

## GE Response to DECC Consultation on UK Electricity Market Reform

March 2011

### Executive Summary:

1. Electricity Market Reform (EMR) is taking place at a critical time for GE's plans to invest in a UK offshore wind manufacturing facility. Whilst we support the long-term aims of EMR, it is creating an investment hiatus for offshore wind in the short-term at a time when the supply chain needs to develop to 2020.
2. The focus of EMR should be on delivery as well as reform. The proposals (notably for feed in tariff) do not sufficiently recognise the non-financial risks associated with low carbon technologies such as construction or technology risk. These can be addressed (through technology differentiation and clearer off-take arrangements) to provide confidence to potential investors.
3. Implementation of EMR and the timing of the White Paper will be critical. More details will be needed to make some of the proposals work and certainty over ROC banding/grandfathering is needed to 2017.
4. EMR should resist over-complicating the current market. Mechanisms such as the capacity payment are viable proposals to meet the EMR's goals for flexible generation and demand response but may not be needed immediately.
5. Policy makers must not overlook the important role that high efficiency gas CCGT will play in the transition to a low carbon economy and the wider role of the supply chain supporting future UK competitiveness by driving cost reductions in low carbon technologies.

### Introduction

GE welcomes this opportunity to respond to the DECC Consultation on Electricity Market Reform (EMR). As one of the world's leading suppliers of energy generation and delivery technologies, GE supports the need for electricity market reform because it is crucial to unlocking private sector investment needed over the next 20 years and to meet the UK's long-term energy challenges.

- GE Energy is one of the world's leading suppliers of power generation and energy delivery technologies.
- The businesses that comprise GE Energy- GE Power & Water, GE Energy Services and GE Oil & Gas - work together to provide a broad portfolio of product and service solutions in all areas of the energy industry including coal, oil, gas CCGT and nuclear energy; renewable resources such as water, wind, solar and biogas; and other alternative fuels. In the UK, GE's installed technology meets 18% of UK electricity needs and we also supply digital energy solutions to 13 of the 14 transmissions & distribution networks in Great Britain.
- GE Energy Financial Services invests globally in essential capital-intensive energy assets and is currently supporting UK R2/2.5 offshore wind projects.
- GE Energy is part of General Electric, a global infrastructure, finance and media company. GE is proud of its presence in the UK since the 1930s. We currently employ over 18,000 people across the UK and have invested over £10 billion in our UK-based businesses since 2002.



## Summary of GE's position on Electricity Market Reform

Over the next decade the UK has the potential to create a thriving low-carbon sector delivering domestic sales and export opportunities, growing jobs and supporting the consumer. However it is competing in a global market and must ensure that its supply chain develops domestically rather than overseas.

As a major UK manufacturing company GE wants to invest and innovate for the long-term. At GE, it is important for us to be in a position to offer customers a range of power generation and energy delivery options. Underlying this is the regulatory certainty that allows us to take investment decisions and a long-term view over the next 30 to 40 years. Our customers need the right regulatory framework in terms of business and technology proposition to allow them to invest.

We welcome the focus on the overall structure of the market and that the long-term conditions for investing in low-carbon generation are being comprehensively examined. EMR can 'future-proof' investment in low carbon generation which in future can be expected to support UK growth by securing investment in the domestic supply chain and in turn offering the potential to drive cost reductions and competitiveness.

In order to achieve this, EMR must create a system of market rules that drives investment in diverse range of supply and demand side technologies and innovation in new technology solutions. A system based around long-term contracts will be important to allow investments to proceed across the necessary range of technologies. However, in light of the unavoidable risks of future uncertainty and potentially conflicting objectives, it is important for the forthcoming White Paper to provide clarity so that the current market momentum is not adversely undermined and that the UK can continue to meet its 2020 obligations.

We would suggest that the underlying principles for EMR should therefore be to:

- Remain as market-orientated as possible
- Provide long-term political durability and consensus
- Recognise the need for technologically differentiation for key pre-commercial technologies to address construction risk and promote delivery
- Support and safeguard existing investment in the supply chain
- Maintain UK competitiveness

Much depends on how market reform is implemented with the timing of an EMR White Paper crucial. Any transition to a new regime must be quick and managed to avoid an investment hiatus that could damage investment plans.

