Department of Energy & Climate Change

Electricity Market Reform Delivery Plan

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

Foreword

This Government is delivering on ambitious plans for reforming the electricity market. Reform will enable the UK to develop a clean, diverse and competitive mix of electricity generation that will ensure we meet our targets on renewable electricity and decarbonisation, and security of supply while keeping bills as low as possible for consumers now and in the future. Without reform electricity prices will become increasingly exposed to the risks of high and volatile international gas prices and we would increase the risks of the lights going out.

This first Electricity Market Reform Delivery Plan, published on schedule following consultation, sets out our final decision on strike prices for Contracts for Difference for renewable technologies. I believe these strike prices will make the UK market one of the most attractive for clean energy developers.

There is currently over 20GW of renewables capacity operational in the UK – a figure that could double by 2020 as a result of the Government's reforms. We have a very healthy pipeline in key technologies, with a total of almost 11GW of offshore and onshore wind with planning consent and awaiting construction. The UK is now on track to double the amount of electricity generated from renewables from 15 per cent to over 30 per cent by 2020.

The strike prices in this Delivery Plan will help to build a low-carbon energy mix to reduce emissions and bring green jobs and growth to the UK. They will enable additional investments of around £40 billion in renewable electricity generation projects up to 2020. The additional investment will generate enough clean power for 10 million homes, and reduce carbon dioxide emissions by over 20 million tonnes.

Increasing the amount of home-grown renewable energy will boost energy security, reduce reliance on imported fossil fuels, and support up to 250,000 jobs by 2020.

The Energy Act now provides the UK with a world leading policy framework and investment opportunity that meets our climate change responsibilities. It will enable the £110bn of additional private capital investment required by the end of this decade to replace existing infrastructure coming to the end of its working life or deemed too polluting for modern standards and move to cleaner low carbon energy.

To ensure sufficient electricity supplies from 2018/19, I announced early this year that the Capacity Market will be initiated, with the first auctions taking place in 2014, subject to State Aid approval. This Delivery Plan now confirms the reliability standard that will guide the level of capacity that is contracted within the Capacity Market. I believe the Capacity Market will provide the economic incentive needed to attract investment to put adequate reliable capacity in place, which will protect consumers against the risk of supply shortages.

This Delivery Plan has benefited immensely from the work of the System Operator (National Grid), the independent Panel of Technical Experts, the Devolved Administrations in Northern Ireland, Scotland and Wales, and of many industry and other stakeholders. I am grateful to all who have contributed.

The Rt. Hon. Edward Davey MP

Secretary of State for Energy and Climate Change

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Annex C	Reliability standard methodology	This annex explains the methodology determining the reliability standard for the Capacity Market.
Annex D	Report from the System Operator (National Grid)	This annex summarises the analysis conducted by the System Operator to inform the EMR Delivery Plan.
Annex E	Report from the Panel of Technical Experts	This annex is the Panel of Technical Experts' report following scrutiny of the analysis and assumptions underpinning the Delivery Plan.
Annex F	CFD policy positions on the contract terms.	Confirming the policy positions on the contract terms
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Other documents that have been published alongside this Delivery Plan include

- NERA Cost of Capital Report
- EMR Impact Assessment, including prices and bill analysis
- Electricity Generation Costs Report (December 2013)

Executive Summary

The Government's Electricity Market Reform (EMR) programme provides an ambitious package of measures to incentivise the investment needed to replace the UK's ageing electricity infrastructure with a more diverse and low-carbon energy mix. Up to £110 billion of capital investment is needed from now until 2020.

The Government's objectives for EMR are to:

- ensure a secure electricity supply
- ensure sufficient investment in sustainable low-carbon technologies and
- maximise benefits[1] and minimise costs to taxpayers and consumers.

EMR is designed to facilitate this vital investment by providing two new mechanisms: the Contract for Difference (CfD) and the Capacity Market. EMR is intended to enable competition between low-carbon technologies as soon as practicable in order to achieve the Government's objectives at the least cost to consumers.

The Government committed to publishing an EMR Delivery Plan every five years.

This Delivery Plan sets out

- the strike prices for the renewable technologies for the period 2014/15-2018/19 (subject to State Aid clearance) and potential deployment rates to 2020;

[1] Compared to other policies, such as the Renewables Obligation, which could allow us to meet our legal obligations under the Renewable Energy Directive and the Climate Change Act.

- the underpinning analysis performed by National Grid on how external factors could affect deployment and spend under these strike prices
- an outlook to 2030 illustrating different decarbonisation trajectories and technologies scenarios;
- a description of the mechanism for managing strike prices within the Levy Control Framework; and
- the reliability standard to be used in the Capacity Market.

Contracts for Difference

CfDs will support low-carbon generation by giving eligible generators increased price certainty through a long-term contract. A CfD will largely remove exposure to volatile wholesale prices during the CfD period, reducing investment risk. Generators will receive revenue from selling their electricity into the market as usual and will also receive a top-up to a pre agreed 'strike price'. If the market price is over the strike price then the generator must pay back the difference.

This Delivery Plan sets the strike prices for renewable technologies for the period 2014/15 to 2018/19. They provide a basis for renewable electricity to achieve at least 30 per cent of generation by 2020, in line with the EU renewables target.

The strike prices in this Delivery Plan have been amended to reflect our analysis of the views and new evidence provided during stakeholder engagement and the Delivery Plan consultation. The strike prices set out a strong foundation for renewable investment in the UK.

The strike prices set out in this document have been determined in a way which seeks to ensure that renewables contribute effectively to the objectives of the CfD, reducing carbon intensity as well as ensuring the electricity system is contributing

appropriately to meeting the UK's target for renewable energy consumption at least cost to consumers. The strike prices are consistent with the upper limits on annual spending on low-carbon generation (including CfDs, the Renewables Obligation and the small scale Feed-in Tariff) as agreed in the Levy Control Framework.

At the strike prices for offshore wind, the modelling suggests that 10GW is achievable (within a range of 8-15GW in the modelling by National Grid). The range for offshore wind deployment presented here is different from the range we presented in the draft Delivery Plan. This is because of changes in our modelling assumptions since the July draft Delivery Plan including on phasing. The proposed policy on phasing means that projects delivered across multiple years will be able to access the same strike price for all phases. This will ease the time constraint on developers and mean that more capacity could be contracted for than is generating at any given time. Depending on future Government decisions on strike prices and budget allocations, this could mean that in the high offshore deployment scenario up to an additional 5GW of offshore wind could have been contracted for by 2020, but would not commission until after that date[2]. These are not targets and actual deployment will depend on technology costs.

We continue our ambitions for other technologies in line with the draft Delivery Plan and the Renewables Roadmap. The strike prices have been informed by analysis from the System Operator (National Grid), who assessed the impact of different strike prices on the Government's objectives in a process scrutinised by an independent Panel of Technical Experts[3].

[2] Other technologies with long lead times could also be contracted for but not generating by 2020, e.g. nuclear.

[3] https://www.gov.uk/government/policy-advisory-groups/electricity-market-reform-panel-of-technical-experts

The Government's aim is for low-carbon technologies to compete on price with other forms of generation. We have clearly stated our intention to move to a competitive price discovery process for all low-carbon technologies as soon as practicable. We set out in this document, in line with guidance on State Aid from the European Commission, that we intend to move to immediate competition (constrained allocation under the CfD) for well-established technologies. Further detail on this will be set out after engagement with stakeholders in early 2014.

Contracts for Difference will operate alongside the Renewables Obligation, which is the existing support scheme for large-scale renewable generation. The strike prices for this period have been set so that they are broadly comparable to the levels of support available under the Renewables Obligation, adjusted to account for the greater revenue certainty and shorter contract length provided by a CfD. In aggregate, consumers pay less under the CfD than under the Renewables Obligation as CfDs will reduce the risks faced by generators and improve the stability of their revenues. In addition, as is the case under the Renewables Obligation, strike prices for a number of key renewable technologies come down over time, reflecting our expectation of costs falling through learning, and meaning consumers will be paying proportionately less.

Strike prices for a number of current and emerging technologies, including large hydro[4], tidal range (including tidal lagoon and tidal barrage), Nuclear and CCS are not set in this Delivery Plan. In the period of this Delivery Plan appropriate prices for these technologies are likely to be determined on an individual basis as projects are identified for support.

[4] Support for repowering and replacement of large existing generation plant will be available through CfDs on a case by case basis.

Levy Control Framework

The Levy Control Framework (LCF) allows Government to control public expenditure paid for through consumers' energy bills, and reflects the importance Government places on monitoring and controlling spending on levy schemes that are funded in this way.

The LCF was extended specifically for low-carbon electricity policies to inform decisions on Electricity Market Reform and to provide investors with greater certainty on future levels of support. In this Delivery Plan we set out further detail of how the LCF covers support across levy schemes and also how much support will be available for new renewable and low-carbon generation to 2018/19. We then outline how DECC is updating its governance arrangements for the LCF in preparation for Electricity Market Reform.

The Capacity Market

The Capacity Market will give investors the certainty they need to put adequate reliable capacity in place and protect consumers against the risk of supply shortages. It does this by providing a predictable revenue stream to providers of reliable capacity. In return they must commit to provide capacity when needed or face financial penalties.

The first Capacity Market auction will be run in late 2014, for delivery in 2018/19[5] subject to State Aid clearance. The Delivery Plan sets out the reliability standard for the GB electricity market which is a Loss of Load Expectation (LOLE) of 3 hours/year. This standard will be used to inform the amount of capacity to be contracted.

[5] https://www.gov.uk/government/publications/electricity-market-reform-delivering-uk-investment

Our Capacity Market proposals for security of electricity supply should be seen alongside the proposals from Ofgem in collaboration with National Grid currently out to consultation, that focus on the immediate and near-term outlook[6] Ofgem has approved National Grid's request to develop new services to ensure we have sufficient capacity in the period before the Capacity Market is operational. This will see existing and mothballed facilities being available to generate power to meet additional demand as necessary.

Prices and Bills

Electricity Market Reform is expected to reduce annual household electricity bills by an average of £41 (6%) over the period 2014 to 2030 (real 2012 prices), relative to achieving the same level of renewables and decarbonisation using existing policy instruments. Making the same comparison for businesses shows electricity prices and bills are lower by an average of around 7-8% over the period 2014 to 2030 than they would otherwise have been. Further information can be found in Chapter 5.

Forward Look

This chapter of the Delivery Plan describes potential deployment requirements beyond 2020. It explores three levels of carbon intensity and three technology scenarios as an illustration of a range of alternative pathways to meeting our post-2020 objective to reduce carbon emissions by at least 80% of 1990 levels by 2050.

[6] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48374/5356-annex-c-emr-capacity-market-design-and-implementat.pdf

Chapter 1: Introduction

Electricity Market Reform and Government Objectives

1. The Government's objectives for the electricity market are to: (i) keep the lights on; (ii) decarbonise electricity generation; (iii) whilst at the same time ensure energy bills remain affordable.

2. Electricity Market Reform (EMR) will provide the means to meet these objectives by:

- **Ensuring a secure electricity supply** through sufficient capacity to meet any demand, a diverse portfolio of generation technologies and a reduced reliance on fossil fuels.

- **Ensuring sufficient investment in sustainable low-carbon technologies** to provide the necessary support and stable revenues to decarbonise electricity generation. This will allow us to continue to drive toward our EU 2020 renewables target and our longer term aim to reduce carbon emissions by at least 80% of 1990 levels by 2050.

- **EMR will do so in a way which maximises benefits and minimises costs** to the UK economy and to taxpayers and consumers. EMR will use the power of the markets and competition to deliver affordable electricity bills alongside unprecedented investment in our energy infrastructure.

3. EMR will deliver the benefits described in paragraph 2 through:

- **Contracts for Difference** (CfDs) which will provide long-term revenue stabilisation to low-carbon plant, allowing investment to come forward at a lower cost of capital with support reducing as wholesale electricity prices rise, therefore ensuring a lower cost to consumers;

- **The Capacity Market** which will provide a regular retainer payment to reliable forms of capacity (both demand and supply side), in return for such capacity being available when electricity supply is squeezed. This will reduce the threat of blackouts due to insufficient capacity on the system.

4. These mechanisms will be supported by:

- The Carbon Price Floor - a tax on fossil fuels used to generate electricity;
- An Emissions Performance Standard applied to fossil fuel power stations - an annual limit on the CO_2 emissions from fossil fuel power stations;
- Measures to incentivise Electricity Demand Reduction - the Energy Act enables permanent reductions in demand to form part of the Capacity Market and the testing of options through an Electricity Demand Reduction pilot in the near term[7];
- Measures to support market liquidity and access to market for independent renewable generators;

[7] More information on Electricity Demand Reduction, including the Government's response to consultation is available at https://www.gov.uk/government/policies/reducing-demand-for-energy-from-industry-businesses-and-the-public-sector--2/supporting-pages/electricity-demand-reduction-project

- Effective transitional arrangements from the Renewables Obligation to Contracts for Difference.

5. Since the publication of the draft Delivery Plan for consultation in July, the Energy Bill has obtained Royal Assent. Details on the Energy Act are available through the footnoted link.[8]

Purpose of the Delivery Plan

6. In November 2012[9], the Government set out its intention to publish an EMR Delivery Plan every five years, beginning in 2013 and stated that it would consult on each draft Delivery Plan document. The Government consulted on the first draft Delivery Plan earlier this year and has considered the responses and evidence submitted in the development of this Delivery Plan.

[8] https://www.gov.uk/government/organisations/department-of-energy-climate-change/series/energy-bill

[9] Annex E to the EMR Overview document contained the following:
The purpose of the Delivery Plan documents – which is to confirm Government objectives for the electricity system, and to publish key decisions about EMR – notably strike prices for renewable electricity CfDs and information about the budget available to support low-carbon generation. Decisions related to the Capacity Market including the proposed reliability standard will also be set out.

7. This first EMR Delivery Plan sets out details of:

- The Levy Control Framework;
- The Government's CfD strike prices for renewable technologies for the period 2014/15 to 2018/19;
- The reliability standard for the Capacity Market;
- An outlook to 2030; and
- Next steps in EMR.

8. It has been developed using analysis (of a number of scenarios) provided by the System Operator (National Grid), the outcome of which has been scrutinised by an independent Panel of Technical Experts.

9. The prices and bills scenarios described in this Plan are consistent with the Levy Control Framework. The purpose of the control framework for DECC levy-funded spending is to make sure that DECC achieves its energy and climate change and fuel poverty goals in a way that is consistent with economic recovery while minimising the impact on consumer bills.

10. The strike prices for a number of current and emerging technologies, including large hydro, tidal range (including tidal lagoon and tidal barrage), Nuclear and CCS are not set in this Delivery Plan. We aim to build competition into the allocation arrangements for these technologies where this is feasible, although in the period of this Delivery Plan it seems likely that prices for these technologies will be determined on a case by case basis as projects are identified for support.

Transition from the Renewables Obligation

11. The Renewables Obligation is the existing financial support mechanism for large-scale renewable generation. Our aim is to ensure a smooth transition for investors from the Renewables Obligation to the CfD, and to minimise hiatus in investment. Details on RO transitional arrangements were set out in the RO Transition Consultation[10] published on 17 July 2013, to which DECC will issue a Government Response in due course.

Route to Market for Independent Renewable Generators

12. Investment from independent developers will play a key role in meeting the Government's decarbonisation and security of supply goals in the future. Many independent generators rely on Power Purchase Agreements (PPAs) to participate in the market and sell their power.

13. The CfD will reduce the risks faced by generators through improved stability of their revenues. As such, it should be easier for independent generators to agree long-term offtake contracts for their electricity. However, some stakeholders remain concerned over how this market will develop.

14. We are working closely with stakeholders to develop some voluntary guidance for the PPA market along with detailed descriptions of the coverage of a PPA and how the contracts will need to change to reflect the move to the CfD. These outputs are intended to form the basis for commercial negotiations and will prepare the market for the introduction of the CfD, helping to facilitate a smooth transition to the new arrangements. We anticipate publishing the outputs from this work in early 2014.

[10] https://www.gov.uk/government/consultations/transition-from-the-renewables-obligation-to-contracts-for-difference

15. However, we believe that there remains a risk that the market for long-term PPAs will be uncompetitive, since relatively few participants are considered sufficiently credit-worthy to provide such contracts. The Government is therefore developing proposals for an Offtaker of Last Resort (OLR) mechanism that should give generators and investors the certainty they need to make investment decisions. This would provide eligible generators with a guaranteed 'backstop' route to market through which they can sell their power at a specified discount to the market price.

