Department of Energy & Climate Change

Annex H: Modelling Assumptions

Changes to modelling assumptions in response to Draft Delivery Plan Consultation responses and other evidence

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https://www.gov.uk/government/publications/electricity-market-reform-delivery-plan

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Introduction

In July 2013, DECC published a consultation on the first EMR Delivery Plan. This included draft strike prices for renewable technologies, and was followed in August by the publication of further detail on CfD contract terms. Industry, investors and other stakeholders were asked to submit their views and further evidence ahead of publication of the final strike prices.

We received over 100 responses to the consultation from a wide range of individuals and organisations including generators, suppliers, consumer organisations and environmental groups. A full analysis of the feedback and evidence received has been conducted – further detail can be found in the accompanying document "Electricity Market Reform: Summary of Responses and Government Response to the July 2013 Consultation"[1]

The purpose of this Annex is to summarise and explain changes to modelling assumptions made since the Draft Delivery Plan. We have made changes to the following key assumptions on the basis of the evidence submitted:

- Offshore wind: We have revised cost reduction profiles to be more in line with the Crown Estate report.

- Cost of capital: We have considered the evidence submitted on cost of capital carefully and commissioned NERA Economic Consulting to undertake a study of the consultation responses as well as reviewing other evidence on the costs of capital under the CfD. This included seeking evidence and engagement with highly relevant stakeholders in the financing community who otherwise might not have participated in the consultation. This evidence supported a cost of capital reduction under the CfD when compared to the RO for most renewable technologies. We have adjusted the technology specific hurdle rates assumed in line with these findings.

- Maximum build rates: We have increased the maximum build rates used in our modelling to be more consistent with higher levels of deployment observed in our pipeline of projects (REPD[2]), especially on onshore wind and solar PV.

- Data on deployment: We have also updated our analysis to be consistent with the latest commercial data on deployment (e.g. on biomass conversion, onshore wind, solar and new nuclear).

There were a number of other issues that were raised in consultation responses where we judged that the evidence submitted did not warrant a change. The purpose of this annex is to provide further details about the changes to these and other modelling assumptions and the reasons for changes.

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[1] https://www.gov.uk/government/publications/electricity-market-reform-delivery-plan

[2] Renewable Energy Planning Database: https://restats.decc.gov.uk/cms/planning-database/

Chapter 1: Summary of changes to modelling assumptions

Several modelling assumptions were reviewed and changed for the Final Delivery Plan. Table 1 below highlights those which were changed. Chapter 2 explains why we have changed these assumptions, and Chapter 3 gives provides an explanation as to why strike prices have changed since July's Draft Delivery Plan.

Table 1: Assumptions Changed in Light of Evidence for the Final Delivery Plan

Offshore Wind learning rate	Power Purchase Agreements (PPAs) discounts*
Cost of capital reductions under CfD	Unabated gas maximum build rates
Cost of capital for round 3 offshore wind	Unabated gas technology costs
Renewable pipeline data and build limits	Indexation
Feed-in –Tariff Spend Projections	Scottish Islands
New RHI tariff	Northern Ireland modelling
Renewable content and emission factor of generation from waste	Demand projections
Nuclear assumptions	Biomass CHP Assumptions

*For solar and wave only. All other PPA assumptions remain unchanged.

Chapter 2: Details of modelling changes made

DECC received over 100 responses to the consultation on the EMR Draft Delivery Plan. The majority of these contained either detailed qualitative evidence, with some also providing quantified evidence.

The Government has carefully analysed the evidence presented to it during this consultation. Where responses received were considered to have presented robust arguments or concrete evidence, the Government has made changes to its modelling assumptions.

DECC has also considered evidence from analyst reports, financiers and other sources[3] to help ensure that we consulted as widely as possible.

Offshore Wind Cost Reductions

Offshore wind costs vary considerably depending on the engineering parameters and requirements of the sites being developed. These parameters include distance from shore, cable length, depth of water and distance from port of supply. While offshore wind projects are nominally split into “Round 2” and “Round 3”, depending on when they were accredited by the Crown Estate, there are significant overlaps in project characteristics between the two rounds. Consequently, in practice there is unlikely to be a clear distinction between all R2 and all R3 projects, as costs will vary on a project by project basis.

