

Onshore Wind - Call for Evidence

Part B – Costs

20 September 2012

Onshore wind call for evidence

Part B – Costs

General information

Purpose of this call for evidence

This call for evidence seeks information on the latest costs of onshore wind energy in the UK. The Government's response to the RO Banding Review, published on 25 July 2012 set out the support levels for onshore wind from April 2013, confirming our intention to reduce the level of support to 0.9ROCs/MWh for new accreditations and additional capacity added in the banding review periods (1 April 2013 – 31 March 2017). This decision was based on this evidence suggesting that expect capital costs for onshore wind to fall by 3.6% to 2016.

However, we also recognise the risk that costs could fall more or less swiftly than expected, and therefore committed to carrying out this Call for Evidence to examine the latest onshore wind costs.

This Call for Evidence is being issued in parallel with a Call for Evidence on 'Onshore Wind Community Engagement and Benefits (Part A)', details of which are published alongside this document on the DECC website.

This call for evidence was issued on : 20 September 2012
The closing date for responses is : 15 November 2012

Responses can be made by downloading the response template published alongside this call for evidence document on the DECC website and emailing the completed form and any accompanying third party reports /evidence to :

Onshorewind@decc.gsi.gov.uk

Alternatively hard copies of responses may be submitted to the address below:

Enquiries and hardcopy responses to:

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Introduction

The case for onshore wind

1. Bringing forward appropriately sited onshore wind generation is an essential part of a responsible UK energy policy. Onshore wind is as necessary for our security of supply over this decade as aging generation closes, as it is for helping to decarbonise our energy market. Since it is also one of the cheapest renewable technologies, it minimises pressure on consumer bills and protects them from the price and availability risks of over-reliance on a limited range of fuels as we bring forward investment in energy.

Deployment potential

2. In 2011, onshore wind already contributed 3% (10TWh) of the UK electricity supply (up from 1.9% in 2010), enough to power 2.4 million homes. The Government's ambition for onshore wind during this decade is set out in the Renewables Roadmap published last summer¹. This shows that up to 13 GW of capacity is expected as part of our renewable energy mix by 2020 and this could generate 24-32TWh of electricity per annum equivalent to 20-30% of renewable electricity generation and enough to power 7.7 million homes.

3. Much of development needed to achieve this ambition is already underway: in July 2012, 5 GW was in operation, nearly 6 GW had received planning consent and was waiting to be built, and a further 7 GW was in the planning system². Not all will be built or consented, and there will be some new projects to come, but the deployment the UK needs is largely already visible within the planning pipeline. Roughly 60% of current development is in Scotland, 20% in England, and 10% each in Wales and Northern Ireland.

Economic benefits and investment

4. As well as contributing to our energy security and low carbon objectives, onshore wind can bring substantial new economic benefits and job opportunities to the country as a

¹ For a copy of the Renewable energy Roadmap published July 2011 see DECC website at : http://www.decc.gov.uk/en/content/cms/meeting_energy/renewable_ener/re_roadmap/re_roadmap.aspx

² Data based on analysis from DECC's Renewable Energy Planning Database (REPD) which tracks renewables developments through the planning system. The REPD database can be found at <https://restats.decc.gov.uk/cms/welcome-to-the-restats-web-site>

whole and at a local level. A recent report for DECC and the main onshore wind trade body RenewableUK, produced by BiGGAR economics³ shows that in 2011 onshore wind supported around 8,600 jobs and was worth £548m to the UK economy. Of this, around 1,100 jobs and £84m investment was estimated to occur at the Local Authority level in which a wind farm was sited. This equates to almost £700k for every MW of onshore wind installed in the UK, with over £100k staying in the Local Authority area. in which a wind farm was sited.

5. In addition between 1 April 2011 and 31st July 2012, DECC has collated renewable industry announcements totalling over £2.7bn investment in onshore wind, supporting over 2400 jobs (with further potential for over £3.7bn investment and over 1,100 jobs from possible future projects and potential manufacturing opportunities not yet announced.

Costs

6. All energy comes at a cost to the consumer and the challenge is to bring those costs down as swiftly as possible as we decarbonise our electricity supply. Wind energy is a free resource, so the costs reside only in the manufacture, construction and maintenance of the infrastructure. As such onshore wind is one of the cheapest large-scale renewable energy source which can be deployed at significant scale.