16. We have established an OLR Advisory Group with members from relevant industry sectors, to give stakeholders an opportunity to input into the policy development. Meetings are held regularly, with all papers posted on the OLR Advisory Group webpage[11].

17. Our intention is for the OLR mechanism to place an obligation on certain suppliers to enter into a PPA on specified terms with an eligible generator who holds a CfD. It is proposed that offtakers would purchase power within these Backstop PPAs at a fixed discount to the market reference price in the generator's CfD. To ensure it is a genuine 'last resort', the discount will be set at a level that is greater than discounts expected to be available in the open market. By effectively capping long-term route-to-market risk, this mechanism should enable generators to use different routes to market such as short-term PPAs, ending their dependency on established players and stimulating new entry and innovation in the PPA market.

18. The Government has taken powers in the Energy Act that would enable the establishment of the OLR mechanism. We intend to consult on the

[11] https://www.gov.uk/government/policy-advisory-groups/electricity-market-reform-off-taker-of-last-resort-advisory-group

OLR in early 2014 and have the secondary legislation in force around the time the first CfDs are signed (expected to be autumn 2014).

Devolved Administrations

Northern Ireland

19. Energy policy is devolved to the Northern Ireland Executive, with the exception of most elements of nuclear power. The Northern Ireland Executive has agreed that the CfD, 'Investment Contracts' and Emissions Performance Standard (EPS) provisions will apply to Northern Ireland, while taking into account both devolved competencies and Northern Ireland's position within the Single Electricity Market.

20. The Department of Enterprise, Trade and Investment (DETI) in Northern Ireland has confirmed that the CfD strike prices for renewable technologies as set out in Chapter 3 of this document will apply in Northern Ireland. DECC and DETI will continue to work together to assess the impact of a different offshore connection regime in Northern Ireland. The CfD will be introduced in Great Britain first, with Northern Ireland opening its market to CfDs from 2016. We envisage that the first payments under EMR for generators in Northern Ireland will flow from April 2016 and that the first contracts for Northern Ireland will be able to be signed from late 2015.

21. The UK Government and Northern Ireland Executive have also agreed that because the Irish Single Electricity Market already uses a capacity mechanism, the Capacity Market will only apply across Great Britain with any associated costs being borne by GB customers.

Scotland

22. The generation and supply of energy are reserved matters under the Scotland Act 1998 and, therefore, all policies in EMR extend to Scotland.

23. The Scottish Government has a consultative role in EMR as set out in the Energy Act – in the design and delivery of the CfD, as well as a consultative role within the accompanying institutional framework. Scottish Ministers have been consulted throughout the Delivery Plan process on the CfD aspects of the analysis and strike prices.

Wales

24. All of the policies in EMR extend to Wales and energy policy is non-devolved in respect of Wales.

25. The Welsh Government has a consultative role in EMR as set out in the Energy Act – in the design and delivery of the CfD, as well as a consultative role within the accompanying institutional framework. Welsh Ministers have been consulted throughout the Delivery Plan process on the CfD aspects of the analysis and strike prices.

Chapter 2: Levy Control Framework

Introduction

26. The Levy Control Framework (LCF) allows Government to control public expenditure paid for through consumers' energy bills, and reflects the importance Government places on monitoring and controlling spending on levy schemes that are ultimately funded in this way[12]. DECC has a responsibility to ensure that the levies raised to support low-carbon generation comply with the requirements set as part of the LCF. Policies that are not classified as a levy, or imputed tax and spend, are not included in the LCF. The impact of all DECC policies on consumer bills is monitored and reported through bills and prices reports, impact assessments and annual energy statements.

27. The LCF was extended specifically for low-carbon electricity policies to inform decisions on Electricity Market Reform and to provide investors with greater certainty on future levels of support[13]. This chapter sets out further detail of how the LCF applies across levy schemes and also how much support will be available for new renewable and low-carbon generation to 2018/19. It then outlines how DECC is updating its governance arrangements for the LCF in preparation for Electricity Market Reform.

[12] The LCF for the current Spending Review period also includes the Warm Homes Discount. In this Delivery Plan document, the LCF only refers to levies to fund low-carbon electricity. Further detail on the mechanism of the control framework can be found in *Control Framework for DECC Levy-Funded Spending*. HM Treasury 2011. Available at: http://webarchive.nationalarchives.gov.uk/20130129110402/http://www.hm-treasury.gov.uk/d/control_framework_decc250311.pdf

[13] See Annex D of the draft Delivery Plan. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/223654/emr_consultation_annex_d.pdf

Scope of the LCF

28. The LCF sets annual limits on the overall costs of DECC's levy-funded policies. These comprise the Renewables Obligation (RO), small scale Feed-in Tariffs (ss-FIT), Investment Contracts for Final Investment Decisions Enabling for Renewables (FIDeR) and Contracts for Difference (CfDs).

29. In future, the Capacity Market will also be included in the LCF. However, it will not fall within the spending cap for low-carbon electricity, which is £7.6bn in 2020/21 (in real 2011/12 prices). Expenditure on the Capacity Market will not begin until 2018. When there is greater certainty on the size of the levy, its own, separate budget will be set.

Breakdown of the LCF between levy schemes

30. Table 1 below shows the actual spend for the current levy schemes, ss-FITs and the RO for 2011/12 and 2012/13, and their forecast spend for 2013/14 and 2014/15.

Table 1. Actual and forecast spend for current levy schemes[14]

	Actual		**Forecast**	
£m 2011/12 prices	**2011/12**	**2012/13**	**2013/14**	**2014/15**
ss-FITs	150	470	590	700
RO	1,460	1,890	2,380	2,800
TOTAL	1,610	2,360	2,970	3,500

[14] All figures are rounded to the nearest £10m. Forecast spend is an estimate only and could be higher or lower depending on actual deployment.

31. Table 2 overleaf sets out the estimated committed, or legacy, spend for plants that are already operating (or plant that will be operating by the end of 2014/2015) under each scheme during the Delivery Plan period, until 2018/19. This is based on projected deployment of projects under the RO and FITs by the end of 2014/15. The table then shows projections of new build spend under ss-FITs from 2015/16.

32. The table also shows the FIDeR affordability envelope, which limits the amount of projected LCF spend that can be allocated to FIDeR projects – though actual spend on FIDeR projects is expected to be lower. The final line shows the funds that might be available (up to the LCF cap) for new build large-scale renewable projects and other low-carbon generation out to 2018/19.

33. The actual spend on new build renewable and low-carbon projects may be lower depending on decisions by this and future governments on strike prices and budget allocations. National Grid's modelling (see Annex D) suggests that the scenario on which strike prices are set could spend less than the LCF cap. The budget actually released to National Grid to allocate CfDs will be published in 2014 (see below on CfD budget management).

Table 2. LCF Committed Spend and Projected Funds Available for New Build Renewable and Low-carbon Generation[15]

£m 2011/12 prices	2015/16	2016/17	2017/18	2018/19
RO/CfD/ss-FITs LCF cap	4,300	4,900	5,600	6,450
Estimated ss-FITs expenditure (committed)[16]	760	760	760	760
Estimated RO expenditure (committed)[17]	2,900	2,790	2,790	2,790
Total estimated committed expenditure[18]	3,660	3,550	3,550	3,550
Total remaining for new entrants up to LCF cap (all schemes)	**640**	**1,350**	**2,050**	**2,900**
ss-FITs projected new build spend	40	130	200	260
Projected available for new build large-scale generation up to LCF cap (RO, CfDs and FIDeR)	**600**	**1,220**	**1,850**	**2,640**
Of which FIDeR affordability cap[19]	260	450	720	1,010
Projected available for new build large-scale generation up to LCF cap (excluding FIDeR)[20]	**340**	**770**	**1,130**	**1,630**

[15] LCF cap not rounded. All other figures rounded to nearest £10m.

[16] This is estimated spending for projects that have come forward by the end of 2014/15. It could be higher or lower depending on levels of actual deployment.

[17] This is estimated based on legacy spend from the RO Obligation setting for 2014/15 but could be higher or lower depending on actual generation that comes forward that year.

[18] For both ss-FITs and the RO, the 15/16 figure is higher than 14/15 from Table 1. This is because projects coming on line in 2014/15 then generate for a full year in 2015/16, and therefore receive a greater total level of support. The RO legacy spend figure falls for 2016/17 based on assessments of projects that will stop generating but are currently supported under the RO.

[19] The FIDeR Affordability Envelope was published on 4 December 2013. For further details see: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/263169/FID_Update_3_Contract_Award_Process.pdf. This envelope represents the maximum possible projected spend that could be allocated to FIDeR projects. The actual spend is expected to be less and any underspends will be re-allocated for CfDs in the enduring regime.

[20] From 2017/18 these figures represent the indicative budget available for CfDs only.

34. Current arrangements allow for 20% headroom above the LCF cap, which represents the level of permissible variation in spend above the LCF annual limits. This provides additional flexibility to manage the potential cost fluctuations associated with CfDs. If headroom is used DECC has to develop plans for bringing spending back to below the cap.

35. These flexibilities to manage spend, and the rising profile of projected minimum funds available for new build generation set out in Table 1 above, will facilitate a steady stream of investment in new generation, year-on-year to 2020. As far as possible, budget will be allocated to ensure a consistent flow of new projects and to help build supply chains.

CfD budget management

36. The CfD scheme will be allocated a budget from the funds projected for new renewable and low-carbon generation detailed in table 2. This budget will be further divided into a sub-budget for 'generic' renewables CfDs to be allocated by National Grid and another for contracts issued directly by the Secretary of State. In advance of the first allocation of generic CfDs, DECC will publish a projection of the amount of budget to be released to National Grid in each year of the Delivery Plan period.

37. Subsequently, an update on the budget to be released for each year of the Delivery Plan period will be published at least two weeks in advance of each allocation round[21]. Not releasing the budget all at once gives DECC

[21] This position reflects the proposals set out in the EMR Consultation on Proposals for Implementation in October, to be finalised in the Government response. If possible, we will aim to publish the budget position at least one month in advance of an allocation round.

an additional tool to manage the LCF and retains funds for projects commissioning in later years with short lead times. Further details on CfD budget management will be provided with the draft Allocation Framework[22] scheduled for publication in early 2014.

LCF Governance

38. DECC and HMT currently have effective governance arrangements in place to monitor and control spending on schemes within the LCF. Ahead of the implementation of Electricity Market Reform, DECC is improving the governance arrangements for the LCF to incorporate the new Contracts for Difference scheme. These arrangements will:

- continue to ensure levy spend is affordable within the overall LCF limits and manage the budgets across the different levy schemes;
- administer effective cost control for each of the levy schemes, including CfDs; and
- report levy expenditure and associated outcomes across the schemes regularly and transparently (see 'Reporting' below).

39. In addition, the Dynamic Dispatch Model (DECC's forecasting model which informs LCF decision-making) is subject to a range of quality assurance processes. Annex G: *Modelling Quality Assurance* describes the systematic process for quality assuring the analysis for the Delivery Plan. This includes the use of DECC's Dynamic Dispatch Model and covers governance of assumptions, model testing, and scrutiny of outputs. To

[22] The draft Allocation Framework will include technical rules, details and procedures that enable CfD allocation to operate, including budget rules.

add to this quality assurance, a comprehensive independent review of the model has been commissioned and will be completed shortly.

40. Regular monitoring of levy spend and longer term model forecasting will maximise DECC's ability to effectively manage the risks of potential overspend and under delivery. These include deployment risks (e.g. more or less deployment of technologies than expected), wholesale electricity price risks and if load factors are higher than those assumed in the modelling.

41. DECC has several forward-looking tools to address the risk of potential overspends. The CfD allocation process introduces cost control mechanisms by way of constrained allocation to contain deployment to within affordable levels. Other cost control measures include, for example, revising strike prices following a consultation, or adjusting budget allocations for specific technologies or groups of technologies[23]. In circumstances of extreme budgetary pressure, the Secretary of State could direct the Delivery Body not to allocate more CfDs. These controls are in addition to existing ones for schemes currently in the LCF.

Devolved Administrations

42. DECC will continue to work with the Devolved Administrations to inform and involve them as far as possible in budget and risk management decisions regarding the LCF.

[23] Budget allocations for specific technologies or groups of technologies are subject to the EMR Consultation on Proposals for Implementation. See page 35 for a further explanation of Government's position.

Reporting

43. To ensure appropriate transparency and Parliamentary oversight, DECC is currently working with the National Audit Office, Treasury and relevant Parliamentary Committees to agree the form and nature of bespoke reporting arrangements for levy expenditure.

44. Our intention is that reporting should cover actual expenditure, forecast expenditure and progress on outcomes for each levy scheme. We are also examining how we can best include information on the costs and outcomes of other polices that are funded by consumers to underpin accountability for decisions affecting energy prices, whatever their formal classification. The estimates of expenditure will be subject to proportionate independent audit and will be formally laid in Parliament. We anticipate that the report would be subject to scrutiny by the Energy and Climate Change Committee.

Information from Delivery Partners

45. To monitor levy spend, manage risks effectively and allow Government to report transparently on LCF expenditure, DECC will require regular and timely information from its delivery partners, the Counterparty Body and National Grid.

46. This information will include forecast and actual CfD spend over a short-term and long-term horizon, updates on the allocation of CfDs and a summary of contract variations.

47. Information requested by DECC will support the following principles:

- Provide early visibility of overspend and under delivery risks to enable them to be managed effectively
- Be proportionate to the information required for risk management and decision making.

Chapter 3: CfD Strike prices for renewable technologies

Introduction

48. The Contracts for Difference (CfD) is a long-term private law contract that pays the generator the difference between a measure of the market price for electricity (the 'reference price') and a measure of the long-term price needed to bring forward investment in a given technology (the 'strike price'). This reduces generators' long-term exposure to electricity price volatility, substantially reducing the commercial risk and encouraging investment in low-carbon generation at least cost to consumers.

49. The strike prices published here present a package for investors along with the CfD contract terms. The Draft Delivery plan published in July 2013 set out proposals on the key design features of the CfD and was accompanied by a document setting out heads of terms[24] setting out the more fundamental terms of the contract. We published a draft of the CfD contract in August 2013 and have engaged since this with a range of stakeholders seeking feedback on the contract terms. A summary of the final policy positions for the key contract terms are set out at Appendix F. We have published separately a revised version of the contract including all the key terms which go to the value of the CfD and a supporting document which highlights the key changes that have been made to the contract since August.

[24] Annex B Feed-in tariff with Contracts for Difference: Heads of terms https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/65636/7078-electricity-market-refrorm-annex-b.pdf

50. The strike prices in this Delivery Plan have been amended to reflect the views and new evidence provided during stakeholder engagement and the Delivery Plan consultation.

51. This chapter provides the final strike prices for renewable technologies for the period 2014/15 to 2018/19 subject to state aid clearance. The strike prices could help achieve total UK renewable deployment of around 43 GW by 2020 generating around 109 TWh (or around 33 % of electricity, but with a range of 30-36%).

How CfD strike prices for renewable technologies have been developed

52. The strike prices have been set with the aim of maximising the delivery of Government objectives for the electricity system – reducing the carbon intensity of the electricity sector, ensuring the electricity system is contributing appropriately to meeting the Government's renewable and low-carbon energy targets, and maintaining a secure electricity supply, all at an affordable cost to the consumer.

53. Strike prices are constrained by the Levy Control Framework funding allocation and levy funded costs for low-carbon electricity cannot exceed £7.6 billion in 2020/21 in real 2011/12 prices (subject to headroom arrangements).

54. In order to understand how various strike prices would impact on the Government's objectives, the Government commissioned analysis from the System Operator (National Grid). The initial commission set out the Government's objectives for EMR and a description of the required analysis, including the data, assumptions, models and scenarios to be

used or developed. Full details of the commission were set out in Annex E of the EMR Policy overview published in 2012.[25] National Grid has modelled the potential deployment and costs associated with the strike prices, including how this might be affected by uncertainty about technology costs, fossil fuel prices and electricity demand (see Annex D).

55. During the period while the CfD is operating in parallel with the RO and investors are able to choose between the two mechanisms, the Government has decided to set strike prices at broadly comparable levels to the RO. Further details on the calculation of an RO equivalent strike price (taking into account relevant differences like a lower cost of capital) can be found in Annex B).