DECC also expect that the levelised costs of offshore wind will fall over time. While there is uncertainty surrounding the exact profile of this cost reduction, there are several factors that are expected to contribute to this cost reduction:

(i) A movement to larger, more efficient turbines;
(ii) Higher load factors;
(iii) Learning and innovation (technology and processes);
(iv) More developed and competitive supply chains; and
(v) Improved financing (cost of capital assumptions)

There are two main sources of evidence that were used when deriving the learning profile used for offshore wind.

1. Cost Reductions based on modelled deployment and learning rates from the approach used for the Renewables Obligation Banding Review (ROBR)[4]; and
2. Evidence from the Crown Estate[5] and the Offshore Wind Cost Reduction Task Force which demonstrates pathways to achieving £100/MWh by 2020[6].

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[3] Detailed in this report

[4] Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/42852/5936-renewables-obligation-consultation-the-government.pdf

[5] Available at http://www.thecrownestate.co.uk/news-media/news/2012/reducing-the-lifetime-costs-of-offshore-wind-pathways-to-success/.

Under the approach used for setting the latest Renewables Obligation, offshore wind learning rates are linked to UK deployment[7]. A learning rate of 12% is used for offshore wind (Arup 2011) meaning that every doubling of cumulative deployment is associated with a reduction in capital costs of 12%.

The Crown Estate's Offshore Wind Cost Reduction Pathways Study (CRPS) explored 4 cost reduction 'pathways' which focuses on key uncertainties faced by the offshore wind industry: rate of build, pace of technological change, maturity of supply chains and depth of financial markets. The study used a bottom-up methodology where deployment is exogenous and learning is driven by both technological improvements and establishment of UK supply chains[8]. In three out of four of these scenarios the Levelised Cost of Offshore Wind was £100/MWh or less for projects reaching financial close in 2020.

The Offshore Wind Cost Reduction Task Force (OWCRTF) considered evidence from the Crown Estate and additional sources and concluded that "the offshore wind levelised cost of energy can be reduced to £100/MWh by 2020 if there is sufficient project momentum, supply chain competition and stronger intra-industry and stakeholder cooperation"[9]

DECC has decided to use a combination of these two pieces of evidence to generate an offshore wind learning profile. The learning profile is derived with equal weighting between the Arup work – of a 12% reduction in costs for every doubling of cumulative deployment – and an exogenous trajectory that achieves £100/MWh for projects *reaching FID* in 2020. This sets an ambitious target for industry, while also recognising that cost reduction will in part be dependent upon deployment.

This differs slightly from the approach taken to offshore wind generation costs in the Draft Delivery Plan, where there was an equal weighting between the 12% reduction for every doubling of cumulative deployment and an exogenous trajectory that achieves £100/MWh for projects *commissioning* in 2020. Many responses to the draft EMR Delivery Plan, stated that the OWCRTF conclusion referred to projects reaching FID in 2020 rather than commissioning.

Cost of Capital Reductions under CfDs

In the Draft Delivery Plan, DECC used estimates from Redpoint (2010) for reductions in cost of capital that were expected to materialise from projects investing under Contracts for Difference rather than the Renewables Obligation (i.e. the '-X' in 'RO-X'). This accounted for the benefits of a more stable revenue stream under CfDs than under the RO.

DECC commissioned NERA Economic Consulting to review the existing evidence on the costs of capital assumptions under EMR. This involved NERA considering evidence from responses from the Draft Delivery Plan Consultation, Analyst Reports and Interviews with the finance

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[6] Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/66776/5584-offshore-wind-cost-reduction-task-force-report.pdf

[7] Cost reductions are endogenous to the modelling scenario.

industry. In addition, NERA quantified the factors that these sources of evidence identified as changing the cost of capital under CfDs relative to the Renewables Obligation.

NERA assessed 4 factors that would change the cost of capital under CfDs relative to the Renewables Obligation:

1. 'Wholesale Market Risk' – a lowering of revenue risk under CfDs due to reduced exposure to wholesale market prices relative to the RO;
2. 'Allocation Risk' – a higher risk for developers of inability to take forward projects under constrained allocation and therefore losing pre-development costs. This increased risk is due to Government being more exposed to wholesale prices under the CfDs relative to the RO;
3. 'Construction Delay' Risk – increased risk for projects with long construction times falling outside the CfD 'long stop date' and into a period of constrained allocation; and
4. 'Novelty Premium' - initial premium due to uncertainties about how the mechanism and its institutions and the will work in practice.

