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**EMR Delivery Plan – clarity over medium-term ambition; proposed strike prices for offshore wind**

Dear Ed

I am writing to you in response to the Government's consultation on the Electricity Market Reform Delivery Plan.

We welcome the Delivery Plan, which provides more clarity on the Government's ambition for low-carbon generation to 2020, and on the prices to be paid for renewable generation projects contracting in the near term and coming onto the system to 2018/19. The Government is to be congratulated on coming forward with this structure which we commend.

However, we have concerns in two specific areas, where required investment is at risk under current proposals. The Delivery Plan leaves a high degree of uncertainty about ambition in the 2020s; it proposes a rate of depression in strike prices for offshore wind that is faster than implied by the evidence. Therefore in order to reduce risks and support investment, we believe that the Government should provide more clarity over ambition for the 2020s and the final Delivery Plan should include a slower depression in strike prices for offshore wind.

- **Ambition in the 2020s.** The Delivery Plan includes a wide range of scenarios for power sector investment in the 2020s, including scenarios with minimal investment in one or more of the key low-carbon technologies. This is despite compelling evidence that a strategy focused on low-carbon investment through the 2020s is a low-regrets option and offers significant cost savings in a carbon constrained world. Industry has been very clear that more certainty is required to support supply chain investment, which is a necessary condition for competition, innovation and cost reduction. The Government has recognised this need in its Offshore Wind Industrial Strategy. Increased certainty could be achieved through a combination of: a) narrowing the

range of scenarios in the Delivery Plan, and clarifying conditions under which different scenarios would be appropriate; b) publishing commercialisation strategies for less mature technologies, including levels of investment through the 2020s and associated conditions; and c) setting a 2030 decarbonisation target.

- **Strike prices for offshore wind.** The proposed strike prices for offshore wind start at a broadly appropriate level but then fall more rapidly than the evidence suggests is achievable, including analysis by the Offshore Wind Task Force. This would put required investment during the first Delivery Plan period at risk. The rate of price depression should be adjusted to reflect the evidence on achievable cost reduction under current market conditions, rather than ideal conditions that have not been met in practice. Our analysis suggests a depression closer to £5/MWh (rather than £15/MWh) between 2016/17 and 2018/19 is more likely to be appropriate.

These issues are exacerbated in the case of offshore wind by an apparent reduction in ambition to 2020 to around 8-10 GW of total installed capacity. This would not necessarily be a concern if there were a clear expectation for ongoing investment in the 2020s. However, reduced 2020 ambition together with the lack of a post-2020 commitment and strike prices that fall more quickly than expected costs jeopardises the commercialisation of this key low-carbon technology.

More details on these points in relation to offshore wind are provided in the attachment. I would be very happy to discuss these issues with you if this would be helpful.

Yours,



Lord Deben,

Chairman, Committee on Climate Change

## Attachment: Offshore wind in the Delivery Plan

We set out our concerns regarding offshore wind in two sections below (overall ambition levels and depression in strike prices), followed by conclusions and key recommendations.

### 1. Proposed 2020 volumes for offshore wind imply reduced ambition, with a high degree of uncertainty about ambition beyond 2020

The Delivery Plan suggests a reduction in ambition for offshore wind capacity in 2020.

- Ten of the eleven scenarios in the delivery plan analysis involve 8-10 GW of offshore wind capacity in 2020.<sup>1</sup> These are shown to be compatible with the levy control framework (LCF) and UK renewable target.
- A scenario with 16 GW of offshore wind by 2020 is nominally included. However, to fit within the LCF this requires no new nuclear or CCS capacity by 2020 and it implies a total renewable share in electricity generation of 39% in 2020, which is well beyond the level expected to be required under the renewable target. The credibility of this scenario is therefore highly questionable, and realistic ambition can be inferred to be 8-10 GW.
- The 8-10 GW of offshore wind deployment is lower than the Government's previous ambition in its 2011 Renewable Energy Roadmap, which suggested a central range of 11-18 GW of offshore wind capacity by 2020.

This new lower ambition can be reconciled with meeting the UK's 2020 renewable energy target, given there are now lower projections for UK electricity demand in 2020 (e.g. electricity demand in 2020 is currently projected to be 327 TWh, a 10% reduction from levels assumed in the Roadmap).

In our 2011 Renewable Energy Review we noted that if renewable energy targets for 2020 can be met more cheaply by other means, ambition for offshore wind to 2020 could be reduced provided that a clear and stretching 2030 commitment was made alongside this, given the long-term importance of offshore wind.

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<sup>1</sup> National Grid (July 2013), *National Grid EMR Analytical Report*, p. 40.

No such commitment has been made in the Delivery Plan. The scenarios in the Delivery Plan suggest offshore wind deployment as low as 9 GW in 2030, implying the possibility of no further investment beyond 2020.