56. Strike prices also reduce over time for some technologies (degression). This is to reflect the fact that technology costs for some technologies will be coming down over time. For some technologies there may not be much cost reduction during the first Delivery Plan period (2014/15-2018/19) or cost reductions in capital costs may be offset by increases in operating costs such as fuel costs. For these technologies the strike prices have been kept flat. For the less mature renewable technologies, such as Advanced Conversion Technologies (ACT) and Anaerobic Digestion (AD), which currently require higher levels of support, strike prices have been set to degress in line with offshore wind[26], as offshore wind support is the maximum support level for large scale renewable electricity generation[27]

[25] Annex E EMR Delivery Plan: decision-making process for Contracts for Difference and the Capacity Market

[26] The strike price for AD is lower than that for offshore in the first two years of the Delivery Plan period

[27] The only exception to this is for tidal stream and wave technologies where for <30MW a higher strike price has been provided to provide additional support

57. Our approach to degression remains consistent with the approach taken for the Renewables Obligation. The design principles imply strike prices that are set at a level comparable to the Renewables Obligation initially, but which after the transition period, where appropriate, decline for projects commissioning later at a rate based on achievable technology cost reductions (for further details see Annex B). These principles have led the Government to set the strike prices in Table 3

58. More detailed information on calculating strike prices can be found in Annex B.

Introduction of competition and technology 'maxima' and 'minima'

59. The Government's aim is for low-carbon technologies to compete on price with other forms of generation in the medium to long term. The Government has also clearly stated its intention to move to a competitive price discovery process for all low-carbon technologies as soon as practicable. One of the key factors in our ability to introduce competition is there being enough capacity in the pipeline to do so.

60. Through its consultation on EMR implementation, which closes on 24 December, the Government is currently consulting on the principle of the use of maxima (caps) and minima (floors) for particular technologies or groups of technologies within the budget available to the EMR Delivery Body for "generic" CfD allocation (i.e. the process applying to most renewables)[28]. The Government noted in the consultation document that it would consider moving immediately to allocation rounds and will also

[28] See question CFD3, page 60 (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/255254/emr_consultation_implementation_proposals.pdf).

consider introducing competition for certain technologies or groups of technologies[29].

61. The European Commission published draft Environmental and Energy Aid guidance on the 18 December for consultation[30]. The new state aid guidelines will require the UK to move to competition for more established technologies. In addition, the pipeline of projects under development in the UK in established technologies is strong enough to permit earlier introduction of competition.

62. The Government is minded to divide the budget allocation between a group of the more established technologies, and a group of the less established technologies. The size of the budget for more established technologies would be set to ensure competition from the start of the regime.

CfD strike prices for renewable technologies 2014/15-2018/19

63. Table 3 sets out the CfD strike prices for renewable technologies for 2014/15 to 2018/19 (with each year beginning on 1 April). The relevant year is determined by the project's target commissioning date. Support will be paid based on net renewable electricity generated.

[29] See paragraph 151 (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/255254/emr_consultation_implementation_proposals.pdf).

[30] http://ec.europa.eu/competition/consultations/2013_state_aid_environment/index_en.html

Table 3: CfD Strike Prices (£/MWh, 2012 prices)[31]

Technology	2014/15	2015/16	2016/17	2017/18	2018/19
Advanced Conversion Technologies[32] (with or without CHP)	155	155	150	140	140
Anaerobic Digestion (with or without CHP) (>5MW)	150	150	150	140	140
Biomass Conversion[33]	105	105	105	105	105
Dedicated Biomass (with CHP)	125	125	125	125	125
*Energy from Waste (with CHP)[34]	80	80	80	80	80
Geothermal (with or without CHP)	145	145	145	140	140
*Hydro[35] (>5 MW and <50MW)	100	100	100	100	100
*Landfill Gas	55	55	55	55	55
*Sewage Gas	75	75	75	75	75
Offshore Wind	155	155	150	140	140
*Onshore Wind (>5 MW)	95	95	95	90	90
*Solar Photo-Voltaic (>5MW)	120	120	115	110	100
Tidal Stream [36]	305	305	305	305	305
Wave[37]	305	305	305	305	305
Scottish Islands – onshore wind (>5MW)	-	-	-	115	115

[31] 'Tidal range' projects, which include both 'tidal lagoon' and 'tidal barrage' technologies, do not have a published strike price. Instead, given the lack of cost data available, DECC will consider how best to price CfDs and the appropriate length of contracts for these projects on a case by case basis.

[32] Standard and advanced gasification and pyrolysis, including advanced bioliquids.

[33] Based on biomass contracts ceasing to pay in 2027.

[34] Energy from waste without CHP is not supported under CfDs, which is consistent with the position under the Renewables Obligation.

[35] For larger hydro projects more than 50MW, DECC will consider how best to price CfDs and the appropriate length of contracts on a case by case basis, similar to the proposed approach for Tidal Range.

[36] The strike prices for Tidal Stream and Wave are intended for the first 30 MW capacity of any project. For higher capacity projects, the additional MWs are offered at a strike price capped at the level of offshore wind (for budgetary reasons).

[37] As per previous footnote.

The strike prices in Table 3 show the strike price for projects commissioning in the year stated in the column. These prices are in all cases maximum strike prices. In the case that constrained allocation applies earlier, the actual strike price will be the outcome of the constrained allocation process if that is a lower value.

The starred technologies are technologies where the Government is considering introducing immediate competition from the start of the regime. This will be decided in early 2014 following further engagement with industry. The approach to biomass conversion will also be confirmed at this time.

While strike prices have been set out for 14/15 in order to ensure comparability, the EMR consultation on proposals for implementation discussed a start date for CfD payments of April 2015.

Total projected deployment associated with strike prices

64. Table 4 sets out the projected range for total capacity by technology for Great Britain. The capacities shown are taken from the System Operator (National Grid) modelling (Annex D – which also contains separate analysis for Northern Ireland). The ranges reflect different underlying assumptions about future technology costs, fossil fuel prices, biomass conversions, and the commissioning dates for new CCS plants. Although the ranges shown do not cover the full range of possible outcomes, they do provide a useful indication of what the modelling suggests is possible given the strike prices in Table 3. These figures are dependent on industry cost reductions over time as well as future policy decisions such as the strike prices for 2019/20 and 2020/21. The figures are not Government forecasts or targets and do not include deployment supported under the small-scale Feed-in Tariff.

65. The generation capacity built given these strike prices will depend to a large extent on the costs faced by developers and on future changes to these costs. As such, the upper ends of the ranges shown in Table 4 typically reflect scenarios in which developer costs are lower and/or decline more rapidly than under central estimates.

66. The range of 2020 renewable generation implied by these alternative assumptions is around 98-118 TWh (including around 9 TWh of small-scale renewables), and represents around 30-36% of total generation.

67. These indicative ranges are aligned with the expected deployment rates published previously and ensure the electricity system is contributing to the UK's target of 15% renewable energy by 2020, which we expect to include over 30% renewable electricity. Our central forecast for renewable electricity generation shows an increase from the Draft Delivery Plan, from around 32% to around 33% of total generation.

68. At the strike price for offshore wind, the modelling suggests that 10GW is achievable (within a range of 8-15GW in the modelling by National Grid). If technology costs were higher than expected then deployment might be lower than this. On the other hand if technology costs fall more rapidly, then higher deployment is possible. The range for offshore wind deployment presented here is different from the range we presented in the draft Delivery Plan. This is because of changes in our modelling assumptions since the July draft Delivery Plan including on phasing.

69. The proposed policy on phasing means that projects delivered across multiple years will be able to access the same strike price for all phases. This will ease the time constraint on developers and mean that more capacity could be contracted for than is generating at any given time Depending on future Government decisions on strike prices and budget allocations this could mean that in the high offshore deployment scenario up to an additional 5GW of offshore wind could have been contracted for by 2020, but would not commission until after that date These are not targets and actual deployment will depend on technology costs.

70. **Table 4: Projected Total Capacity (GW, Great Britain, excl. small-scale deployment)** [38]

Technology	**2020**
Advanced Conversion Technologies (with or without CHP)	c.0.2-0.3
Anaerobic Digestion (with or without CHP) (>5 MW)	c.0.3-0.4
Biomass Conversion	1.7 – 3.4
Dedicated Biomass (with CHP)	c. 0.3-0.6
Energy from Waste (with CHP)	c. 0.4
Geothermal (with or without CHP)	< 0.1
Hydro (>5 MW)	c. 1.7
Landfill Gas	c. 0.9
Offshore Wind[39]	8 – 15
Onshore Wind (>5 MW)	11-13
Sewage Gas	c. 0.2
Large-Scale Solar Photo-Voltaic (>5 MW)	2.4 – 4
Tidal Stream	c. 0.1
Wave	

71. Onshore wind deployment is modelled as between 11 and 13GW depending on what happens to e.g. technology costs, fossil fuel prices and electricity demand.

72. The range for large-scale solar is between 2.4 to 4GW.

73. Biomass conversion has a deployment range of between 1.7 and 3.4GW depending on how many plants convert to biomass

[38] The ranges shown assume that if technology costs are higher than expected, the 2018/19 strike prices for onshore and large solar PV are increased above those shown in Table 2

[39] The upper end of the offshore wind range is reached if costs come down to meet industry aspirations and there is some delay to CCS build and prices do not reduce with costs.

Overview of consultation and changes to strike prices

74. In July 2013, DECC consulted on draft strike prices in the draft EMR Delivery Plan[40]. Industry, investors and other stakeholders were asked to submit their views and further evidence ahead of publication of the final strike prices.

75. We received over 100 responses to the consultation from a wide range of individuals and organisations including generators, suppliers and consumer organisations. A full analysis of the feedback and evidence received has been conducted. 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 to undertake an analysis 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 (see Annex H of the Delivery Plan).

Maximum build rates: We have increased the maximum build rates used in our modelling to be more consistent with recent levels of deployment

[40] Consultation on the draft Electricity Market Reform Delivery Plan: https://www.gov.uk/government/consultations/consultation-on-the-draft-electricity-market-reform-delivery

observed in our pipeline of projects (Renewable Energy Planning Database - REPD), especially on onshore wind.

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).

76. The resulting impact on individual technologies strike prices is discussed in detail in the 'an explanation of strike prices by technology' section towards the end of this chapter.

77. There were a number of other issues that were raised in consultation responses where we have felt that the evidence submitted did not warrant a change. The Government's full response to the consultation is published alongside the final Delivery Plan.[41]

Box 2: Technology cost and hurdle rate assumptions

Technology Costs

A number of data sources were considered in developing a dataset for technology costs in the analysis and modelling of the Electricity Market Reform Delivery Plan. These data sources are summarised below. Further detail on the assumptions used and their sources are set out in the DECC report 'Electricity Generation Costs December 2013.[42]

Further details on modelling changes made for the Final Delivery Plan as a result of evidence received through consultation and other evidence can be

[41] Link to summary of responses

[42] https://www.gov.uk/government/organisations/department-of-energy-climate-change/series/energy-generation-cost-projections

Box 2: Technology cost and hurdle rate assumptions

found in Annex H of the Final Delivery Plan documents.

Technology Costs for Non – Renewable Technologies:

Underlying data on non-renewable technologies has been provided by Parsons Brinckerhoff. The underlying data and assumptions can be found in the Parsons Brinckerhoff (2013) report.[43]

Technology Costs for Renewable Technologies:

The following data sources for various renewable technologies have been used and/or considered by DECC. These are:

1. Government Response to the Banding Review (GRBR) - data and evidence underpinning the 'Government response to the consultation on proposals for the levels of banded support under the Renewables Obligation for the period 2013-17 and the Renewables Obligation Order 2012' for renewable technologies.[44]
2. Solar PV data (250-5000kW roof-mounted/ sub-5000kW ground-mounted solar PV) - data and evidence on the costs and performance of large-scale solar PV underpinning 'Government response to further consultations on solar PV support, biomass affordability and retaining the minimum calorific value requirement in the Renewables Obligation'.[45]
3. FITs data (PV, wind, hydro and AD under 5MW): Data and evidence from Parsons Brinckerhoff (PB) (2012) published as part of the Government response to Phase 2A and 2B comprehensive review of feed-in tariffs.[46,47]

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[43]: https://www.gov.uk/government/organisations/department-of-energy-climate-change/series/energy-generation-cost-projections

[44] http://www.decc.gov.uk/assets/decc/11/consultation/ro-banding/5936-renewables-obligation-consultation-the-government.pdf. This is referred to as the 'Government Response to the Renewables Obligation' throughout this report. Please note that the data has been inflated from 2010 to 2012 prices and heat revenues have been updated to reflect DECC's 2013 fuel and carbon prices when compared to those published as part of the Government Response to Renewables Obligation.

[45] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/66516/7328-renewables-obligation-banding-review-for-the-perio.pdf

[46] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/43083/5381-solar-pv-cost-update.pdf

Box 2: Technology cost and hurdle rate assumptions

4. Onshore Wind Call for Evidence - Data received in response to DECC's Onshore Wind Call for Evidence and published in June 2013.[48]
5. NG Call for Evidence - Data received as part of National Grid's Call for Evidence[49] (2013).
6. PB 2013 - a DECC commissioned report from Parsons Brinckerhoff (2013) on renewable technologies.[50]
7. TNEI offshore wind costs assessment.[51]
8. The Crown Estate Offshore wind cost reduction pathways study,[52] including the associated PwC Project Finance work stream[53].
9. Offshore Wind Cost Reduction Task Force Report June 2012.[54]

Build Constraints

Build constraints for renewable technologies are broadly consistent with those used in the Renewables Obligation Banding Review Government Response (2012), which are based on Arup (2011)[55] and information obtained during the Renewables Obligation Banding Review Consultation.[56,57] Some of the build

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[47] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/42912/5900-update-of-nonpv-data-for-feed-in-tariff-.pdf

[48] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/205423/onshore_wind_call_for_evidence_response.pdf

[49] https://www.gov.uk/government/organisations/department-of-energy-climate-change/series/energy-generation-cost-projections

[50] https://www.gov.uk/government/organisations/department-of-energy-climate-change/series/energy-generation-cost-projections

[51] https://www.gov.uk/government/organisations/department-of-energy-climate-change/series/energy-generation-cost-projections

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

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

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

[55] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/42843/3237-cons-ro-banding-arup-report.pdf

[56] https://www.gov.uk/government/consultations/supporting-large-scale-renewable-electricity-generation

[57] Build constraints for large solar photo-voltaic reflect assumptions underpinning analysis for the *Renewables Obligation Banding Review for the period 1 April 2013 to 31 March 2017: Government Response to further consultations on solar PV support, biomass affordability and retaining the minimum calorific value requirement in the RO* (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/66615/7328-renewables-obligation-banding-review-for-the-perio.pdf), and build constraints for tidal stream and wave technologies reflect DECC's current understanding.

Box 2: Technology cost and hurdle rate assumptions

constraints have been revised based on information and commercial intelligence about the total capacity of projects that are coming forward. Projects already in the pipeline are consistent with DECC's latest view on what is in construction, based on planning consent databases and industry intelligence.

Further information is available in section 7.8 of the System Operator (National Grid) report at Annex D.

Hurdle Rates

The pre-tax real hurdle rates used in the EMR Delivery Plan analysis are calculated from the post-tax nominal hurdle rates underlying the Renewables Obligation Banding Review Government Response (2012). These post-tax nominal rates are based on evidence from Arup (2011)[58] and Oxera (2011).[59]

In order to convert the post-tax nominal rates into pre-tax real rates, we have used updated effective tax rate assumptions from work undertaken by KPMG (2013)[60] (further explained below) and a 2% inflation assumption consistent with the Government's inflation target.

The estimated hurdle rate reductions due to the introduction of CfDs are based on evidence reviewed by NERA (2013).[61] Further details can be found in Annex H.

The resulting pre-tax real hurdle rates for technologies for which strike prices have been calculated are shown in Annex 4 of the DECC report 'Electricity Generation Costs December 2013'.[62]

Effective Tax Rates

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[58] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/42843/3237-cons-ro-banding-arup-report.pdf

[59] http://hmccc.s3.amazonaws.com/Renewables%20Review/Oxera%20low%20carbon%20discount%20rates%20180411.pdf

[60] https://www.gov.uk/government/consultations/consultation-on-the-draft-electricity-market-reform-delivery

[61] [link to NERA report]

[62] https://www.gov.uk/government/organisations/department-of-energy-climate-change/series/energy-generation-cost-projections

Box 2: Technology cost and hurdle rate assumptions

For strike price setting, we have used assumptions on the level of tax paid by developers – expressing these as effective tax rates (ETRs) which take into account the effect of capital allowances. These assumptions are based on advice from KPMG.