NERA presented a range associated with the impact of each 'risk factor' on pre-tax real hurdle rates for onshore, offshore and conversion. DECC's considered this evidence. This is show in Table 2 below.

Table 2: DECC's Translation of Consultation Responses and NERA's Hurdle Rate Reductions for Onshore, Offshore and Conversion

NERA's Risk Factors:	Transposed Rule	Change
1. Wholesale Market Risk	Agreed with NERA's assessment. Used the mid-point of their range	Different by technology
2. Allocation Risk	Agreed with NERA's assessment, but due to benefits including guaranteed earlier certainty of support under CfDs we judged this should be towards the lower end of NERA's range.	+ 5bp
3. Construction Delay Risk	Agreed with NERA's assessment that this would exist for large projects with long construction times that are likely to commission in the latter half of this decade or later. Based on this consideration, DECC judged this risk was only relevant for Offshore Wind R3.	N/A with the exception of offshore wind R3 (10 basis points)
4. Novelty Premium	Agreed this may be present for projects commissioning during the First Delivery Plan Period as uncertainty associated with how the regime and institutions would work. Judged this would be the same for all technologies because the risks are not specific to any technology. Used the midpoint of NERA's mature	+ 25 bp

	technology range.

Translation of NERA's Conclusions for Other Renewable Technologies

The NERA report sets out principles for determining the change in cost of capital for all technologies under the CfD relative to the RO. DECC Analysts have used these principles to develop a set of rules and method for translating these risks for other renewable technologies not covered by the NERA report. To summarise at a high level:

Table 3: High-Level translation of NERA's principles for cost of capital[10] reductions under CfDs

NERA's Risk Factors:	Transposed Rule	Change
5. Wholesale Market Risk	Consider two factors: a) Exposure to wholesale market revenues relative to ROC levels b) Fuel price risk to derive technology specific reductions.	Different by technology [drives reductions]
6. Allocation Risk	Same for all technologies	+ 5bp
7. Construction Delay Risk	Same for all technologies (0 basis points), with the exception of offshore wind R3 (10bp)	N/A
8. Novelty Premium	Same for all technologies	+ 25 bp

The 'wholesale market risk' drives the potential for a reduction in costs of capital under CfDs. In order to translate the wholesale market risk for other technologies, DECC analysts calculated the exposure to wholesale market revenues as a proportion of their total revenues for projects starting operation in 2016 for each technology. These were benchmarked against NERA's estimates of the reductions for onshore and offshore wind. This is illustrated in Figure 1 below.

For biomass technologies an adjustment was made to account for increased fuel price risk under the CfDs relative to the RO, which NERA discussed for biomass conversion. This was calculated using the difference between the estimated change in the biomass conversion hurdle rate that would have resulted from the approach above and NERA's estimated reduction for biomass conversion[11].

[10] All hurdle rates shown in this paper are pre-tax real.

[11] We considered whether waste technologies should also have a fuel price risk adjustment. The adjustment derives from the fact that biomass fuel prices are arguable correlated to wholesale market prices (increased demand for electricity, increases fuel stock prices). Thus there is an increased risk under CfDs. Waste markets tend to be local / regional. This is likely to make waste prices less pro-cyclical (in a "beta" calculation). However, waste contracts are likely to be made on a long-term basis and it seems reasonable to think that waste markets will be less correlated with global energy prices than will biomass prices.

Figure 1: Illustration of Method for determining the 'wholesale market 'risk element of total hurdle rate adjustments or other renewable technologies under CfDs