Meanwhile, the introduction of 'one size fits all' support mechanisms (i.e. FIT) for all forms of low carbon generation or a failure to provide sufficient return to address construction and operational risks, may inadvertently result in delays. We would prefer proposals designed to meet the risk management needs of different technologies that are at different stages of development. In some circumstances this might be closer to a fixed payment whilst in others a premium payment may be more appropriate.

Efficiency opportunities exist along the entire energy value chain. As part of a serious effort to reduce emissions, it is important to recognise the continued role of gas as part of the energy mix. Gas offers half the emissions of coal and, with continued investment can provide important back-up to support the growing penetration of low carbon energy.



## Developing a Supply Chain for Offshore Wind Manufacturing: Addressing Project Risk

Last year GE illustrated its belief that the UK has a unique opportunity to become a global centre of excellence for offshore wind by announcing a £99m investment in a new wind turbine-manufacturing site in Britain. As our plans progress, it is hoped that this investment could provide up to 1,900 clean energy jobs by 2020.

The EMR package as a whole will be good for electricity generated along traditional or 'business-as-usual' cost profiles. However low carbon technologies (such as offshore wind and carbon capture & storage) entail significant upfront investment that require a different approach.

Many low carbon technologies experience high or 'one-off' costs at first, although as industry competences grow, a lot of technology risk can be mitigated against. These costs break down into two parts; that is early-stage or emerging technology costs and infrastructure costs. Projects have a development cycle ranging from under a year for smaller solar projects to ten years or more for large scale projects. Meanwhile investments in manufacturing also have a long development cycle. It can take several years to fund, build and tool a plant, and a number of years of operation are required to justify the investment.

GE's breadth of expertise in Energy Financial Services supports a wide range of renewable power projects and has strong experience of these types of investments. However the investment profile often discourages financial investors whose risk profiles require a steady rate of return and are not designed to offset non-financial risk.

Long-term policies are critical to encouraging financial investment throughout the value chain as they demonstrate a clear commitment to the deployment of renewable energy technology in the UK. This is crucial to help technologies become mainstream and allows investors to enter the market to achieve critical mass and economies of scale are reaped.

As investment increases and the supply chain develops, technology cost comes down significantly. Industry needs to be able to gain experience in the short term to feed the knowledge gained back into the development of processes and so drive efficiencies and learning. For example in offshore wind, CAPEX has risen from £1m/MWh in 2003 to £3m/MWh in 2010 as you cannot drive out costs on a 'per project' basis but need a pipeline of projects to promote planning and synergies.

While costs for offshore wind are likely to decline from 2017-2020, the focus now should be on promoting delivery first. A bonding of 2 ROCs/MWh for offshore wind needs to be retained to underwrite investor confidence and assist in a smooth transition to the new market arrangements proposed under the EMR.



## Key issues for EMR to consider:

### 1. Feed-in Tariffs (FITs)

**Proposal: Contracts for Difference (CfD) to be provided by a central body to provide low carbon generators a guaranteed tariff calculated as the difference between a 'strike price' and average price in the wholesale market**

#### Finance Mechanism

- The proposed Feed-in tariff for low carbon generation is viewed by GE as a central component to the EMR package based on the Government's proposal for Contracts for Difference (CfD) and the back-up option a Premium FIT (PFIT).
- The choice faced essentially reflects a trade-off between the sustainability of long-term finance and short-term continuity in investment. Whether DECC opts for a CFD or PFIT, creating and maintaining a sustainable market for offshore wind will be key in the UK to maintain momentum in offshore and limit a hiatus in investment.
- The current Renewable Obligation (RO) has to date proven to be an effective policy for encouraging the deployment of renewable energy technologies by incentivising utilities with strong balance sheets to invest in higher risk technologies such as offshore wind. Whilst we understand that the proposals to transition away from the RO are intended to make renewable projects easier to finance in the longer term, there is a risk that the move could have the reverse effect in the short-term unless managed.
- Depending on how it is implemented, a CFD could be an appropriate solution to incentivise renewable generation; however unless properly managed, the introduction of a 'one size fits all' approach for all forms of low carbon generation would likely result in delays, higher costs and greater uncertainty. We would prefer proposals designed to meet the risk management needs of different technologies. In some circumstances this might be closer to a fixed payment whilst in others a premium payment may be more appropriate.
- We are particularly concerned that the current set of proposals does not sufficiently recognise the non-financial risks associated with low carbon technologies such as construction or technology risk. These can be addressed via a multiplier to reflect technology differentiation.