7. Onshore wind sites (larger than 5MW) were estimated to generate electricity at an average cost of £86-126/MWh, compared to £81/MWh for Combined Cycle Gas Turbines (CCGT)⁴, with the relative gap between onshore wind and CCGT costs halved in the last five years⁵. Financial support to make onshore wind economic comes primarily through the Renewables Obligation (RO) through which subsidies are paid for renewable electricity

Purpose of the call for evidence

8. The Government's response to the RO Banding Review published on 25 July 2012⁶ set out the support levels for onshore wind from April 2013, confirming our intention to

³ Report by BiGGAR Economics for DECC and RenewableUK – 'Onshore wind – direct and wider economic impacts' May 2012. See : http://www.decc.gov.uk/en/content/cms/meeting_energy/wind/onshore/delivering/cost_economic/cost_economic.aspx

⁴ These figures are in £2012 prices and for Projects Starting in 2011 with a 10% discount rate. CCGT costs source PB 2011, Onshore wind costs are in line with the government response to the RO banding review

⁵ Based on levelised cost analysis carried out for DECC by Arup (2011) and PB Power (2011) and compared with figures in the 2006 Energy Review.

⁶ A copy of the Government Response can be viewed on the DECC website at: http://www.decc.gov.uk/en/content/cms/consultations/cons_ro_review/cons_ro_review.aspx

The response to the Northern Ireland Renewables Obligation consultation can be viewed on the DETI website at: http://www.detini.gov.uk/niro_2012_consultation_-_government_response.pdf

reduce the level of support to 0.9ROCs/MWh for new accreditations and additional capacity added over the banding review period (1 April 2013 – 31 March 2017).

9. The evidence gathered as part of the RO banding review is based on an independent study by Arup⁷ updated with evidence received from generators, manufacturers and independent third parties during the consultation on the RO banding review in January 2012.

10. Based on this evidence capital costs for onshore wind are expected to fall by 3.6% between 2011/12 and 2015/16. However, we also recognise the risk that costs could fall more or less swiftly than expected, and therefore we committed to carrying out this Call for Evidence to examine the latest onshore wind costs.

11. If the findings show that one or more of the statutory grounds for a review exist⁸, for example that there has been a significant change in the generation costs, then Government would expect to initiate an immediate review of support levels for onshore wind. Any changes to rates would be consulted on and would take effect from April 2014 at the earliest. The setting of strike prices for Contracts for Difference (CfD) will be informed by RO cost data, so any revisions of the RO data as a result of this Call for Evidence may be taken into account in that process.

12. Our grandfathering policy would continue to apply, and we would expect to protect from a fall in support levels those projects where significant financial commitments had been made. For example, support levels would be held for consented projects with a pre-existing grid connection and turbine order in place, or potentially those which had otherwise invested a significant proportion of total development costs. In the event of a review of onshore wind rates, Government would expect to consult publicly on the detail of a grace period provision following these principles. Implementation would be subject to State Aid approval.

13. In this way we will ensure that pressures on household bills are kept to a minimum while also ensuring that investors have the policy stability that they require to continue to invest in the UK economy

Process

14. The Call for Evidence published today (alongside Part A on Community Engagement and Benefits) will be open for eight weeks and will close 15 November 2012.

15. Using the RO Banding Review Government Response analysis as a baseline, we will examine whether there has been a change in the capital and/or operating costs of onshore wind, and whether that change is significant.

16. We will ensure that synergies in information arising from this Call for Evidence (Part B) and the Call for Evidence on Community Engagement and Benefits (Part A) are taken into

⁷ <http://www.decc.gov.uk/assets/decc/11/consultation/ro-banding/3237-cons-ro-banding-arup-report.pdf>

⁸ As set out in section 33 of the Renewables Obligation Order 2009 (see : <http://www.legislation.gov.uk/uksi/2009/785/article/33/made>)

account in our analysis of both exercises. Currently, community benefits are not included as a cost in the levelised cost model used for the RO Banding review. If we expect that developers will be paying a higher level of community benefit as a result of the outcome of the Part A Call For Evidence, this may need to be considered as a cost.

17. We will publish a final report on costs, including a decision on whether a further review of tariffs is necessary, in May 2013.

18. In addition, DECC plans to undertake a separate research study to examine UK onshore wind remuneration levels against those of other countries. We intend to publish this study alongside the final report on costs.

Scope

19. The Renewables Obligation system works on the basis of three complementary obligations, one covering England and Wales, and one each for Scotland and Northern Ireland. Decisions regarding the details of the Obligations, including the setting of the RO banding levels in Scotland and Northern Ireland are for the Scottish Government and Northern Ireland Executive respectively.

20. The UK Government and the Devolved Administrations in Scotland and Northern Ireland understand the benefits of a consistent approach across the UK and have agreed that this call for evidence should cover all parts of the UK.

Existing Evidence

21. Levelised costs are a convenient shorthand summary of all project cost information. They are a single figure used to represent the sum of all lifetime generation costs, in relation to the amount of lifetime electricity generation.