The KPMG report derives indicative ETRs for three electricity generating technologies: onshore wind, offshore wind and biomass conversions. The report then applies a high-level qualitative analysis for other renewable technologies to assess whether the ETR for offshore wind or biomass conversions is an appropriate proxy. For technologies that do not show similar characteristics to either offshore wind or biomass conversions the 20% corporation tax rate is proposed.

The ETRs which have been used in setting strike prices are shown in Annex 3 of the DECC report 'Electricity Generation Costs 2013'.

Power Purchase Agreements (PPAs)

It is not possible to assess with a high degree of certainty what level of discounts will be available in PPAs for CfD-holding generators since, by definition, such PPAs are not currently available. We have therefore estimated potential discounts for renewable generators by reference to discounts available in the market for Renewables Obligation generators today, adjusted to reflect likely changes in the market following the move to CfDs.

The estimate for discounts for current Renewables Obligation plant is based on the evidence underpinning the Renewables Obligation banding review[63] together with evidence provided by market participants through a call for evidence over the summer of 2012[64]. These were then adjusted to reflect the likely changes in the market as a result of the move from the Renewables Obligation to CfDs reflecting the changing risk landscape[65], in particular:

- Removal of price risk through guaranteed top-up payment against

[63] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/42846/4081-poyry-revised-ro-bands-review.pdf

[64] https://www.gov.uk/government/consultations/barriers-to-long-term-contracts-for-independent-renewable-generation-investment

[65] Supported by analysis by Baringa, available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/253175/Baringa_analysis_of_PPA_market_liquidity.__Presentation_at_April_workshop___Report_published_July_2013_.pdf.

Box 2: Technology cost and hurdle rate assumptions

reference price;

- Removal of exposure to ROC price volatility;
- Removal of risk of carrying ROCs; and
- Application of discounts to wholesale price only, rather than the entire revenue stream.

These discounts assume efficient pricing of imbalance risk and route to market costs. DECC is actively considering interventions to promote competition in the PPA market.

More information is available in section 7.7 of the System Operator (National Grid) report at Annex D.

Scrutiny from the Panel of Technical Experts

78. The Government established an independent Panel of Technical Experts, in February 2013, to scrutinise the analysis carried out by the System Operator (National Grid) in its role as the EMR Delivery Body, to ensure it is robust and fit for purpose. The Panel is made up of experts with knowledge across sectors of the electricity market and who have both analytical and technical modelling skills. The Panel has been working alongside the System Operator and DECC, and reporting informally to DECC throughout the analytical process. The Panel's report on the Delivery Plan is published at Annex E. More information on the members of the Panel and its terms of reference is available on the Government web pages.[66]

[66] https://www.gov.uk/government/policy-advisory-groups/electricity-market-reform-panel-of-technical-experts

An explanation of strike prices by technology

79. This section sets out the decisions about strike prices for each technology, and where we have taken decisions not to support particular technologies. It includes a discussion of where some of the assumptions have been updated based on information received as part of the consultation, or where more information has become available. More detail is provided in the full consultation response, as well as Annex H.

Advanced Conversion Technologies (gasification and pyrolysis)

80. The Advanced Conversion Technologies (ACT) strike price is for technologies previously eligible for the Renewables Obligation support bands for both standard and advanced gasification and pyrolysis. Payment will be made for the electricity derived from biomass including the biomass fraction of waste. In the case of electricity derived from a gaseous fuel, a minimum calorific value requirement of 2MJ/m^3 must also be met.

81. ACTs are considered to be an emerging technology, and as such, are eligible for a high strike price. No assumptions were changed as a result of the cost data submitted under the consultation.

82. Under the Renewables Obligation, the support level of offshore wind was used to set a ceiling of acceptable spend (with a few very limited exceptions). Government support for renewables is predicated on there being cost reductions over time. Therefore, strike prices, as with support under the RO, have been set to reduce over time. This reduction has been set in line with offshore wind strike price, as set out above. Whilst we recognise that the status and scale of offshore wind and ACT are different, strike prices have been capped at the offshore wind rate as the marginal technology in renewable electricity.

83. Therefore, as for offshore wind the strike price for ACT has increased by £5 in 2018/19, to £140/MWh

Anaerobic Digestion

84. We have increased support proposed for Anaerobic Digestion (AD) by £5 per MWh in all years except 2017/2018 compared with the strike prices proposed in the Delivery Plan consultation, in line with our updated assumptions on cost of capital. Strike prices reduce over time in line to reflect cost reductions expected as the technology matures. Whilst we recognise that the status and scale of offshore wind and AD are different, strike prices have been capped at offshore wind.

85. Because installations up to 5MW are supported by the feed-in Tariff, strike prices are only available for AD greater than 5MW.

Biomass Conversions

89. Conversion of coal power or biomass co-firing stations or units to sustainable biomass offers a quick, cost-effective way to rapidly decarbonise electricity generation in the short to medium term, as well as contributing to security of supply through the extension of the lifetime of generating assets, during our transition to other more sustainable low-carbon generation.

90. We are offering a flat strike price throughout this Delivery Plan period, instead of reducing strike prices, to take account of the shorter contract term being offered to biomass conversions and expected increases in imported fuel costs due to our proposed changes in sustainability standards. The decision to end payments to biomass conversions in

2027[67], which results in the shorter contract term, is in line with Government's longer term objectives for the effective use of biomass as set out in the Bioenergy Strategy[68].

91. The strike price for biomass conversions remains the same, at £105/MWh

Dedicated Biomass Combined Heat and Power

92. The strike prices for biomass Combined Heat and Power (CHP) stations are based on the assumption that generators will be able to apply for the Renewable Heat Incentive (RHI) tariff as well as CfD support. As set out in the Government consultation, this tariff will be 4.1p per kWh of generation.

93. Under the Renewables Obligation, there is a cap of 400MW on deployment of dedicated biomass. However, dedicated biomass CHP is exempt from this cap. As identified in the UK Bioenergy Strategy, dedicated biomass CHP is a low-risk pathway for the use of bioenergy to 2030 in view of its higher efficiency than dedicated biomass and will therefore continue to be eligible for support under CfDs.

94. As in the EMR Draft Delivery Plan, we are proposing to offer a flat strike price for dedicated biomass with CHP throughout this Delivery Plan period because fuel costs are a large share of the overall costs of biomass generation. In order to be eligible for support, generating plants would need to provide a certificate from the Combined Heat and Power Quality Assurance (CHPQA) programme confirming that the plant either partially or fully qualifies under the CHPQA criteria.

[67] p.15,https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/209276/EMR_Spending_Review_Announcement_-_FINAL_PDF.pdf

[68] https://www.gov.uk/government/publications/uk-bioenergy-strategy

95. For more information on dedicated biomass Combined Heat and Power policy please see the October EMR: Consultation on Proposals for Implementation[69].

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

97. Dedicated energy crops, which are supported separately under the Renewables Obligation, will also be eligible for the Dedicated Biomass CHP strike price but will not receive any additional support.

Energy from Waste CHP

98. Strike price for Energy from Waste CHP is set lower than proposed in the consultation in line with our updated assumptions on cost of capital. This has reduced the strike price by £10 to £80/MWh. As a mature technology there is limited scope for further cost reduction, for example due to the potential for fluctuations in fuel costs; therefore we are proposing a flat strike price throughout this Delivery Plan period. The Government Response setting out decisions taken for the non-domestic RHI confirmed that the Renewables Obligation was intended to fully cover the cost of energy from waste CHP, and therefore plants that received support under the Renewables Obligation would not be eligible for RHI support. This is expected to continue under CfDs.

[69] P.63,https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/255254/emr_consultation_implementation_proposals.pdf

99. We published proposals in October outlining our intention to pay the CfD on the Qualifying Power Output (QPO) of the plant[70].

Geothermal

100. The Government committed to consider the findings of the Atkins report on the potential of deep geothermal power in the UK in setting the final strike price. The report was published in October[71]. It concludes that the deep geothermal power potential in the UK is limited (with an upper bound of 3-4% of total generation in 2050), will be fairly insensitive to tariff-levels for the period 2014/15 to 2018/19 given the level of upfront risk and uncertainties, and that the economic viability of all schemes will be heavily dependent on heat sales. The Government has concluded that it should adopt a stepped approach to supporting the deep geothermal sector as a whole. This will include focussing effort on heat-only deep geothermal projects and heat network development. Over time, it is envisaged that the development of heat-only schemes may reduce some of the risks and uncertainties associated with deep geothermal power schemes.

101. The strike price has been changed to be in line with the assumptions on cost of capital. This has increased the strike price by £20-£25, to £145/MWh up until 2016/17 and £140/MWh thereafter.

Hydro

102. Hydropower can be an efficient and cost effective way of producing renewable energy. While most of the UK's existing large-scale sites have already been exploited, modelling by the Environment Agency suggests that there is still resource available, for example at a smaller level in run-of-river applications. The Renewables Obligation-comparable strike price

[70]https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/255254/emr_consultation_implementation_proposals.pdf

[71] https://www.gov.uk/government/publications/deep-geothermal-review-study

is already relatively low for this technology, as cost reductions are well advanced; therefore, we are maintaining a flat strike price rather than making further reductions to support levels.

103. Based on evidence submitted during the consultation, the Government has revised the strike prices for hydroelectric so that they are equal to the current support under the Scottish RO band (1 ROC instead of a 0.7 ROC equivalent strike price).This is because the majority of potential hydro sites are located in Scotland.

104. Revising strike prices to be based on support under the Scottish RO and updating the assumptions on the cost of capital have increased the strike prices for hydro by £5 in all years to £100/MWh.

105. For 'larger' hydro, >50MW, DECC will consider how best to price CfDs and the appropriate length of contracts on a case by case basis.

106. A number of hydro power plants are coming to the end of their lifecycles. Therefore, support for repowering and replacement of large existing plants may be available through CfDs, again on a case by case basis.

Landfill Gas

107. While the RO has different bands for different types of landfill gas (closed landfill, open landfill and waste heat to power units) we have decided to offer a single strike price under the CfD. This is because the difference between the costs for these categories of landfill gas is not considered to be significant enough to warrant separate strike prices. The strike price has been set to be equivalent to support under the RO. It has been reduced by £10 from the draft Delivery Plan to reflect the updated cost of capital assumptions. The CfD is offered to give developers greater

certainty about the revenue streams, reflecting the greenhouse gas reduction benefit of landfill gas resulting from its capture and combustion of methane.

Sewage Gas

108. Strike price for sewage gas is set lower than proposed in the consultation in line with our updated assumptions on cost of capital. This has reduced the strike price by £10 to £75/MWh. We consider that a flat strike price throughout the Delivery Plan period is appropriate, as cost reductions for this technology are well advanced.

Offshore Wind

109. Offshore wind is the most scalable of the renewable technologies and also offers an opportunity to develop a competitive and quality UK based supply chain. We expect costs of offshore wind to fall over time as more is deployed. The industry-led Cost Reduction Task Force concluded that a levelised cost reduction to £100/MWh for projects commissioning in 2020 was challenging but achievable.

110. During the consultation, many responses provided evidence suggesting that the cost reduction profile set out in the draft EMR Delivery Plan was not realistic given the deployment levels. We have therefore assumed a less aggressive cost reduction profile, which is a combination of a deployment-based learning rate and an aim to reach £100/MWh for projects reaching FID in 2020[72]. The Government is working with the industry led Offshore Wind Programme Board to drive cost reduction.

[72] Projects reaching FID in 2020 are anticipated to commission by 2023 – so this portion of the learning rate effectively delays the achievement of £100/MWh by 3 years, compared to the draft Delivery Plan.

111. We have also updated the hurdle rates assumed for offshore wind round 3 projects. The differential between this and the hurdle rate for round 2 is now smaller, and so more round 3 projects are anticipated to come forward over this Delivery Plan period.

112. This assumption was changed as modelling for the draft Delivery Plan appeared to underestimate deployment of offshore wind Round 3 when compared to anticipated deployment. DECC has therefore adjusted the difference in baseline hurdle rate between R2 and R3 projects to reflect evidence provided by PwC for the Crown Estate Cost Reduction Pathways study[73].

113. Therefore, following the consultation, Government has decided that a higher strike price for offshore wind is necessary to ensure we meet our objectives. The strike price for offshore wind has been increased by £5 in 2018/19 but remains the same for all other years. This enables greater deployment of offshore wind before 2020, in line with delivering around 33% renewable electricity by 2020, as well as reducing the costs of deployment in the long term.

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

Onshore Wind

114. The Government is planning to consult next year on proposals to extend coverage of FITS for community projects between 5 and 10 MW.

115. Onshore wind is one of the lowest cost large-scale renewable technologies, and we remain committed to supporting its deployment on appropriate sites. Support under the Renewables Obligation was reduced by 10% in April 2013, in line with cost reductions. More recently, the onshore wind Call for Evidence found that onshore wind costs have not changed significantly since the reduction to Renewables Obligation support was announced. We have therefore based strike prices on the Renewables Obligation level of support, using the Call for Evidence data.

116. Following NERA's review of the evidence on the costs of capital, onshore wind strike prices have been lowered by £5/MWh in each year, to £95/MWh until 2016/17 and £90/MWh thereafter. The onshore wind strike price degresses in the penultimate year of the Delivery Plan period to ensure spending remains within the LCF, which we believe is consistent with delivering the deployment ranges set out. Our overall deployment ambition for onshore wind remains consistent with that set out in the Renewable Roadmap, at 11-13GW.

117. Because onshore wind up to 5MW is supported by Feed-in Tariffs (FITs), these strike prices are to support capacity greater than 5MW.

Solar PV

118. We continue to be of the view that 'large-scale' solar PV, greater than 5MW, has the potential to play a significant role on appropriate sites if there are continued cost reductions and innovation in both technology and

business models and measures. The strike price trajectory has been set to incentivise those continued cost reductions and innovation.

119. The strike price covers both the building-mounted and ground-mounted solar PV bands under the Renewables Obligation. Decisions on the siting of installations will be made through the planning system, using appropriate guidance, ensuring that local communities are properly consulted on developments that affect them.

120. Following new evidence on the costs of capital and evidence submitted during the consultation, the strike prices have been lowered across all years. Strike prices have been reduced by £5 in the period 2014/15 to 2017/18 and by £10 in the last year.

121. There has been some comment from the sector that solar PV costs will fall lower than the published strike prices. We received a range of proposed strike prices from the solar PV sector in response to the consultation on the Delivery Plan. These also included proposed prices which exceeded the solar PV strike prices consulted on in July.

122. Future prices for solar PV will be affected by a range of factors (including the EU anti-dumping measures proposed by the European Commission, rationalisation of global manufacturing over capacity, levels of global deployment and technological advances). This creates a significant uncertainty on the level of technology costs in the latter part of the decade.

123. Small-scale solar PV up to 5MW will continue to be supported under the small-scale Feed-in Tariff, therefore strike prices and deployment figures in this document relate to large-scale solar PV only.

Tidal Range

124. Tidal Range includes both tidal barrage and tidal lagoon projects. There is no published strike price for Tidal Range. Instead, given the lack of cost data available, and the variations between projects, DECC will consider how best to price CfDs and the appropriate length of contracts for tidal range projects on a case-by-case basis.

Tidal Stream and Wave

125. We are maintaining our support for tidal stream and wave technologies to encourage further development of these early-stage technologies. Given the high level of revenue support needed, the high strike prices being offered will only be available up to a 30MW deployment cap per project.

126. This is to encourage the move towards commercialisation for both the sectors whilst managing overall costs to consumers. Additional capacity in excess of this cap will be supported at a lower strike price in line with offshore wind. This is consistent with the support provided under the Renewables Obligation.

127. The Government will continue to review the necessity of having a cap. We anticipate that, over time, this cap will lift as the volume of projects increases, the costs of the technologies come down and in line with this, the level of support needed decreases.

128. We do not anticipate any significant cost reduction to either technology within the first Delivery Plan period (2014/15 to 2018/19) and as such

there is no degression of strike prices[74]. We anticipate that degression will happen in the future but in line with cost reductions for the technologies.