Without a commitment to ongoing investment in the 2020s, incentives for supply chain investment and project development are weak, and commercialisation of offshore wind is at risk.

As recommended in our May 2013 report *Next steps on Electricity Market Reform*, such a commitment could entail:

- Setting a 2030 carbon intensity target / range.
- Publishing commercialisation strategies which show how less mature technologies will contribute to this target, including minimum levels of investment through the 2020s and cost conditions to be fulfilled.
- Extending funding for the LCF beyond 2020.

In the specific context of the Delivery Plan, the scenario which results in carbon-intensity of 200 gCO<sub>2</sub>/kWh should be ruled out. It would not prepare sufficiently for the 2050 target, is not economically sensible under plausible assumptions about key investment drivers, and adds to what is already an uncertain investment climate.

## **2. Proposed strike prices for offshore wind: initial prices can be reconciled with evidence, but degression appears too strong**

The strike prices offered for offshore wind projects in the draft Delivery Plan start at a level that appears broadly appropriate but then fall more rapidly than industry and existing evidence suggest is achievable under current market conditions. The risk is that the lower strike prices offered for projects commissioning in 2017 and 2018 will not be sufficient to bring forward required investment.

The proposed strike prices start at £155/MWh for projects commissioning in 2014/15 and 2015/16, falling to £150/MWh in 2016/17, and then to £135/MWh by 2018/19.<sup>2</sup>

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<sup>2</sup> Under a central 32% renewables electricity by 2020 scenario; DECC (July 2013) *Consultation on the draft Electricity Market Reform Delivery Plan*, Table 1.

- Prices in early years have been derived in relation to returns currently offered under the Renewable Obligation (RO).
- Prices in the later years reflect Government assumptions about cost reduction.

In this section we:

- Consider how returns under the RO compare to our cost estimates.
- Compare these to returns under the proposed strike prices.
- Assess the rate of degression in the proposed strike prices.

### ***Reconciling levelised costs implied by the RO with CCC cost estimates***

The revenue implied by the RO is broadly consistent with our estimates of levelised cost, subject to the caveat that the Government's assumptions over effective tax rates, wholesale electricity price and PPA discounts are valid.

- The relevant levelised cost estimate in our analysis<sup>3</sup> for projects commissioning in 2016/17 is around £150/MWh.
  - The range for costs in 2016/17 was £140-165/MWh.<sup>4</sup>
  - The cost at the high end of the range corresponded to investment rates up to 1.5 GW annually.
  - The cost corresponding to reduced ambition in the delivery plan (which can be delivered without deploying the more expensive marginal projects) is around £150/MWh.
- Our cost estimates were based on assumptions over effective tax rates that DECC have since updated.<sup>5</sup> Reflecting this adjustment reduces our 2016/17 cost estimate from £150/MWh to £141/MWh.
- By comparison, analysis in the delivery plan suggests that the RO provides revenue of around £144/MWh for projects commissioning in 2016/17, based on the Government's assumptions for wholesale electricity prices and PPA discounts.

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<sup>3</sup> See CCC (May 2013), *Next steps on Electricity Market Reform*.

<sup>4</sup> Pöyry (2013) *Technology Supply Curves for Low-Carbon Power Generation, A report to the Committee on Climate Change*

<sup>5</sup> KPMG (2013) *Electricity Market Reform – Review of effective tax rates for renewable technologies*

Real-world experience that projects are being brought forward under the RO backs up this finding. We therefore conclude that returns under the RO are consistent with evidence on levelised costs.

***Reconciling levelised cost estimates and RO support with initial proposed strike prices***

The starting level for proposed strike prices is consistent with our levelised cost assumptions and the returns under the RO, provided that EMR delivers an immediate reduction in the required rate of return reflecting lower risk under the new regime.

- Table 1 demonstrates that our levelised cost analysis implies a required strike price of £154/MWh in 2016/17 at the Government's reduced ambition, given adjustments for effective tax rate, other market mechanisms and shorter contracts.
- The Government's proposed strike price (£150/MWh) is lower, implying an immediate reduction in the rate of return.
- This reflects that in moving from RO support to strike prices, the Government has assumed that the different risk profile under the new regime should mean that developers will accept a lower rate of return.

This reduced return may be appropriate as a reflection of reduced risk relating to future electricity prices under CfDs. However, it may not be realisable immediately, before the new mechanisms are proven, and benefits may be offset by increased risks elsewhere (e.g. relating to contract allocation and CfD penalties).