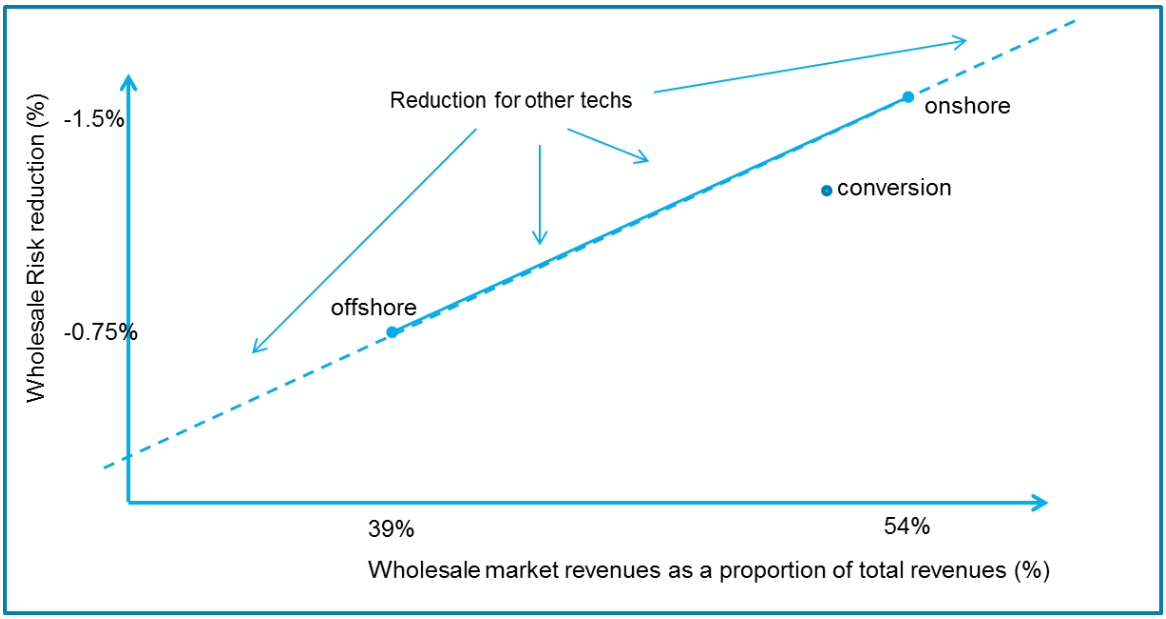

Table 4 shows each element of the new calculated hurdle rate reduction by technology.

There are some consistent implications from the translation of NERA's principles and the application of them:

- For more costly technologies, which receive a lower proportion of their revenues from the wholesale market and more from policy support, reductions under CfDs are likely to be smaller than previously assumed.
- This also applies for CHP technologies which receive a significant proportion of their income from heat revenues
- For some very expensive technologies (i.e. wave and tidal stream) the reductions due to lowering the wholesale price risk are very small, and therefore they see a small increase under the CfDs due to increased allocation risk and the novelty premium[12].
- For cheaper technologies (i.e. onshore, landfill, sewage gas) which receive a large proportion of their revenues from the wholesale market, the evidence implies a larger reduction in hurdle rates than assumed for the Draft Delivery Plan analysis.

Chapter 3 sets out how these changes in the cost of capital have translated into changes to Strike Prices set out between the draft and final Delivery Plans.

[12] Note in the modelling we are removing the Novelty Premium after the first Delivery Plan period, as we assume at that point the scheme is sufficiently 'proven'

Table 4: Calculated Hurdle Rate Reductions for other renewable technologies

	Calculating the New Reductions				
Technology	1. Wholesale Risk	2. Allocation Risk	3. Construction Delay Risk	4. Novelty Premium	New total reduction under CfDs
Onshore Wind	-1.50%	0.05%	0.00%	0.25%	-1.20%
Offshore Wind R2	-0.75%	0.05%	0.00%	0.25%	-0.45%
Offshore Wind R3	-0.75%	0.05%	0.10%	0.25%	-0.35%
Tidal	0.00%	0.05%	0.00%	0.25%	0.30%
Wave	0.00%	0.05%	0.00%	0.25%	0.30%
Biomass CHP	-0.15%	0.05%	0.00%	0.25%	0.15%
Biomass Conversion	-1.00%	0.05%	0.00%	0.25%	-0.70%
ACT advanced	-0.80%	0.05%	0.00%	0.25%	-0.50%
ACT CHP	-0.25%	0.05%	0.00%	0.25%	0.05%
ACT standard	-0.80%	0.05%	0.00%	0.25%	-0.50%
AD CHP	-0.20%	0.05%	0.00%	0.25%	0.10%
EfW CHP	-1.40%	0.05%	0.00%	0.25%	-1.10%
AD >5MW	-0.80%	0.05%	0.00%	0.25%	-0.50%
Geothermal	-0.80%	0.05%	0.00%	0.25%	-0.50%
Geothermal CHP	0.00%	0.05%	0.00%	0.25%	0.30%
Hydropower 5-16MW	-1.55%	0.05%	0.00%	0.25%	-1.25%
Sewage Gas	-2.20%	0.05%	0.00%	0.25%	-1.90%
Large Scale Solar PV	-1.25%	0.05%	0.00%	0.25%	-0.95%
Tidal range	-0.90%	0.05%	0.00%	0.25%	-0.60%
Tidal stream deep	0.00%	0.05%	0.00%	0.25%	0.30%
Landfill Gas	-3.05%	0.05%	0.00%	0.25%	-2.75%

