, however, be influenced by the returns available from alternative investments

1.34 The tariff levels are taken from the model, with two exceptions. The first relates to tariffs in the 250 kilowatt to 5 megawatt band and the standalone band, where the tariffs were set at a level to provide a subsidy equivalent to that available through the Renewables Obligation, with the aim of limiting take-up of the FiTs scheme by larger investors. The second exception is for the proposed new tariffs for aggregators. The Department is proposing to set these at 80 per cent of the proposed standard tariffs for individual installations. The Department adopted a higher rate than the 64 per cent used by Parsons Brinckerhoff and Cambridge Economic Policy Associates, on the grounds that there is considerable uncertainty surrounding the extent of cost-savings that aggregators might enjoy, and a higher return is therefore needed to maintain aggregators' interest in the scheme.

Where to find out more

The National Audit Office website is

www.nao.org.uk

If you would like to know more about the NAO's work on the Department of Energy and Climate Change, please contact:

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