129. There have been some changes to the assumptions on cost of capital which could suggest a higher strike price for these technologies. However, we do not consider that there is a case for increasing the strike increasing the strike prices for wave and tidal stream, in particular given that they are already receiving a significant premium in comparison with other technologies. For this reason, the Government has chosen to maintain the strike prices for these technologies at £305/MWh. 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.

Renewables projects on Scottish islands

130. In early 2013, the Government, in conjunction with the Scottish Government, commissioned independent analysis on the potential contribution that could be made to renewable and low-carbon targets by renewables located on the Scottish islands.[75] The report of this analysis was made available on the DECC and Scottish Government websites in May 2013[76]. It concluded that the economics for developing renewables projects on the Scottish islands is significantly different to elsewhere in the United Kingdom and large-scale renewable energy projects may be

[74] This refers to support up to 30MW project cap. Support above 30MW project cap to be supported in line with offshore wind, as set out above

[75] The study focused on potential onshore wind and marine projects on the island groups of Shetland, Orkney and the Western Isles.

[76] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/199038/Scottish_Islands_Renewable_Project_Baringa_TNEI_FINAL_Report_Publication_version_14May2013__2_.pdf

unlikely to proceed on the Scottish islands, based on a strike price set at an appropriate level for mainland projects.

131. In September 2013, we consulted on a proposal to provide a separate strike price for onshore wind projects[77] located on the Scottish islands. As part of that consultation, we proposed that the island onshore wind strike price should be set at £115/MWh. This strike price would apply from 2017/18 and 2018/19, as we anticipated projects on the Scottish islands being able to generate from 2018 at the earliest. In light of the further analysis that has been undertaken and the potential that exists for additional cost-effective renewable electricity, the Government has decided to provide support at this level. The proposed single strike price of £115/MWh is the appropriate level to bring on cost-effective projects without over-compensation.

132. We recognised that this level of support may not bring on all of the potential projects, and therefore may not in itself provide sufficient support for all potential transmission links. However this is the case for all technology bands. In addition to the provision of support at this level we proposed working with the Scottish Government to assess further the issues raised on the Baringa/TNEI report regarding grid access for developers on the islands. This work is now underway.

133. We further considered that there was considerable potential for marine energy projects on the Scottish islands. However, we do not expect to see commercial-scale marine energy projects deployed during the lifetime of the first Delivery Plan. As a result, an island-specific uplift on the generic strike prices for marine energy technologies is unlikely to lead to any

[77] https://www.gov.uk/government/consultations/additional-support-for-scottish-island-renewables

further deployment during the first delivery period. Therefore we have not set island-specific strike prices for wave and tidal stream energy as part of the first Delivery Plan. Instead, we intend to consider again in detail whether Scottish island-specific measures for marine energy should be put in place, and at what level, as part of the second Delivery Plan period.

134. The Government is also publishing the response to consultation for the Scottish Islands consultation alongside the Delivery Plan[78].

Other renewable technologies without a CfD strike price

135. There are several technologies which currently receive support under the Renewables Obligation, for which we are not currently setting a strike price or offering the option of bespoke negotiations. These technologies are:

- Biomass co-firing;
- Dedicated biomass;
- Standard bioliquids; and
- Geopressure.

The reason for this position is set out for each of these technologies below:

Biomass Co-firing

136. We are not offering CfDs for co-firing plants because, as outlined in the Renewables Obligation Banding Review Government Response, our preference is for full biomass conversions. Conversions provide higher, more reliable levels of renewable generation.

[78] https://www.gov.uk/government/consultations/additional-support-for-scottish-island-renewables

Dedicated Biomass

137. We took the decision to constrain deployment of Dedicated Biomass in line with the conclusions of the 2012 UK Bioenergy Strategy; in the medium to long term, new build electricity-only biomass plant do not offer as cost-effective a means of decarbonising the electricity grid as other renewables technologies, such as the marginal technology, offshore wind. However, we were aware that several plans for projects were well advanced, having invested heavily in getting their projects “shovel-ready”. For this reason, we decided to provide a mechanism to allow those projects to come forward and introduced a 400MW non-legislative cap with a notification procedure under the Renewables Obligation. In line with the conclusions of the Bioenergy Strategy, we have decided not to offer a strike price for dedicated biomass under EMR. Several projects have asked for FID-enabling and are looking at the CfD route but offering a CfD at this stage would have circumvented our policy intent to discourage electricity-only new build and to encourage more resource-efficient technologies such as CHP and heat.

Standard Bioliquids

138. We are not offering a strike price for bioliquids at this time, nor will electricity generated from bioliquids be eligible for support under CfDs as either biomass conversions or, dedicated biomass with CHP. Sustainable waste oils, such as used cooking oil, are a finite resource; using them for electricity production would divert resources from other, more critical sectors such as transport. The UK is taking an active role in discussions on proposed amendments to the Renewable Energy Directive to address important sustainability issues such as indirect land use change. Given this, and the fact that there is already a cap on the amount of support for bioliquids in electricity production under the Renewables Obligation, we

have chosen not to offer a strike price for bioliquids at this time, rather than instituting a similar cap for CfDs. The evidence submitted during the consultation was not sufficient to warrant changing this.

139. We recognise that CHP use of bioliquid produces the most energy per unit of input fuel leading to high levels of efficiency. However, bioliquids are one of the few sources of renewable fuel available for transport and to be consistent with the bioenergy strategy we are mindful to not divert significant volumes of bioliquids from the transport sector. There is no support for bioliquid CHP under the CfD.

Geopressure

140. We are not offering a strike price for geopressure at this time as this technology is at an early developmental stage. Although geopressure is eligible for support under the Renewables Obligation, there are no geopressure projects currently receiving or seeking that support. On that basis, we have no means to set a reliable strike price that will incentivise cost-effective deployment. The vast majority of respondents to the consultation made no comment on this exclusion, therefore we are maintaining it. We will keep this position under review in future Annual Updates.

Renewables Trading

141. The Government recognises that there is a potential contribution to be made from sources of renewable energy that are located outside the UK.

Further detail on the Government's position is set out in the response to the Call for Evidence on Renewable Energy Trading[79].

142. In January 2013, the UK and Irish Governments signed a Memorandum of Understanding committing to a programme of work to jointly evaluate the case for the physical export of renewable electricity from Ireland to the UK. We are taking forward work to resolve the issues around technical potential, timing, cost, potential support mechanisms and regulation. We expect to provide further updates on this work in early 2014.

[79] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/42929/5140-call-for-evidence-on-renewable-energy-trading.pdf

Chapter 4: Capacity Market-Reliability Standard

143. The Capacity Market will protect consumers against the risk of supply shortages by giving investors the certainty they need to put adequate reliable capacity in place. It will do this by providing a predictable revenue stream to providers of reliable capacity. In return, they must commit to provide capacity when needed or face financial penalties. The Government confirmed in its publication of 27 June 2013 its intention to run the first Capacity Market auction in late 2014, for delivery in the winter of 2018/19, subject to State Aid clearance.

144. The decision on how much capacity to contract in each capacity auction will be informed by an enduring reliability standard. A reliability standard is an objective level of security of electricity supply, and will be the basis for establishing a demand curve in advance of each capacity auction.

145. More detail on the Capacity Market and how the reliability standard feeds in to the wider design process can be found on the DECC website.[80] In designing our Capacity Market proposals we have worked with stakeholders and drawn on the historical experience of capacity mechanisms in the UK and on current experience in Europe and a number of American states.

[80]https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/255254/emr_consultation_implementation_proposals.pdf

146. This document sets out the reliability standard, and the methodology[81] for setting the demand curve.

The reliability standard and why it is needed

147. The Capacity Market is intended to ensure 'resource adequacy'. In other words, to ensure sufficient investment in the total reliable capacity needed to meet demand.[82]

148. A reliability standard is needed to set a target level of resource adequacy to be provided through the Capacity Market.

149. No electricity system can ever be 100% reliable, and there is always some trade-off between the cost of providing additional back up capacity, and the level of reliability achieved. The reliability standard allows this trade-off to be made. Each additional unit of capacity contracted through the auction brings an increased security of supply benefit; it is the reliability standard that will suggest the point at which this additional security benefit is outweighed by the costs of providing that capacity.

150. Reliability standards are a relatively common feature of international energy and capacity markets. Establishing an enduring reliability standard gives investors and market participants clarity over the Government's long-term security of supply objectives and will help market participants price their bids in an auction (because they will know that from year to year there should be roughly the same proportion of demand and supply in the

[81] Although we are setting the methodology, we are not setting the parameters.

[82] This is distinct from 'operational security', which is dependent on the moment to moment balancing of supply and demand. Operational security will continue to be managed by the System Operator. The Capacity Market is also not designed to improve the physical resilience of the electricity network.

electricity market). Reducing uncertainty for investors should reduce their costs, benefitting consumers.

151. While we expect the reliability standard to be enduring, it is important to ensure the underlying analytical foundations remain relevant. Accordingly, we will review the standard every five years.

152. The Reliability Standard will express the accepted level of risk that electricity demand is not met in a given year as a result of having insufficient capacity to meet demand on the system, resulting in voltage reductions or, in exceptional circumstances, electricity customer disconnections. The standard is expressed as a loss of load expectation (LOLE), i.e. the number of hours/periods per annum in which, over the long term, it is statistically expected that supply will not meet demand, and which reflects the economically efficient level of capacity. [83] This does not mean that we would have this level of blackouts in a particular year; in the vast majority of cases, loss of load would be managed without significant impacts on consumers[84].

How the reliability standard will be used in practice

153. The reliability standard will guide how much capacity is auctioned in the Capacity Market. The System Operator (National Grid) will set out how much capacity is needed to meet the reliability standard and will provide advice to the Secretary of State who will in turn take the decision over how much capacity to procure.

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[83] The choice of LOLE as a metric for security of electricity supply is discussed in Annex C

[84] A discussion of what Loss of Load Expectation means in practice; the range of tools available to the System Operator, and; how to interpret the risks to security of electricity supply can be found on pages 25-27 of Ofgem's Electricity Capacity Assessment: http://www.ofgem.gov.uk/Markets/WhlMkts/monitoring-energy-security/elec-capacity-assessment/Documents1/Electricity%20Capacity%20Assessment%20Report%202013.pdf

154. The precise amount of capacity required to meet the standard will vary depending on how we expect demand to vary in the coming years. For example, under a scenario with high economic growth and high electricity demand growth over the next four years, we will need more capacity to meet the same reliability standard. Similarly the level of installed capacity needed will also depend on the underlying technology mix of system generation. For example, we would likely want a higher total installed capacity in a system with lots of intermittent capacity than in a system with more reliable generation.

155. The System Operator (National Grid) will set out the analysis of how much capacity we will need to meet the reliability standard through the EMR Delivery Plan process.

The reliability standard

156. The reliability standard for the GB electricity market is a LOLE of 3 hours/year. This translates as a system security level of 99.97%.

157. We acknowledge there are uncertainties around the metrics which underpin the standard. Therefore, although this standard is based on the underlying metrics, it has also been set in the context of the consultation responses and reliability standards that exist in other countries (e.g. France also has a LOLE of 3 hours).

Analytical grounds for the reliability standard

158. The Government has analysed the costs (of providing capacity) and benefits (in terms of security of supply) to determine the most efficient reliability standard.

159. Annex C lays out this analytical approach in more detail. The calculation is based on two key assumptions:

a. The long-term cost of a marginal peaking plant which describes the cost to society of building a new peaking plant. We have used the cost of an open cycle gas turbine to calculate the costs of additional capacity as this is the cheapest way of providing capacity. This is estimated to be around £47,000/MW-year, which is estimated to be the annual revenue required in each year of a plant's lifetime to cover the initial cost of building the capacity.[85]This parameter is equivalent to the Cost of New Entry (CONE) which is an important parameter in determining the demand curve in a Capacity Market auction and which is now the subject of a separate consultation[86]. However we do not propose to revise the reliability standard in line with updated CONE parameters for capacity auctions – rather the reliability standard is intended as an enduring parameter. We will look to update the reliability standard only if there are significant changes in the underlying analytical foundation justifying change and accordingly we will review the standard every 5 years.

[85] Parsons Brinkerhoff (PB) 'Electricity Generation Model – 2013 Update of Non Renewable Technologies

[86]https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/255254/emr_consultation_implementation_proposals.pdf

b. The value of lost load (VoLL), which is the value that consumers place on avoiding loss of electricity supply. We commissioned a joint study together with Ofgem to estimate this VoLL, which has concluded that the average value to consumers of preventing disconnections at times of system peak is around £17,000/MWh.[87]

160. We consider that the most economically efficient reliability standard is the ratio of the cost of avoiding blackouts based on the long-term marginal cost of peaking capacity to the value consumers place on avoiding disruption (VoLL)[88]. The full derivation of this is presented in Annex C but the high-level calculation is presented in Box 3.

161. Whilst, taking into account consultation responses there are uncertainties around the CONE estimate, if CONE was 25% higher than the current estimate, we would still have a reliability standard of 3 hours a year.

Box 3: Analytical basis of reliability standard

In order to maximise customers welfare, the reliability standard ought to relate to the following calculation:

$$\frac{Long\ term\ marginal\ cost\ of\ peaking\ capacity}{Value\ of\ lost\ load}$$

The lowest cost of reliable generation capacity – assumed to be an Open Cycle Gas Turbine plant – is around £47,000/MW-year.

[87] London Economics 'The Value of Lost Load (VoLL) for Electricity in Great Britain' (2013)

[88] Steven Stoft, 'Power System Economics' (2002), pg. 138

The reason that we have chosen this is type of plant is that it would be the marginal plant. In other words it would be the cheapest plant to build if you only expected it to sit idle, providing capacity, but only running in exceptional circumstances. This type of plant should only be dispatched once other plants are already operating and the system is running out of capacity. This is because, although it is the cheapest type of capacity to construct, it has very high running costs.

If it is assumed that wholesale prices can match the value that consumers place on electricity or the value of lost load (£17,000/MWh), then the plant can cover its costs by running for around 3 hours per year. For example, a 1MW peaking plant will serve roughly 3 MWh of load at a cost of £17,000/MWh, thus earning around £47,000 in the process.[89]

If more capacity were installed (i.e. if we had a more secure system than implied by the reliability standard), then the marginal peaking plant would run less often and therefore would serve less than 3 MWh of load per MW of capacity. The cost of serving this load would therefore exceed the value that customers place on electricity and it would represent poor value for money for customers.

If less capacity was installed (i.e. if we had a less secure system than implied by the reliability standard), then the marginal peaking plant would serve more than 3 MWh of load per MW of capacity. The cost of serving this load would therefore be less than VoLL and so building more capacity would offer value for money for customers.

[89] To five significant figures, we have estimated the cost of new entrant capacity to be £47,177/MWh and the value of lost load to be £16,940 and therefore the Reliability Standard would be around 2 hours, 47 minutes and 6 seconds. However, given the level of uncertainty in estimating the associated parameters, it would not be appropriate to express a reliability standard to such a degree of accuracy which is why we have chosen to express it to 1 significant figure as is common elsewhere.

Chapter 5: Summary of Price and Bills Impact

162. Electricity Market Reform should benefit consumers in three key ways. It dampens the effect of volatile fossil fuel prices on electricity bills, it reduces the risk of costly supply shortages and it allows low-carbon generation to be more cost-effectively supported. By providing generators support that falls as electricity prices rise, consumers avoid overpaying generators while also helping smooth the effect of electricity price movements on their bills.

163. More cost-effective support for low-carbon generation means that the same amount of low-carbon generation can be funded for less. As a result, bills can be lower than if this generation were funded through existing policies.

164. This chapter looks at the price and bills impact of Electricity Market Reform in two ways:

- As savings relative to a scenario (the “counterfactual”) in which existing policies are used to achieve similar levels of decarbonisation; and
- As absolute costs.