#### Trading Arrangements & 'Off-Take Risk'

- With wind projects to date, involving investors who are not vertically integrated, risks have typically been addressed via the use of a Power Purchase Agreement (PPA) between the generator and the utility/supplier.
- There is concern about removing the obligation on suppliers as currently exists in the RO, under which suppliers currently have an incentive to sign PPA's with generators, to secure the ROCs that go with this electricity. Under the new proposals there is no such direct driver for suppliers to do this. With no other reform, projects may not be able to secure PPAs, which will deter investment in development and have implications for liquidity.
- This can be addressed through a range of additional measures to provide an incentive or comfort that renewable electricity generated will clear the market.
- Liquidity in the wholesale electricity market will also be key in the context of EMR as the mechanisms rely on the effective functioning of the wholesale market to provide investment signals. This is currently low in the UK Wholesale Electricity Market in comparison to other commodity markets.



- The EMR also gives little attention to governance and institutional issues given that the proposals potentially shift key decisions away from market players to government agencies. Of particular concern is the lack of clarity around the counter-party needed to be identified for the CfD or other variants of the FIT.

## Transition

- Greater certainty is needed on the transition from the Renewables Obligation. The timing of the White Paper will be critical to provide clarity on the new financial support mechanism and how grandfathered support is priced.
- The rules for grandfathering of existing investments under the RO are therefore vitally important to ensure a quick and managed transition and while the grandfathering principle is enshrined on the EMR document, there is currently insufficient detail about how it will actually work in practice.
- The principle of grandfathering is not limited to preservation of the RO but to ensure the economic case that investors expected under the RO when power purchase agreements (PPA's) were signed is maintained. RO Banding, grandfathering and understanding of the wholesale electricity price will all be vital in this process.
- As such GE believes that the current system should be maintained as much as possible in the run up to 2017 as any project being developed at present may have to be suspended until the details of this proposal are worked out.

## 2. Capacity Mechanism (CM)

**Proposal: An obligation to be placed on a central body to maintain a set capacity margin. The mechanism will be targeted rather than general capacity payments and can select specific technology including demand-side response to determine the mix**

- Proposals on the Capacity Mechanism in the EMR are a welcome step in recognising the link between supply and demand and the growing role that flexible and demand side management will play in the future.
- This is of great interest to GE as we are a manufacturer of flexible generation turbines as well as a major supplier of grid solutions to the UK electricity distribution industry where we see demand response i.e. changes in use by demand-side resources from normal consumption patterns, as a core element of smart grid value proposition.
- We view the current options for a capacity mechanism as possibly the least well-formed and so more detail will be required to define what exactly constitutes a 'targeted' or 'market-wide' mechanism and how they will be applied in the market.
- Broadly speaking we support the Government's current preference for a targeted capacity mechanism and administered by a central body as grid operators are best able to assess capacity requirements to deal with increasing grid operation uncertainty.
- We also believe that capacity markets should only apply for selective options as wider participation can result in a range of unintended consequences that can distort energy markets. For example, incentivising out-dated capacity could undermine the wholesale electricity price and not drive investment.
- Any mechanism needs to be sufficiently long-term and flexible to bring forward a range of potential investments in balancing technologies, including supporting necessary on-going investment in existing assets and the development of new technologies. This will enable all

the possibilities (such as storage and demand response) to be opened up by smart grid functionality and exploited in a way that is commercially viable.