**Table 1 Reconciling CCC levelised costs and DECC strike prices, 2016/17**

		£/MWh	Notes
Levelised costs	CCC (Pöyry) levelised cost estimates	Range: £140-165	<i>The range for the distribution of potential projects under central cost assumptions.</i>
	Cost of marginal project for 1-1.5 GW/yr ambition	£160	<i>Most projects are required in this case, so the marginal project cost is near the top of the cost range.</i>
	Cost of marginal project under reduced ambition (0.5-1 GW/yr)	£149	<i>With lower ambition the more expensive projects are no longer required, so the marginal project is cheaper.</i>
Adjustments	Adjustment to reflect ETR change	-£8	<i>Previous assumptions overestimated the pre-tax return required for a given post-tax return.</i>
	Adjustments for LECs and PPA discount	+£2	<i>LECs provide an additional revenue stream, while PPA discounts imply an additional cost not included in the levelised cost.</i>
	Impact of shorter contract	+£11	<i>Since subsidies are spread over a shorter period than the project lifetime, more needs to be paid for each unit of generation.</i>
Required prices	Strike price implied by CCC levelised costs	<b>~£154</b>	<i>= Cost of marginal project plus adjustments</i>
	DECC draft strike price	<b>£150</b>	<i>In 32% scenario.</i>

### **Price degression for offshore wind**

Beyond 2016/17, proposed strike prices for offshore wind fall more quickly than may be achievable under current market conditions.

- From 2016/17 to 2018/19 the proposed strike prices in the Delivery Plan fall by £15/MWh over two years.
- This is comparable to the average rate of reduction envisaged in our strike price analysis (£30/MWh over four years), but it is unlikely that it can be delivered in the context of the Government's proposals:
  - Half of the degression in our analysis is due to falling cost of capital over time, initially as investors become more comfortable with new market arrangements and later as the technology becomes more proven. The Government's analysis

has already built in the effect of the new arrangements to the 2016/17 price, so this potential source of cost reduction is not available. This would reduce the potential degression from 2016/17 to 2018/19 to under £10/MWh.

- Cost reductions in our analysis due to learning by doing are driven by deployment, rather than passage of time. These were premised on higher levels of ambition to 2020 than proposed in the Delivery Plan. Applying our assumed learning rate to the reduction in ambition (which now has a doubling of capacity from 2014 to 2020 rather than a trebling) suggests potential cost reduction is reduced by £2-3/MWh for 2016/17 to 2018/19. Furthermore, these reductions due to learning by doing occur over time, and are unlikely to ensue over a two-year period, particularly alongside a move to more challenging sites.
- More generally, cost reductions require confidence about longer-term development of the market in order to support investment in R&D, and require supply chain competition to spur innovation; these conditions are not fulfilled.
- Therefore, a degression closer to £5/MWh between 2016/17 and 2018/19 is likely to be more appropriate, based on the evidence on cost reduction potential.

The 2012 Crown Estate *Offshore Wind Cost Reduction Pathways Study* had similar conclusions. They emphasised that asset growth and economies of scale (rather than passage of time per se) will have the greatest impact on cost reduction. They suggest that a UK market of at least 2 GW per year from 2015 to 2025 is needed to ensure significant cost reductions, assuming market developments in the rest of Europe remain on track.

With these conditions in place, the Crown Estate, and subsequently the Offshore Wind Cost Reduction Task Force, estimated that a levelised cost of £100/MWh could be delivered for projects reaching financial close in 2020, which would commission around 2023. The Government's proposed degression appears to go beyond even this level: if continued it would result in a strike price in 2023 below £100/MWh, which would require levelised costs below £90/MWh given the 15-year contract term and PPA discount.



### 3. Conclusions on offshore wind

We conclude that:

- The starting prices for offshore wind may be sufficient to incentivise development, although developers will choose to contract under the RO instead if the transition to EMR does not immediately provide a reduction in perceived risk and acceptance of a lower rate of return.
- The degression in prices from 2016/17 to 2018/19 appears fast compared to the evidence on the scope for cost reductions under current market conditions; in particular, when bearing in mind that the lack of a long-term ambition for offshore wind may undermine potential for cost reduction.

We therefore recommend that:

- The rate of degression for offshore wind strike prices should be adjusted in line with the evidence and the other elements of the Delivery Plan (reduced volumes and low clarity for long-term ambition).
- More confidence should be provided over the long-term ambition for offshore wind:
  - The scenarios for 2030 should be narrowed, with scenarios involving limited low-carbon investments in the 2020s ruled out. Conditions under which different scenarios would be appropriate should be clarified.
  - A commercialisation strategy for offshore wind should be published. This should build on the work of the Cost Reduction Task Force and include ambition for investment levels through the 2020s under different cost trajectories, transparent criteria for moving between scenarios, a clear narrative over how costs can be reduced and Government's role in supporting these reductions.
  - A target for sector decarbonisation by 2030 should be legislated, that is consistent with commercialisation of offshore wind (and CCS) and with cost-effective deployment of more mature technologies.

Without these changes there is a significant risk that insufficient development will come forward and commercialisation of this key long-term technology could be undermined.