165. Further detail on this analysis can be found in the EMR Impact Assessment published alongside this Delivery Plan.

166. In order to assess the costs of Electricity Market Reform relative to the costs of achieving similar levels of decarbonisation[90] using existing policy instruments, an existing policy instruments scenario (the counterfactual) has been developed as part of the Government's Impact Assessment.[91] Relative to the counterfactual, Electricity Market Reform is expected to reduce annual household electricity bills by an average of £41 (6%) over the period 2014 to 2030 (real 2012 prices).[92] Making the same comparison for businesses shows electricity prices and bills lower by an average of around 7% to 8% over the period 2014 to 2030.[93]

167. In order to help show the drivers of this net impact, Electricity Market Reform's price and bill impacts have been disaggregated into three distinct effects:

- **EMR support costs**: The EMR package affects bills most directly through the CfD and Capacity Market payments paid to generators. These payments are levied on electricity suppliers and assumed to be passed through to consumers (both households and businesses) by energy suppliers.
- **Lower Renewables Obligation support costs**: The introduction of CfDs requires less new generation to be supported by the Renewables Obligation. This results in lower Renewables

[90] A decarbonisation target for electricity for 2030 has not yet been set by the Government. The results presented here are for an illustrative average grid emission intensity of 100gCO_2/kWh in 2030. Results for grid intensity levels of 50gCO_2/kWh and 200gCO_2/kWh in 2030 are also presented in the Impact Assessment.

[91] This is a different comparison than made in DECC's March 2013 report on the *Estimated Impacts of Energy and Climate Change Policies on Energy Prices and Bills* (https://www.gov.uk/government/publications/estimated-impacts-of-energy-and-climate-change-policies-on-energy-prices-and-bill) which compares the cumulative impact of all policies against a scenario with no policies.

[92] This assessment has been adjusted to start in 2014, rather than 2016, in order align with the start of the strike price period. A comparable figure from this updated analysis (i.e. evaluated over the period 2016-2030) is an average reduction in annual household electricity bills of £46 (real 2012 prices), or 7%.

[93] The percentage reductions are larger for businesses than households because electricity prices are lower for businesses meaning a comparable £/MWh reduction in price results in a larger percentage reduction for businesses. It does not reflect any exemptions from CfD costs for electro-intensive industries, the details of which are still under consideration and have therefore not been factored into this analysis.

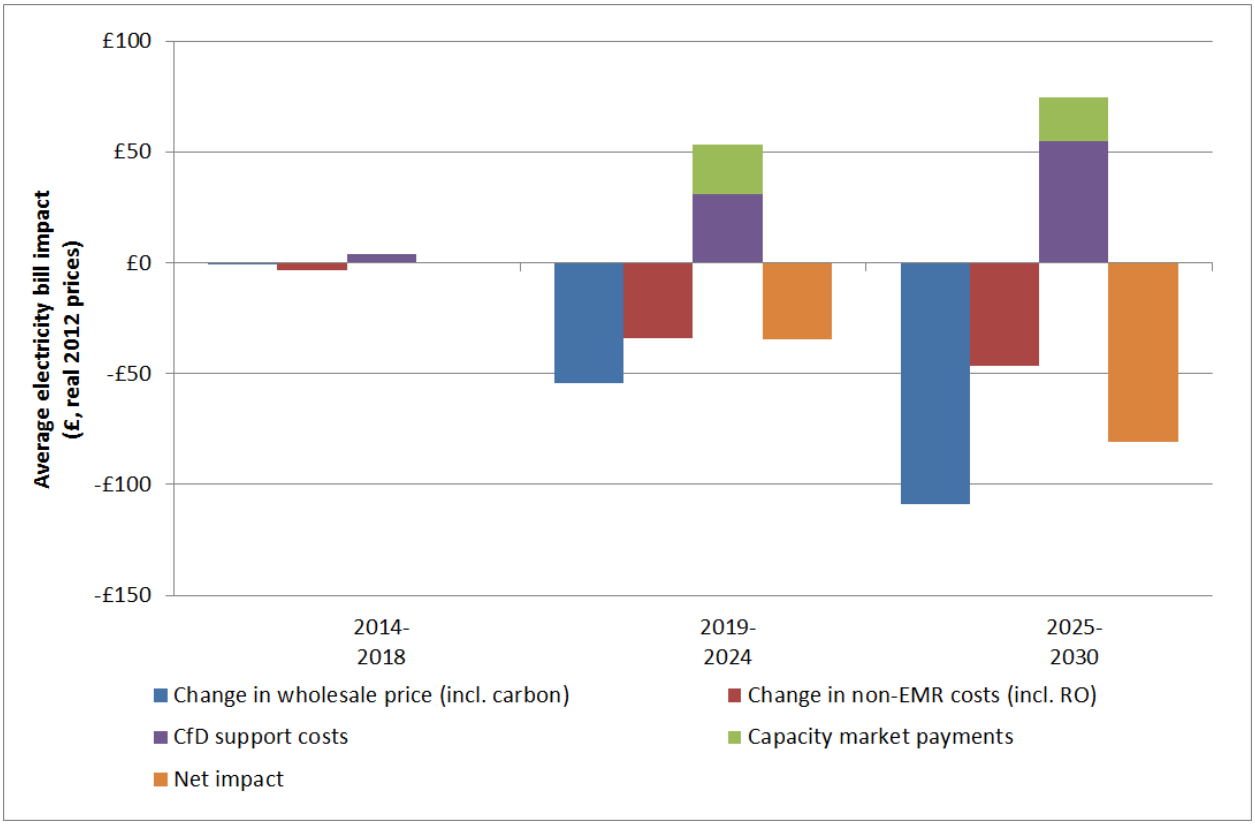
Obligation costs relative to the counterfactual. CfDs also provide a more cost-effective means of support than the Renewables Obligation for renewable generation.

- **Wholesale price effect**: In general, an electricity system with more low-carbon generation results in lower average wholesale prices, because low-carbon capacity typically has very low, or no, fuel costs. A higher carbon price, while supporting low-carbon investment, pushes up wholesale prices, and tighter capacity margins similarly push up wholesale electricity prices. In the counterfactual, a higher carbon price is needed to achieve a similar level of decarbonisation in the absence of CfDs. Moreover, the lack of a Capacity Market means capacity margins are significantly tighter. Both of these factors push up wholesale prices in the counterfactual, although the impact of very tight capacity margins on wholesale prices is very uncertain; initial comparative analysis indicates that DECC analysis may be relatively insensitive to lower capacity margins. This means that EMR could potentially deliver larger bill savings than estimated above, relative to the counterfactual.

168. Chart **1** shows how EMR affects household electricity bills relative to the counterfactual. As can be seen, the direct effect of the support costs is more than offset by the reductions resulting from lower Renewables Obligation support costs and lower average wholesale prices. The estimated savings are lower than the previous estimate, owing mainly to revisions to the counterfactual.[94]

[94] Input assumption changes in the updated analysis have pushed down the relative cost of achieving decarbonisation using alternative policies, such as the carbon price floor.

Chart 1: Net Impact of EMR on Household Electricity Bills Relative to Achieving Similar Levels of Decarbonisation Using Existing Policy Instrument



Absolute costs

169. As noted above, we expect the payments paid to generators as part of EMR to be passed onto consumers (households and businesses) through their electricity bills. In 2020, our analysis suggests that around £26 of the annual household energy bill will go towards CfD payments, with small-scale Feed-in Tariff (FITs) payments accounting for around £12 and legacy Renewables Obligation payments[95] around £37, bringing total support low-carbon generation support under the Levy Control Framework to £76 (real 2012 prices, excluding VAT).[96]

[95] The modelling assumes all new renewable generation plants beginning generation in 2016 onwards receive a CfD.

[96] Figures may not sum due to rounding.

170. In addition, Capacity Market payments in 2020 are estimated to be around £19 to £26, with costs for subsequent years typically towards the lower end of this range. The range reflects potential uncertainties around clearing prices for the Capacity Market auction in early years.

171. The above costs are the “gross” costs. Offsetting some of the costs of the low-carbon support and Capacity Market payments is a reduction in wholesale prices as a result of having less reliance on fossil fuels as well as higher capacity margins. For example the “net” impact of the Capacity Market on household bills is estimated to be an increase in household bills of around £15 (2%) on average over the period 2014-2030 – although as noted above the modelling may underestimate the reductions in wholesale prices from the Capacity Market.

172. The prices and bills estimates have been made using DECC’s standard prices and bills methodology and involve spreading the expected aggregate payments across total electricity sales (for all types of consumers) on a £ per MWh basis.

Chapter 6: Forward Look to 2030

Decarbonisation of the electricity sector during the 2020s

173. The Carbon Plan of 2011 confirmed the Government's commitment to creating a sustainable pathway for the decarbonisation of our electricity system. This requires a new generation of secure, low-carbon electricity, powered by a mix of renewable energy, new nuclear power and fossil fuel power stations fitted with new Carbon Capture and Storage (CCS) technology capable of locking away carbon dioxide emissions, and reusing as far as possible the waste heat that is generated. These changes are likely to need to happen between now and 2030.

174. Earlier chapters and the accompanying analysis describe how the decisions published in this Delivery Plan are expected to influence the generation mix to 2020/21, and how deployment may diverge from these central projections in response to changes such as fuel price or demand. This chapter provides indicative illustrations of deployment scenarios beyond this period.

175. The strike prices published in this Delivery Plan reflect the spending envelope established by the Government, which is set through the Levy Control Framework. This Framework sets a cap on the total amount of the levies that can be imposed on consumers and is set to 2020/21. Arrangements are yet to be made for the Framework beyond this period.

Decarbonisation of the electricity sector during the 2020s

176. The Government is committed to facilitating a cost-effective approach to meeting the UK's legally binding target to reduce greenhouse gas emissions by at least 80% of 1990 levels by 2050. In order to drive progress and keep the UK on a pathway to achieve our 2050 target, the Climate Change Act introduced a system of Carbon Budgets, which provide legally-binding limits on the quantity of greenhouse gas that may be emitted in successive five year periods. More information on Carbon Budgets can be found on the Government web pages[97].

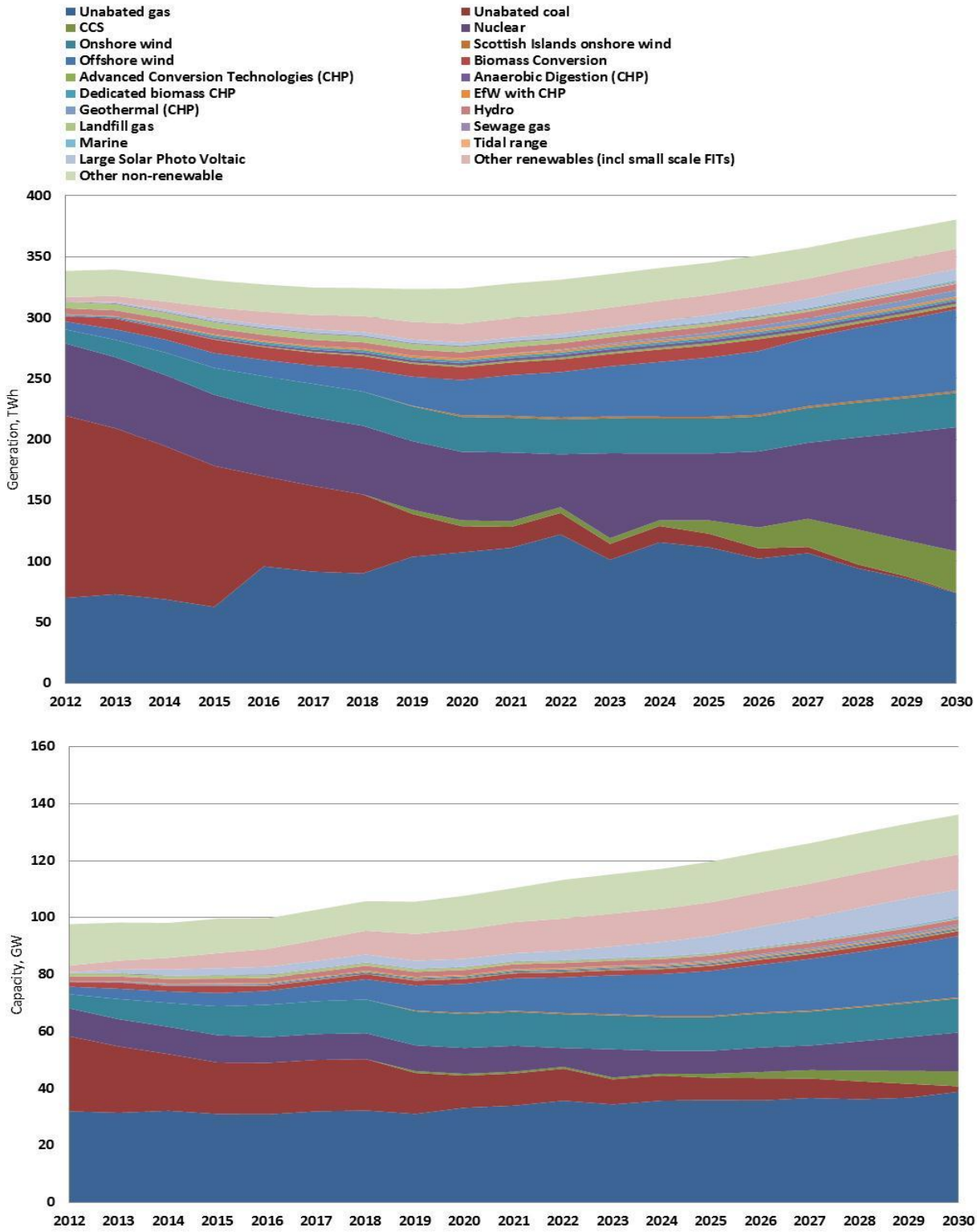
177. We have set the first 4 carbon budgets in law, covering the period from 2008 to 2027, and must set the fifth carbon budget (2028 to 2032) in law by June 2016. The 2011 Carbon Plan set out proposals for achieving the emissions reductions committed to in the first four carbon budgets, on a pathway consistent with meeting the 2050 target.

178. Our latest projections show that we are on course to achieve the first three carbon budgets with current planned policies. However, there is a projected shortfall of 215 $MtCO_2e$ over the fourth budget reflecting the fact that detailed policy mechanisms have yet to be developed. In the Carbon Plan, the Government set out a number of scenarios for bridging the previous assumed shortfall (181 $MtCO_2e$). The revised estimation reflects a number of factors, including revised population projections, fossil fuel price projections, inventory corrections, and revisions to estimated savings from policies.

[97] https://www.gov.uk/government/policies/reducing-the-uk-s-greenhouse-gas-emissions-by-80-by-2050/supporting-pages/carbon-budgets

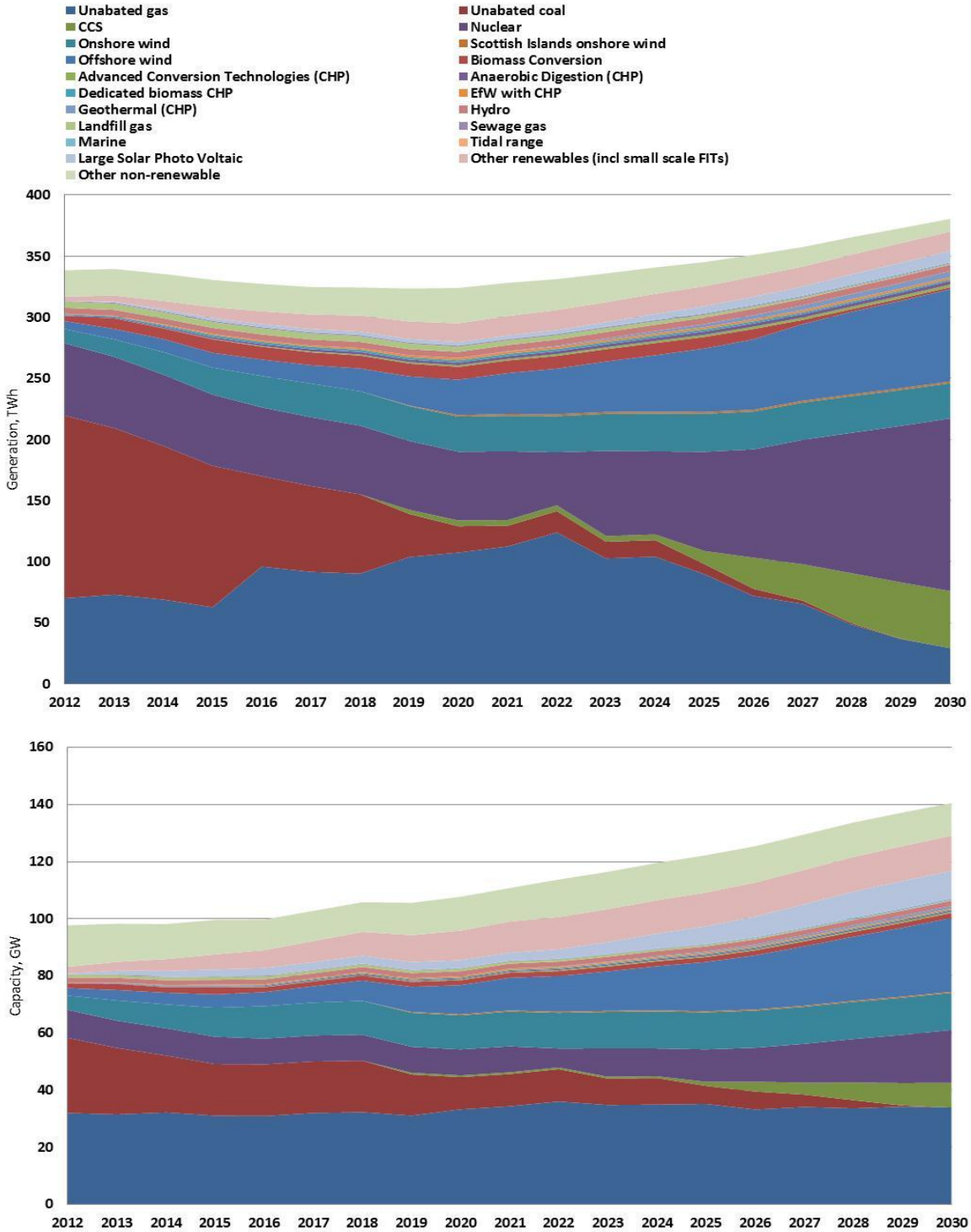
179. This chapter considers three different decarbonisation trajectories to 2030. The main analysis reflects the central assumption used consistently in analysis of Electricity Market Reform by DECC, namely a trajectory to around 100g CO_2/kWh grid emissions intensity in 2030. The second is a sensitivity analysis based on a trajectory to around 50g CO_2/kWh in 2030 and the third is a sensitivity analysis based on a trajectory to around 200g CO_2/kWh in 2030.