- Whilst the profile of the UK energy industry is changing to meet the increasing demands for efficient and flexible products that can be integrated to the various grid systems, a capacity mechanism may not be needed until later at a point when there is greater penetration of intermittent or inflexible generation and the UK's generation and the low carbon energy mix is better understood.
- Other international markets have capacity payments and therefore a more detailed international comparison could be carried out in the context of EMR. GE's own experience from the PJM Capacity Market shows that demand response can be successfully integrated into capacity markets. The PJM provides a three-year forward price, based on a locational element which has resulted in a 5-fold increase in demand side participation.

### **3. Emissions Performance Standards (EPS)**

#### **Proposal: An annual regulatory limit on carbon dioxide emitted by new coal plant**

- GE sees an EPS as a viable regulatory supplement that can drive 'dynamic efficiency' as investors know they will have to invest in new technologies in the future. An EPS can also increase the future market opportunity for commercially-viable CCS, by ensuring low carbon options are not undercut by high carbon generation.
- This is particularly important as it allows suppliers such as GE, to support investments in the technology development and supply chain capacity now that is necessary in order to begin deployment in 10-20 years' time.
- Whilst more detailed proposals are required, at the current levels proposed (450g or 600g Co2/kwh) an EPS would simply provide back-stop options and could be somewhat redundant given that generators cannot get consent for unabated coal.
- It may be preferable for Government to delay application of an EPS until 2020/2025 where levels could possibly trend from 350g Co2/kwh or be consistent with Best Available Technology (BAT) at the time of implementation as any standard set higher risks penalizing fuel advantages provided by natural gas by unnecessarily increasing capital and operating expenditures. If Government is keen to introduce an EPS now it should be set no higher than the grid average and build in assumptions to 2030 to ensure investor certainty.
- An EPS can only be part of a wider framework that sufficiently rewards generators via the FIT and CM. If the wider proposals are successful an EPS could be rendered unnecessary in the near term.
- More thought needs to be given to the design to ensure that there are no unintended consequences.



#### 4. Carbon Price Support (CPS):

**Proposal: The UK Treasury to remove exemptions from the Climate Change Levy (CCL) for fossil fuels used to generate electricity and tax these at a rate to take account of average carbon content.**

- The Coalition Government is committed to reforming the Climate Change Levy (CCL) to include a carbon price signal in the electricity market. A UK mechanism that brings certainty to the carbon price is welcome however policy-makers should not neglect the need to ensure the EU ETS is fit for purpose as it remains central to EU efforts to reduce carbon emissions in the long-term.
- Whilst support for the carbon price is helpful for low carbon technologies it will be insufficient on its own to drive forward investment on the scale required and in the necessary range of technologies.
- There are also specific short-term impacts that will need to be addressed:
  - A specific impact of the reform proposals could be to discourage plant from operating in CHP mode and discourage public sector investment in CHP where the technology has been providing a growing level of tangible emissions reductions.
  - As a solution we are supportive of alternative proposals that Government could simply exclude the fuel used for the heat generated from CHP from the new carbon tax. This would preserve the value for CHP operators and is administratively very simple as it would use the existing CHP Quality Assurance programme. To increase support for CHP, it could be entirely exempted from the new carbon tax.
- A second impact relates to circumstances where CCS facilities are given an exemption from the EU ETS as captured emissions are stored in geological formations. This should be reflected by providing relief from the carbon tax according to the amount of stored carbon emissions.
- As CCS plants use more fossil fuel to provide the energy to capture, compress and inject carbon into long-term storage, CCS plants could be adversely impacted (even if an exemption for stored emissions is provided).



## **Appendix: Response to Consultation Questions**

### **Current Market Arrangements**

#### **1. Do you agree with the Government's assessment of the ability of the current market to support the investment in low-carbon generation needed to meet environmental targets?**

Yes. Low carbon projects, such as offshore wind and CCS, have not previously been able to provide the capital required given the operational and construction risks involved. To address this we support the view that certain reform is required to ensure that UK power markets remain fit for purpose during the low carbon transition.