Costs of Capital for Round 3 Offshore Wind

Modelling for the Draft Delivery Plan appeared to underestimate deployment of offshore wind Round 3 when comparing to anticipated deployment, and we therefore reviewed the Round 3 offshore wind assumptions used, in particular the hurdle rate assumptions. As part of the Crown Estate's Cost Reduction Pathways work (2012[13]), PwC produced a comprehensive finance report which estimates the evolution of hurdle rates for offshore wind over time. This report showed that while there was evidence on the cost of capital differences for offshore R2 and R3, the differences between site types predicted in the PwC report were lower than the 1.8%[14] difference DECC had assumed in the Draft Delivery Plan.

13 http://www.thecrownestate.co.uk/media/305102/PwC%20OWCRP%20project%20finance%20work%20stream.pdf

14 The draft Delivery Plan assumed that the hurdle rate for offshore wind R3 was 1.8% higher than the hurdle rate for offshore wind R2. This was based on estimates used in analysis by Redpoint (2010) which considered both development and technology risk as well as market arrangements: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/42638/1043-emr-analysis-policy-options.pdf

DECC has adjusted the difference in baseline hurdle rate for offshore wind Round 2 and Round 3 to reflect evidence on the difference between R2 and R3 sites in the PWC report. See Table 5 below for a summary of hurdle rate assumptions for offshore wind.

Table 5: Pre-tax Real Hurdle Rate Assumptions for Offshore Wind R2 and R3

Pre-tax real	Offshore Wind R2	Offshore Wind R3
Hurdle rates under the RO assumed in the Final Delivery Plan (differential based on PWC report)	10.2%	10.45%
Hurdle rates reduction	-0.45%	-0.35%
Hurdle rates under the CfDs assumed in the Final Delivery Plan	9.75%	10.1%

Renewable Pipeline Data and Build limits

There have been two updates to the renewables pipeline information and build limits. Firstly, we have used data employed in setting the RO for 2014/15[15]. This includes more information about projected deployment before the Delivery Plan period; the starting point now more accurately reflects best estimates of deployment by the end of 2014/15.

We have also included updated pipeline information and build limits. This is based on detailed commercial information about the pipeline of potential projects[16]. This particularly applies to onshore wind, solar, biomass conversions and offshore wind.

The build limits for offshore wind used in the modelling for the Final Delivery Plan assume that projects will be phased over three years. All phases receive the same strike price and this price is determined by the target commission date of the first phase. The modelling assumes that 25% of a project comes forward in the first phase and 37.5% in both the second and third phase[17].

Feed-in –Tariff Spend Projections

We have updated our modelling assumptions on FITs spend projections, to take account of deployment up until July 2013. These projections reflect our latest evidence on FITs deployment.

New RHI Tariffs

[15] https://www.gov.uk/government/publications/renewables-obligation-level-calculations-2013-to-2014--2

[16] This is in the Renewable Energy Planning Database (REPD), available at https://restats.decc.gov.uk/app/reporting/decc/datasheet. This gives information both about projects currently operational, and those that have applied for planning approval. Note that not all projects in REPD will come forward.

[17] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/263182/Final_Document_-_Investing_in_renewable_technologies_-_CfD_contract_terms_and_strike_prices.pdf

For the Draft Delivery plan, our modelling assumed an RHI tariff of 1p/kWh for Biomass CHP. Since the Draft Delivery Plan was published – the updated DECC RHI tariff has been set to 4.1p/kWh for this technology. Our modelling has been updated to reflect this change.