Chart 3: Scenario with 100g CO_2/kWh in 2030[98]



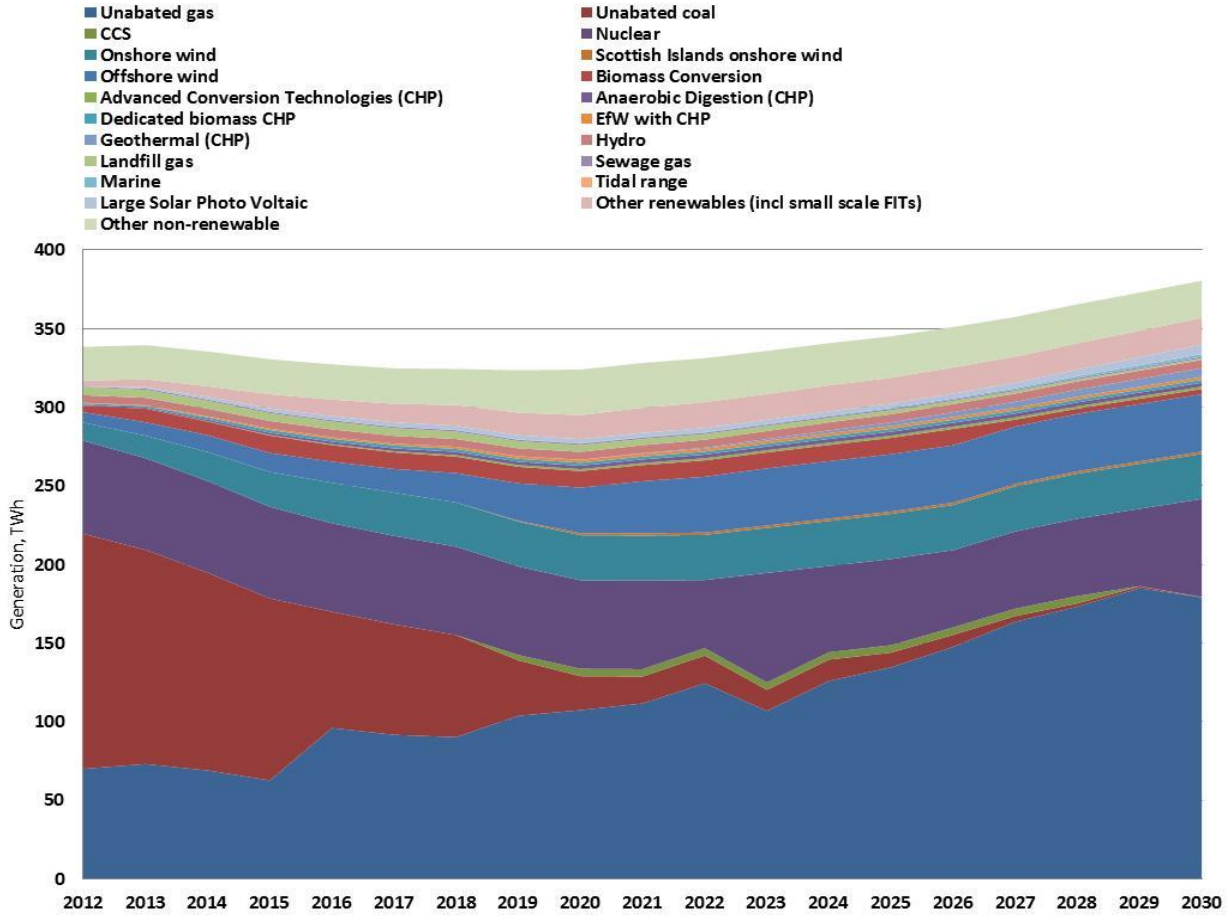
[98] Other renewables includes: small scale FiTs, small and large dedicated biomass, bioliquids, bioliquids CHP, EfW and ACT (for EfW and ACT only renewable % for generation charts); Other non-renewable includes: pumped storage, interconnectors, autogeneration, oil and, for generation charts only, EfW and ACT (for EfW and ACT only non-renewable % in generation charts).

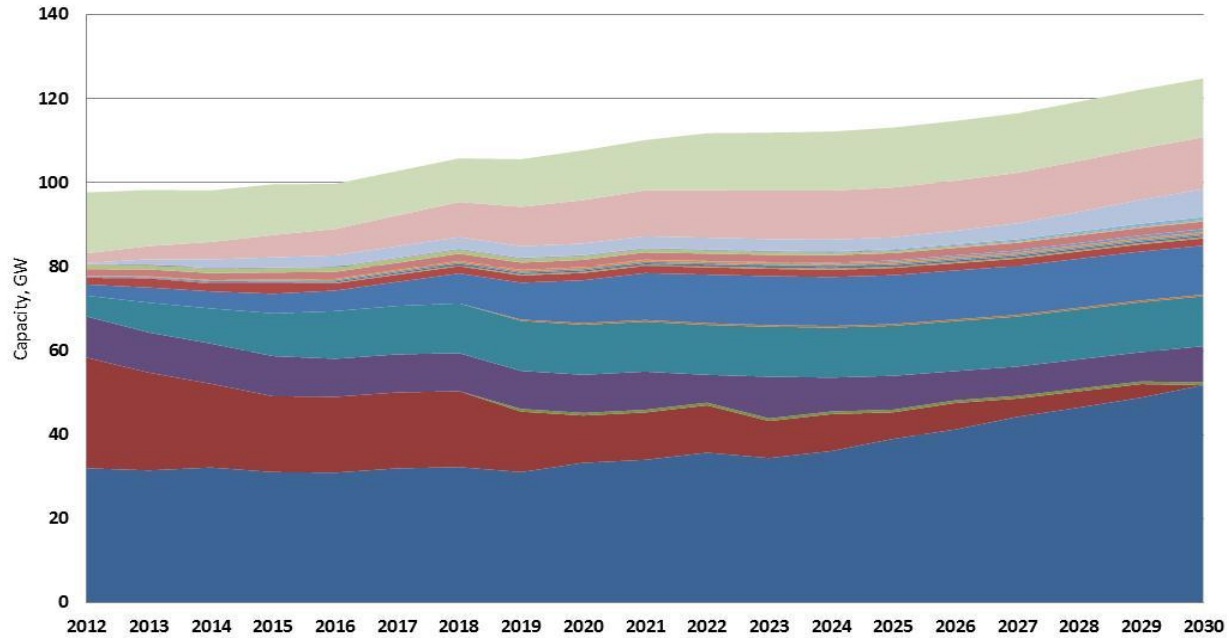
Chart 4: Deployment Mix with Lower Grid Carbon Intensity in 2030 (50g CO_2/kWh)[99]



[99] Other renewables includes: small scale FiTs, small and large dedicated biomass, bioliquids, bioliquids CHP, EfW and ACT (for EfW and ACT only renewable % for generation charts); Other non-renewable includes: pumped storage, interconnectors, autogeneration, oil and, for generation charts only, EfW and ACT (for EfW and ACT only non-renewable % in generation charts).

Chart 5: Deployment Mix with Higher Grid Carbon Intensity in 2030 (200g CO_2/kWh)[100]





[100] Other renewables includes: small scale FiTs, small and large dedicated biomass, bioliquids, bioliquids CHP, EfW and ACT (for EfW and ACT only renewable % for generation charts); Other non-renewable includes: pumped storage, interconnectors, autogeneration, oil and, for generation charts only, EfW and ACT (for EfW and ACT only non-renewable % in generation charts).

Technology deployment in the electricity sector during the 2020s

180. The generation mix beyond the period of the first Delivery Plan, from 1st April 2019, will be influenced by how individual technologies develop in the coming decade. We are committed to maximising value for money for consumers. Our intent is to move to a competitive price discovery process for new generation for all low-carbon technologies as soon as practicable though we may still need to set prices administratively for some technologies from 1st April 2019 onwards.

181. Initially, these competitive processes will differentiate between technologies, recognising that technologies will be at different stages of development, but the Government believes that it can promote competitive tension between some technologies from the start of EMR, and most low-carbon technologies competing increasingly on price alone as the 2020s progress.

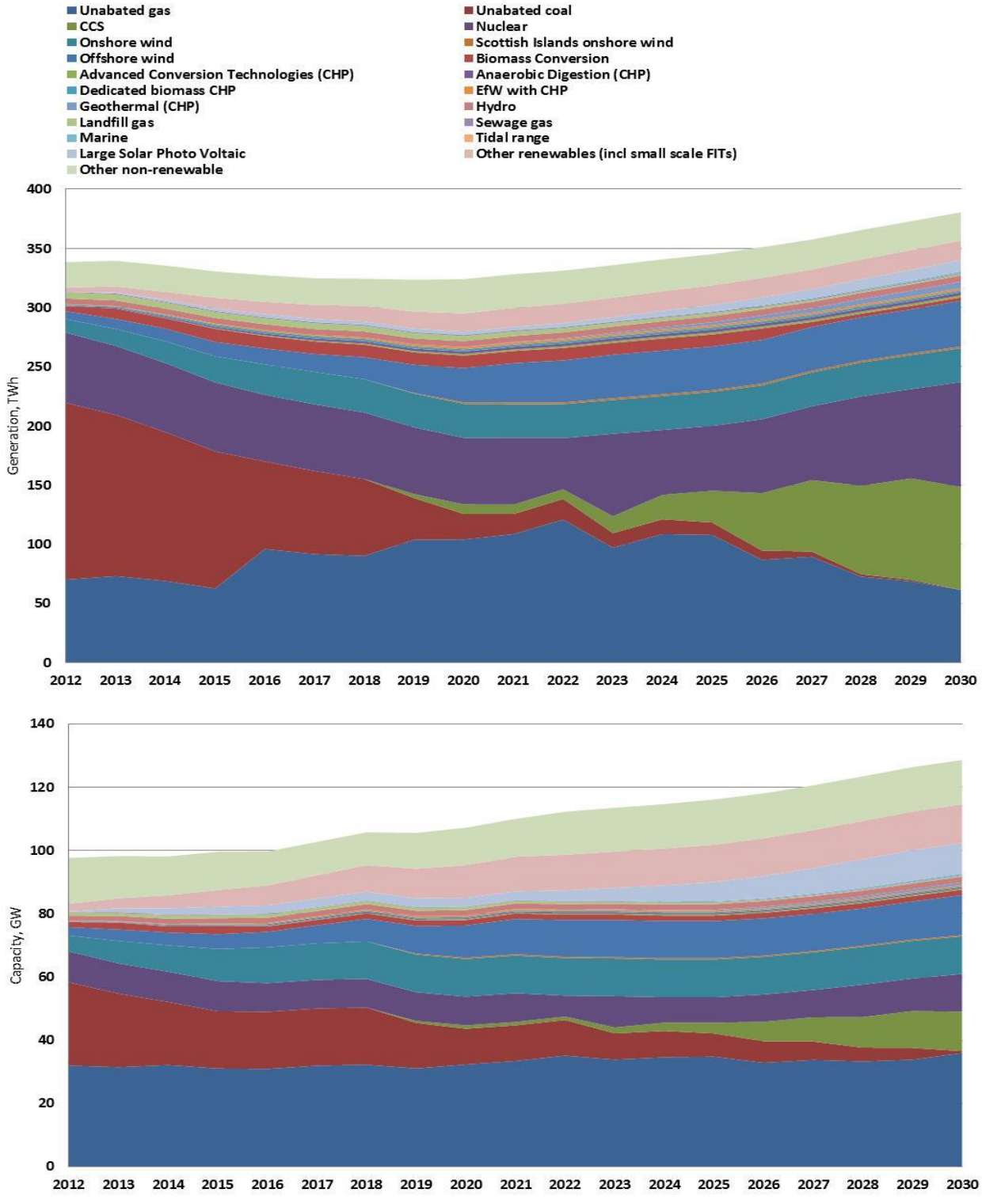
182. In accordance with this approach, we have explored three technology scenarios, to illustrate a range of low-carbon generation scenarios. These scenarios are indicative: the electricity generation mix through the 2020s is unlikely to match any one of these scenarios exactly. All these scenarios are based on central assumptions of demand and grid intensity in 2030 (100g CO_2/kWh).

Scenario showing higher deployment rates of CCS

183. This scenario is based on central demand and decarbonisation assumptions (100g CO_2/kWh) and illustrates a generation mix that would be consistent with CCS costs and deployment circumstances being

favourable compared to other technologies. In this scenario, three CCS plants are built by the end of 2020, with commercial deployment of both gas and coal CCS throughout the 2020s- leading to deployment of around 13GW CCS in 2030.