Table 1: Levelised costs for onshore wind over the RO banding review period 2013-2017 (£2012 price base) in England and Wales

Commissioning Years /Operation Start		2013/14	2014/2015	2015/2016	2016/2017
	High	£125	£125	£124	£115
Onshore >5 MW	Medium	£105	£104	£103	£96
	Low	£86	£85	£85	£80

22. The levelised costs above use assumptions consistent with the RO Banding Review Government Response; including those of pre-development costs, capital costs, operating costs, hurdle rates and load factors, detailed in Annex A⁹. The high and low ranges are based on high and low pre-development and capital cost assumptions. The variability of capex is based on variability between different projects in the data gathered for the banding review. The resulting range of levelised costs is assumed to represent the overall range of levelised costs for the year in question, across different projects in England & Wales¹⁰.

23. The response to this call for evidence will re-estimate the levelised costs in table one on a comparable basis, using a consistent methodology.

24. We are minded to keep the assumptions used in the RO Banding Review Government Response, for instance on load factors. Therefore the re-estimation will use revised estimates of pre-development, capital and operating costs only, and reflect the cost evidence received as part of this call for evidence.

25. The RO banding review considered financing costs as part of the required rate of return and did not analyse these costs separately. However, DECC and the Devolved Administrations are interested in gathering additional information on financing costs and how developers, investors and operators believe these may have changed in recent years. If sufficient evidence of the required rate of return for onshore wind projects is made available during this call for evidence, we will revise the hurdle rate assumptions used, when re-estimating the levelised costs for onshore wind in response to this call for evidence.

Evidence Sought

26. As part of this call for evidence we are seeking fresh data on pre-development costs, capital costs, operating costs and financial costs.

27. Respondents should provide this data within the excel template published on the DECC website alongside this call for evidence document.

28. Please also provide relevant academic studies and analysis into the costs of onshore wind in the UK; including how costs are likely to change over the RO banding review period (2013-2017).

⁹ The levelised cost calculations in tables 1 to 3 use consistent assumptions on pre-development costs, capital costs, operating costs and hurdle rates. The variation in levelised costs between regions is driven by a difference in the assumed load factors, as presented in Annex A.

¹⁰ Operating costs, load factors and hurdle rates may all vary from project to project as well as capex, but these factors will not necessarily be correlated

How to respond to this call for evidence

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In responding to this call for evidence, the Government would like to highlight the need to provide robust evidence that can be quoted to support transparent policy development. In preparing the Government's response to the evidence gathered through this process we will, as far as possible, ensure that individual pieces of evidence cannot be attributed to individual respondents.

Confidentiality and Data Protection

Information provided in response to this call for evidence, including personal information, may be subject to publication or release to other parties or to disclosure in accordance with the access to information regimes (these are primarily the Freedom of Information Act 2000 (FOIA), the Data Protection Act 1998 and the Environmental Information Regulations 2004). If you want information, including any personal data that you provide to be treated as confidential, please say so clearly in writing when you send the information. Under the FOIA, there is a statutory Code of Practice with which public authorities must comply and which deals, amongst other things, with obligations of confidence.

It would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information, we will take full account of your explanation, but we cannot give an assurance that confidentiality

can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, in itself, be regarded as binding on the Department.

Annex A

The following assumptions were used in the analysis for the Government response to the RO banding review:

Table 2: Pre-development, capital and operating costs for onshore wind over the banding review period 2013-17 (£2012 prices, rounded values)

Onshore wind > 5MW			Commissioning Year			
			2013/14	2014/15	2015/16	2016/17
Pre-development and capital costs	£/kW	High	2,000	2,000	1,900	1,900
		Median	1,600	1,600	1,600	1,500
		Low	1,200	1,200	1,200	1,200
Fixed opex (Years 1-5)	£/MW/y	Median	14,700	14,700	14,700	14,700
Fixed opex (Years 6+)	£/MW/y	Median	34,600	34,600	34,600	34,600
Variable opex	£/MWh	Median	3	3	3	3
Insurance	£/MW/y	Median	6,500	6,500	6,500	6,500
Connection and UoS charges	£/MW/y	Median	10,200	10,200	10,300	10,300

The costs presented here are assumed to be the same across England and Wales, Scotland and Northern Ireland. Operating costs are assumed to increase after 5 years, presented in the table in a separate row.

Table3: Assumed load factors for large scale onshore wind over the banding review period (2013-2017)

Onshore wind > 5MW	England and Wales	25.5%
	Scotland	28.7%
	Northern Ireland	33.3%

Source: All new build and existing capacity assumed to have net load factors as above, based on historic trends as published in DUKES.¹¹ Load factor assumptions will not be revisited as part of this call for evidence.

The assumed hurdle rate¹² over the banding review period (2013-2017) for onshore wind is 9.6%. This is based on Arup (2010) and Oxera¹³ (2011). There is a drop in the levelised

¹¹ <http://www.decc.gov.uk/assets/decc/11/stats/publications/dukes/5956-dukes-2012-chapter-6-renewable.pdf>

¹² Hurdle rates quoted here are pre-tax, real.

¹³

costs presented in table 1 in 2016/17, as it is assumed that these projects can generate under CfDs, and so face a lower hurdle rate (of 8.6%).

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