Renewable Content and Emission Factor of Generation from Waste

Following the publication of the Draft Delivery Plan, DECC has updated the figure for the renewable content of electricity generation from waste. This is now based on the latest DUKES (Digest of UK Energy Statistics) information, which estimates that 63.5% of electricity generation from municipal solid waste should be considered to be renewable.

The Final Delivery Plan modelling assumes that emissions caused by the non-biodegradable content of waste are accounted for.

Nuclear Assumptions

Assumptions on commissioning dates and strike prices have been updated to reflect the latest information from the published Hinckley Point C deal. This included the later commissioning date for that plant (2023), as well as the strike price concluded from the negotiations between DECC and EDF.

Power Purchase Agreements discounts

For the Final Delivery Plan analysis, the Power Purchase Agreement (PPA) wholesale price discount under CfDs for solar PV (and other non-wind intermittent generators) has been changed from 13% to 10% in line with the PPA discount for onshore wind under CfDs.

PPA rates assumed under CfDs can be found in Table 6 below.

Table 6: Assumed PPA discounts under CfDs in the Final Delivery Plan

	Wholesale price	*LEC*
Offshore wind	5%	5%
Onshore wind	10%	10%
Other intermittent renewables	10%	10%
Non-intermittent renewables	7%	10%

Unabated gas maximum build rates

The assumptions on maximum yearly build rates for unabated gas have been updated to reflect forthcoming research by Parsons Brinckerhoff. The maximum rates were informed by a review of historical build rates and non-economic constraints including production capability, site availability and regulatory constraints.

Unabated gas technology costs

Since the draft Delivery Plan, the low and high technology costs for CCGT and OCGT plants have been revised, based on forthcoming research by Parsons Brinckerhoff.

The final Delivery Plan analysis now assumes increases in costs when constructing multiple plants in a single year for CCGT and OCGT plants, i.e. technology-specific new capacity supply curves for each year. This approach is in line with the treatment of renewable technologies.

Indexation

Inflation factors (including the Retail Price Index (RPI) and the Consumer Price Index (CPI)) have been updated in line with OBR 2013 estimates

Scottish Islands

Please see Annex E: National Grid EMR Analytical Report

Northern Ireland Modelling

Please see Annex E: National Grid EMR Analytical Report

Demand Projections

DECC publishes Updated Energy and Emissions Projections on an annual basis. The last full set of projections was published in September 2013[18]. The analysis for the Final Delivery Plan uses these updated projections.

[18] https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2013

Chapter 3: Impact on Strike Prices

This chapter provides further details on how changes to the modelling assumptions have affected strike prices announced for the Final Delivery Plan.

Table 7 shows the strike prices announced in the Draft and Final Delivery Plans. There have been changes to the strike prices for ACT, AD, Dedicated Biomass with CHP, Energy from Waste with CHP, Geothermal (with and without CHP), Hydro, Landfill Gas, Sewage Gas, Onshore Wind, Offshore Wind and Large Scale PV.

Table 7: Comparison of Draft Delivery Plan and Final Delivery Plan strike prices

Technology	2014/15	2015/16	2016/17	2017/18	2018/19
Strike Prices (£/MWh) unchanged from the Draft Delivery Plan					
Biomass Conversion	105	105	105	105	105
Tidal Stream	305	305	305	305	305
Wave	305	305	305	305	305
Strike Prices (£/MWh) which have changed since the Draft Delivery Plan					
Advanced Conversion Technologies (with or without CHP)	155	155	150	140	140 (135)
Anaerobic Digestion (with or without CHP)	150 (145)	150 (145)	150 (145)	140	140 (135)
Dedicated Biomass (with CHP)	125 (120)	125 (120)	125 (120)	125 (120)	125 (120)
Energy from Waste (with CHP)	80 (90)	80 (90)	80 (90)	80 (90)	80 (90)
Geothermal (with or without CHP)	145 (125)	145 (120)	145 (120)	140 (120)	140 (120)
Hydro	100 (95)	100 (95)	100 (95)	100 (95)	100 (95)
Landfill Gas	55 (65)	55 (65)	55 (65)	55 (65)	55 (65)
Sewage Gas	75 (85)	75 (85)	75 (85)	75 (85)	75 (85)
Onshore Wind (>5MW)	95 (100)	95 (100)	95 (100)	90 (95)	90 (95)
Offshore Wind	155	155	150	140	140 (135)
Large Solar Photo-Voltaic	120 (125)	120 (125)	115 (120)	110 (115)	100 (110)
Scottish Islands Onshore				115	115