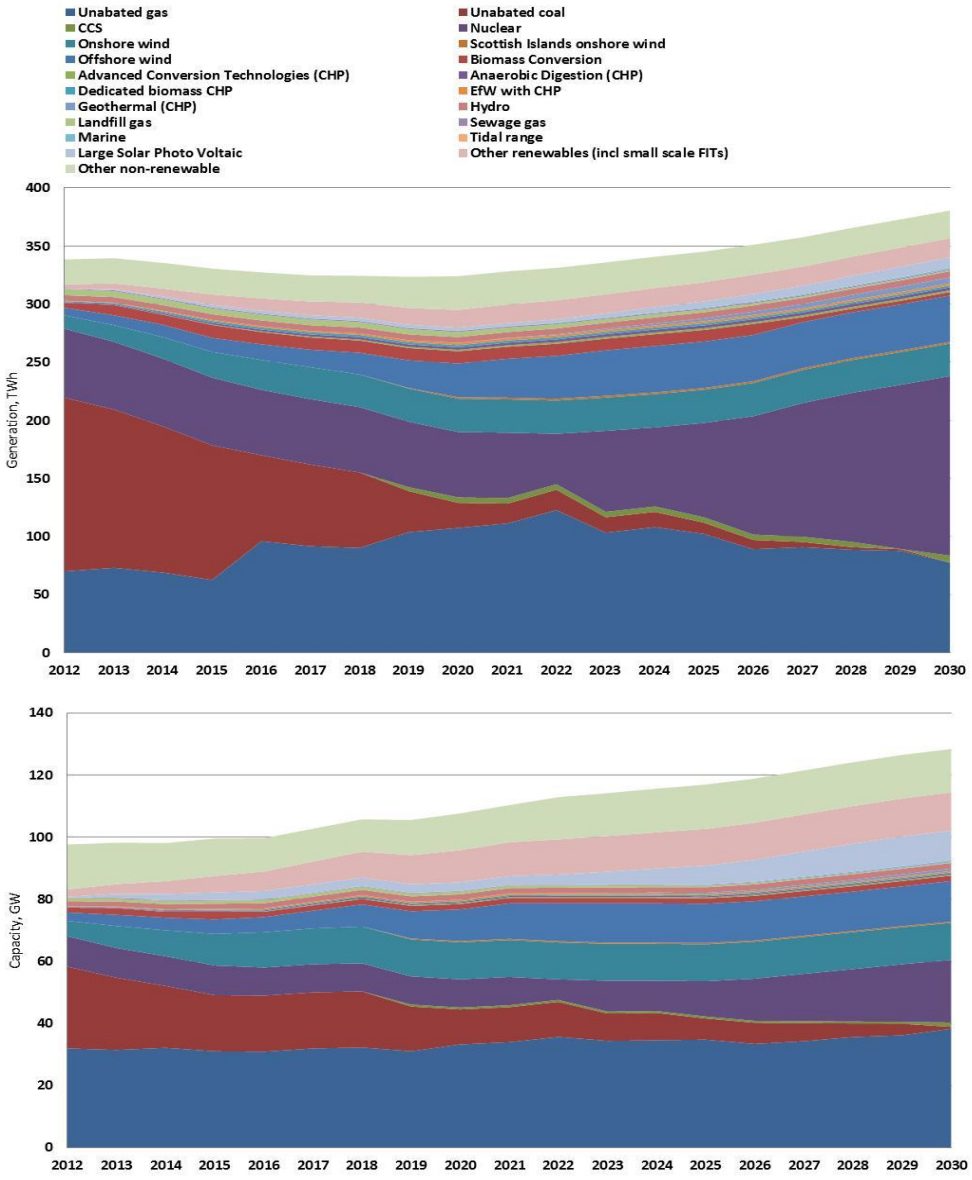
Chart 6: Higher Deployment Rates of CCS



Scenario showing higher deployment rates of nuclear generation

184. This scenario is based on central demand and decarbonisation assumptions (100g CO_2/kWh) and illustrates a generation mix that would be consistent with nuclear costs and deployment circumstances being favourable compared to other technologies and high nuclear build throughout the 2020s - leading to deployment of around 20GW of nuclear generation in 2030.

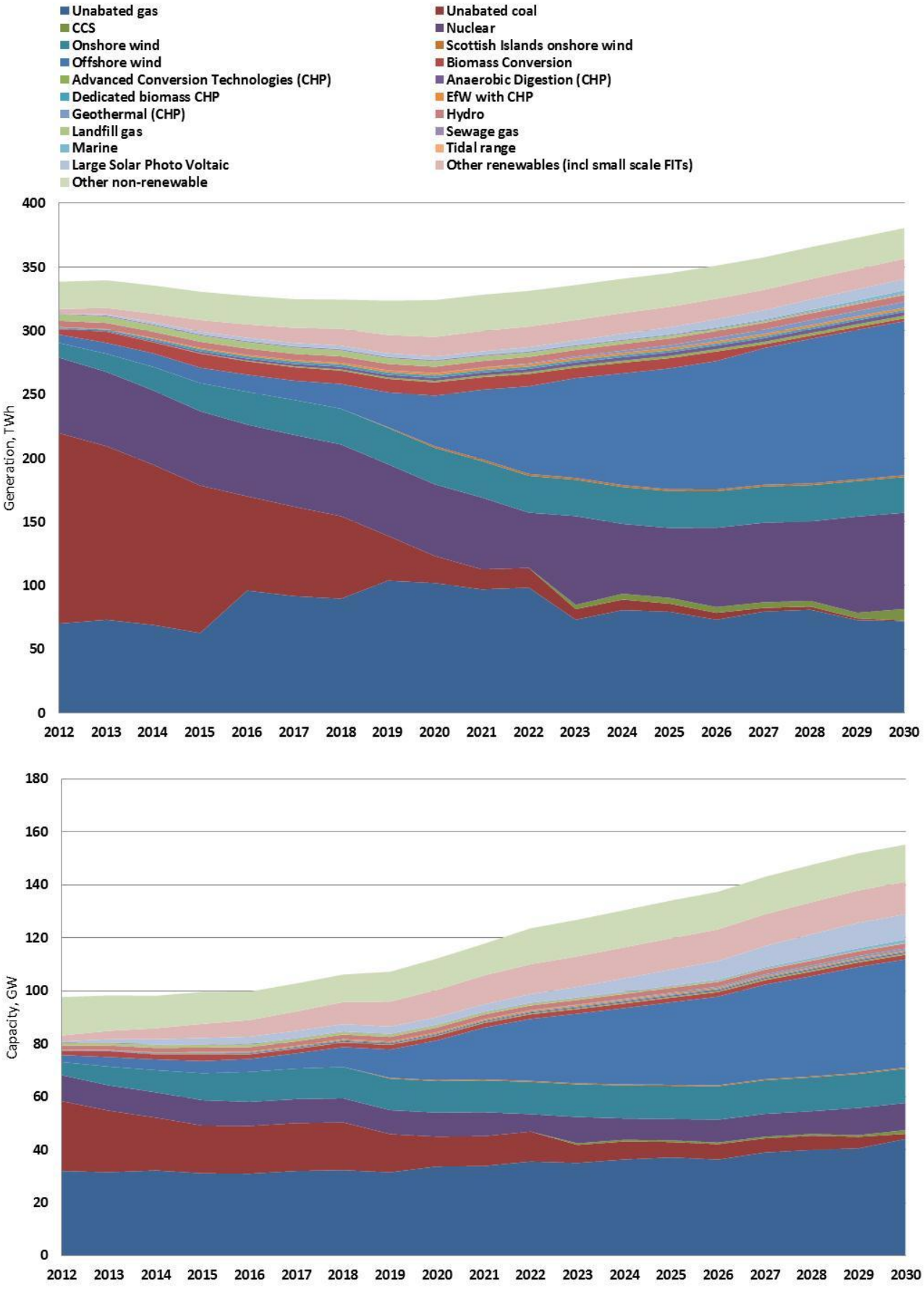
Chart 7: Higher Deployment Rates of Nuclear



Scenario showing higher deployment rates of offshore wind

185. This scenario is based on central demand and decarbonisation assumptions (100g CO_2/kWh) and illustrates the generation mix that would be consistent with the costs and deployment circumstances of offshore wind being favourable compared to other technologies. Under this scenario, the costs of offshore wind fall more rapidly than support levels, and offshore wind deployment rises to 41GW by 2030 (compared to around 4GW of fully operational offshore wind now).

Chart 8: High Deployment of Offshore Wind



Summary of scenarios

186. It should be noted that the scenarios shown above are illustrative: the actual deployment levels realised in this period will depend on cost reductions, support levels and other factors[101]. For example, in the high offshore wind scenario, central offshore wind costs are assumed to fall to around £98/MWh in the mid-2020s[102], with support levels falling significantly less quickly than costs. This would have to be a policy decision for the Government of the day.

187. Our modelling suggests deployment of roughly 41GW of offshore wind in 2030 would be consistent with those assumptions. In the first scenario shown below (100g/CO2 per KWh), offshore wind costs are assumed to fall less quickly than this – to around £125/MWh in the mid-2020s, which leads to modelling projections of around 22GW offshore wind deployment in 2030. The range of nuclear deployment in 2030 (9-20 GW) is consistent with central costs estimate of around £85/MWh in the mid-2020s[103]. Similarly, the range of CCS deployment in 2030 (1-13GW) is consistent with CCS costs in the range of between £95-117/MWh in the mid-2020s[104], depending on scenario and technology. The Government has not yet agreed an LCF cap beyond 2020/21. More information on cost estimates

[101] All cost estimates quoted here refer to levelised costs presented at technology-specific hurdle rates in line with the modelling approach. More information can be found in Tables 7 & 13 of DECC's Electricity Generation Cost December 2013 Report. Levelised costs (which summarise generation cost data) are not strike prices, as strike-price setting may reflect other factors including: other revenue assumptions; costs not included in DECC's definition of levelised costs; CfD contracting terms; financing arrangements; and wider policy considerations.

[102] These cost estimates refer to deployment of Round 3 offshore wind at technology-specific hurdle rates; they are illustrative and do not account for full cost uncertainties. More information can be found in Table 7 of DECC's Electricity Generation Cost Report December 2013 https://www.gov.uk/government/organisations/department-of-energy-climate-

[103] This analysis uses generic generation cost estimates for nuclear power, as opposed to any site-specific nuclear cost discovery exercises. A fuller range of uncertainty on the generic nuclear levelised costs in the mid-2020s is around £75-100/MWh as presented in the levelised cost report. For the reasons listed above, This data should in no way be seen as a guide to potential strike prices for early new nuclear power plants.

[104] There is considerable uncertainty at this stage of CCS development as to which technologies will prove the most cost-effective in the long-term. There is also a wider range of uncertainty presented in Table 13 of the levelised cost report, relating to future capital costs, which widens the range to around £85-210/MWh

can be found in DECC's "Electricity Generation Cost Report December 2013".

188. The cost to consumers of these different scenarios would also vary. For example, on the basis of current cost estimates the high nuclear scenario would be less costly than the high offshore wind scenario. The Government has not yet agreed an LCF cap beyond 2020/21.

Capacity and generation (rounded by GW or TWh as appropriate)

	Installed Capacity in 2030 (GW)			
	Offshore Wind	Onshore Wind	CCS	Nuclear
100g CO_2/kWh Scenario	22	12	5	14
50g CO_2/kWh Scenario	26	13	9	19
200g CO_2/kWh Scenario	12	12	<1	9
High CCS Deployment Scenario	13	12	13	12
High Nuclear Deployment Scenario	13	12	>1	20
High Offshore Wind Deployment Scenario	41	13	>1	10

	Annual Generation in 2030 (TWh)			
	Offshore Wind	Onshore Wind	CCS	Nuclear
100g CO_2/kWh Scenario	67	28	34	102
50g CO_2/kWh Scenario	76	29	47	141
200g CO_2/kWh Scenario	37	29	<1	62
High CCS Deployment Scenario	39	29	87	89
High Nuclear Deployment Scenario	40	28	6	155
High Offshore Wind Deployment Scenario	121	28	9	76

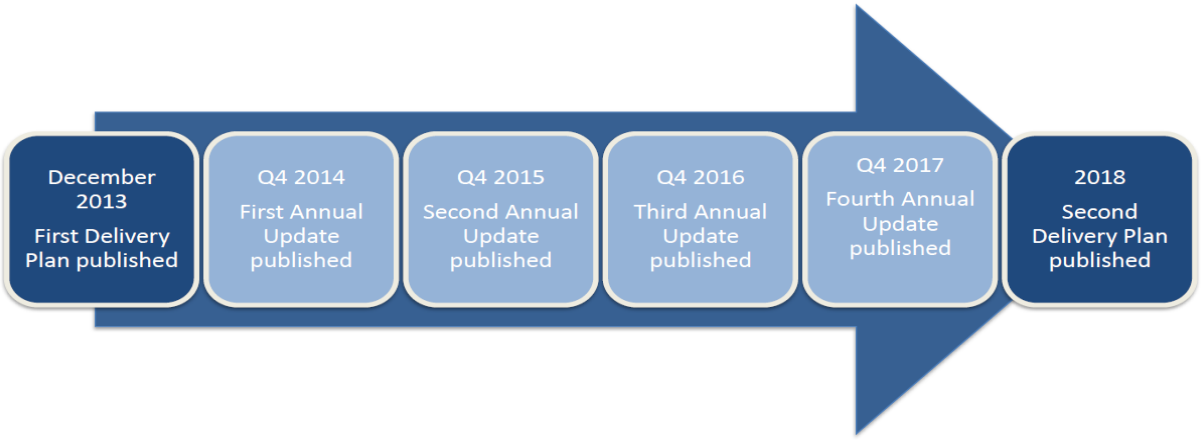
Chapter 7: Next Steps in EMR

Delivery Plan Annual Updates

189. The Government has confirmed its intention to publish a Delivery Plan every five years[105] and Annual Updates in years between Delivery Plan publications.

190. The first Annual Update is due for publication in Quarter 4 of 2014 with subsequent Annual Updates also following in Quarter 4, see Figure 1. Unlike the Delivery Plan, Annual Updates will not be consulted on ahead of publication.

Figure 1. Timings of future annual updates.



[105] The Government's intention is to publish EMR Delivery Plans in 2018 and 2023 (see Annex E (EMR Delivery Plan) to the EMR Policy Overview document of November 2012 https://www.gov.uk/government/publications/electricity-market-reform-policy-overview--2)

Content of the 2014 Annual Update

191. The first Annual Update, in Q4 2014, is expected to include:

- Information related to the delivery of the EMR mechanisms: the Capacity Market and Contracts for Difference, such as the number and type of contracts allocated;
- Update on Final Investment Decision Enabling for Renewables investment contracts awarded by the Secretary of State in 2014 (for the first Annual Update only);
- Update on the Levy Control Framework within the context of investment contracts signed (for the first Annual Update only) and CfDs being allocated;
- Update on the readiness of the Counterparty Body, associated systems and any contract management issues (for the first Annual Update only);
- Update on the Offtaker of Last Resort mechanism, including market indicators (e.g. number of independent generators that have applied for CfDs), use of the mechanism, costs to suppliers, and whether the parameters remain appropriate (e.g. discount, eligibility, mandatory offtakers, and levelisation process).

192. During the period in which strike prices are set administratively, we intend that each Delivery Plan will be the primary means of publishing CfD strike prices for renewables for the following five-year period.

Annual reporting duty

193. The Energy Act 2013 includes a provision (section 5(4)) designed to create further transparency relating to EMR policies. This requires the Secretary of State to report, before 31 December each year and beginning in 2014, on how he has carried out his functions in Part 2[106] of the Energy Act order to deliver the objectives. The report must be laid in Parliament and be shared with the Devolved Administrations.

194. The Government is considering whether the Annual Updates to the Delivery Plan are the appropriate vehicle for meeting the Annual reporting duty and will set out its position in due course.

Consultation on Implementation

195. In October the Government published the consultation on proposals for Implementation of EMR. An addendum to this, covering supply chain plans, was published on 25th November. The consultation will close on 24th December of this year. The consultation seeks views on the Government's proposals for implementing the following components of EMR within Great Britain:

a) The detailed policy framework for Contracts for Difference (CfD).
b) The detailed policy framework for the Capacity Market.
c) The institutional delivery arrangements.

196. A package of draft secondary legislation was published alongside the consultation. These draft statutory instruments were published to illustrate how the policy proposals discussed in the consultation might be reflected in implementing secondary legislation.

[106] Part 2 of the Energy Act includes: Contracts for Differences, Capacity Market, Investment Contracts, Conflicts of Interest and Renewables Obligation Transitional provisions.

197. The draft secondary legislation will be revised following the outcome of the consultation to reflect final policy decisions. We plan to lay these in Parliament in late spring 2014 with the aim of having them in force by the end of July 2014.

Final Investment Decision Enabling for Renewables (FIDeR)

198. In March 2014 binding applications for Investment Contracts will be received. Following this an affordability assessment of final applicants against the available budget will take place, and if required, a down-selection process. The Government currently expects Investment Contracts to be awarded to successful applicants in March 2014.

Contracts for Difference (CfD)

199. In the first half of 2014 we expect to publish updated CfD contract terms as part of Renewables Investment Contracts. At the same time we will consider whether a further update of CfD contract terms is required to support the Parliamentary process.

200. The first applications for CfDs in England, Scotland and Wales may be submitted in late 2014.

201. Initial discussions with potential generators, suppliers, the counterparty and the settlement agent suggest that payments may flow to generators from April 2015 with supplier obligation payments commencing shortly before.

202. The supplier obligation will not be levied in Northern Ireland until 2016, at which point Northern Ireland generators will be capable of benefitting from the CfD regime. It is envisaged the first CfDs will be eligible for signing for

generators in Northern Ireland from late 2015 with first payments flowing from April 2016.

Capacity Market

203. The first capacity auction will be run in December 2014 for delivery of capacity from 1 October 2018 –to 30 September 2019, subject to state aid clearance.

204. We are currently consulting on the detailed design of the Capacity Market, alongside other aspects of EMR. We aim to have completed the design by late spring 2014, and to have all necessary legislation in force before summer recess 2014.

State aid

205. The implementation of EMR is subject to State Aid approval from the European Commission and we are working with the Commission to secure this as soon as possible and prior to the laying of regulations.

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