Where present, brackets indicate the draft strike price as published in June 2013

Explanation of Changes to Our Published Strike Prices

Cost of Capital Reductions

The majority of strike price changes are driven by hurdle rate reductions resulting from work commissioned on Cost of Capital (published alongside the Final Delivery Plan) and detailed in Chapter 2 of this Annex. The following table shows a comparison of the hurdle rate reductions used in the July 2013 report – and the Final Delivery Plan[19].

Table 8: Comparison of Hurdle Rate Reductions used in Draft and Final Delivery Plans

	Hurdle Rate Reduction	
Technology	**Draft Delivery Plan**	**Final Delivery Plan**
Onshore Wind	-0.4%	-1.20%
Offshore Wind R2	-0.6%	-0.45%
Offshore Wind R3	-0.6%	-0.35%
Tidal	-0.7%	0.30%
Wave	-0.6%	0.30%
Biomass CHP	-0.8%	0.15%
Biomass Conversion	-0.7%	-0.70%
ACT advanced	-0.6%	-0.50%
ACT CHP	-0.4%	0.05%
ACT standard	-0.4%	-0.50%
AD CHP	-0.7%	0.10%
EfW CHP	-0.7%	-1.10%
AD >5MW	-0.6%	-0.50%
Geothermal	-1.4%	-0.50%
Geothermal CHP	-1.5%	0.30%
Hydropower 5-16MW	-0.3%	-1.25%
Sewage Gas	-0.4%	-1.90%
Large Solar PV	-0.4%	-0.95%
Tidal range	-0.5%	-0.60%
Tidal stream deep	-0.7%	0.30%
Landfill Gas	-0.4%	-2.75%

These changes to hurdle rates drive the following changes to strike prices:

[19] Changes to strike prices resulting from changes to other assumptions besides the cost of capital, are explained overleaf.

- **A reduction in strike prices** for onshore wind, energy from waste, landfill gas, sewage gas and large solar PV.
- **An increase in strike prices** for anaerobic digestion, and geothermal
- **No change to the strike price** offered to offshore wind (please see note below on cost degression), biomass conversion projects

Changes to Hydro ROC Assumptions

The strike price for hydro has increased, and is driven by two factors – the increase in the assumed hurdle rate reduction (which would lower the strike price), and the move to setting hydro strike prices equivalent to 1.0 ROC (as opposed to 0.7 ROC used in the Draft Delivery Plan). This is in line with the Scottish RO band (1 ROC) and is because the majority of potential hydro sites are located in Scotland. The effect of moving to 1.0 ROC more than offsets the benefits of an increase in the hurdle rate reduction – resulting in a small increase in the strike price offered to hydro projects.

Changes to Offshore Wind Cost Degression

Following responses received during the Delivery Plan consultation, we now assume a slower rate of cost degression for offshore wind – meaning that the strike price for this technology is now higher in 2018/19 by £5. This also affects the strike prices offered for other technologies given that we have chosen to limit the level of support available for most technologies to that available for offshore wind.

Tidal Stream and Wave

We reviewed the case for tidal stream and wave. While NERA's recommendations on hurdle rate changes would suggest higher strike prices for these technologies, the Government's position is that an increase in strike prices could not be achieved whilst providing adequate support for other technologies and protecting consumers against increases in support costs. For this reason, the Government has chosen to maintain the support costs for these technologies at £305/MWh. The strike prices offered are significantly higher than strike prices for other renewable technologies. Our modelling suggests these strike prices are sufficient to bring forward 0.1GW deployment of wave and tidal stream technologies by 2020, which is consistent with the levels of deployment which we would expect to see from the sector by 2020.

Changes to Biomass CHP Assumptions

The strike price for biomass CHP has increased by £5/MWh throughout the Delivery Plan period. This is due to a change in the hurdle rate under CfDs, and an adjustment to the draft Delivery Plan strike price to take into account longer heat contracts.

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3 Whitehall Place
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https://www.gov.uk/government/publications/electricity-market-reform-delivery-plan