The policy challenge is to attract levels of investment to the sector whilst maintaining sufficient levels of certainty whilst ensuring public acceptance and support for an energy policy agenda.

#### **2. Do you agree with the Government's assessment of the future risks to the UK's security of electricity supplies?**

Government modelling demonstrates that the capacity margins will reduce in the latter part of the decade however power demand has fallen significantly in the recessions and is unlikely to return quickly to the levels predicted previously. Meanwhile new-build CCGT and life-extension to nuclear plant have reduced fears of the lights going out.

The EMR measure that is most focused on security of supply is the Capacity Mechanism. Capacity payments, providing they are strictly related to flexibility, are a potential means of balancing the investment model and ensuring continuity of supply for consumers, however may not be required if other parts of the EMR package are implemented and greater low carbon penetration occurs around 2020.

### **Options for Decarbonisation**

#### **Feed-in Tariffs**

#### **3. Do you agree with the Government's assessment of the pros and cons of each of the models of feed-in tariff (FIT)?**

The analysis is overly theoretical and does not take into account the practical deployment and technological risk faced by investors in low carbon projects. Construction and operational risk continue to deter financial investment into offshore wind together with other constraints in the planning and grid access systems. Offshore wind and CCS continue to present one of the riskiest of low carbon investments and require sufficient returns.



**4. Do you agree with the Government's preferred policy of introducing a contract for difference based feed-in tariff (FIT with CfD)?**

The choice of FIT mechanism is contingent on a wide range of other factors and effectively reflects a trade-off between cost and continuity. Whatever the final mechanism is, it should be technologically differentiated to meet the risk management needs of different technologies. In some circumstances this might be closer to a fixed payment whilst in others a premium payment may be more appropriate.

There is concern around removing the obligation on suppliers as currently exists in the RO. This might be addressed through a continued obligation on suppliers, a single buyer option or by increasing liquidity in the market to provide an incentive or comfort that renewable electricity generated will clear the market.

More work is also needed by DECC on how a CfD would work in practice, to ensure low carbon investments receive appropriate returns and clarity around market off take and institutional arrangements.

**5. What do you see as the advantages and disadvantages of transferring different risks from the generator or the supplier to the Government? In particular, what are the implications of removing the (long-term) electricity price risk from generators under the CfD model?**

Please see Q3.

**6. What are the efficient operational decisions that the price signal incentivises? How important are these for the market to function properly? How would they be affected by the proposed policy?**

A price signal must ensure that levels of returns for low carbon technologies are appropriate to meet both financial investment and construction risks. It should also encourage the effective operation of the wholesale market i.e. efficient dispatch. Additional measures may be required to build confidence and ensure sufficient returns for investors.

**7. Do you agree with the Government's assessment of the impact of the different models of FITs on the cost of capital for low-carbon generators?**

Low carbon projects have a development cycle ranging from under a year for smaller solar projects to ten years or more for large scale projects. Meanwhile investments in manufacturing also have a long development cycle. It can take several years to fund, build and tool a plant, and a number of years of operation are required to justify the investment.

Revenue certainty and stability is key to helping drive down costs and will contribute to lower cost of capital. Offshore wind CAPEX has risen from £1m/MWh in 2003 to £3m/MWh in 2010 as you cannot drive out costs on a 'per project' basis but need a pipeline of projects to promote planning and synergies.

Any final mechanism should be technologically differentiated to meet the risk management needs of different technologies. In some circumstances this might be closer to a fixed payment whilst in others a premium payment may be more appropriate.

**8. What impact do you think the different models of FITs will have on the availability of finance for low-carbon electricity generation investments from both new investors and the existing investor base?**

Much will depend on how the EMR package is implemented. If the current low levels of market liquidity are not sufficiently addressed, FIT it will not bring about the desired levels of new investors. While this is desirable in principle, the introduction of 'one size fits all' support mechanisms (i.e. FIT) for all forms of low carbon generation, in addition to the overall levels of complexity, may inadvertently result in barriers to entry.

**9. What impact do you think the different models of FITs will have on different types of generators (e.g. vertically integrated utilities, existing independent gas, wind or biomass generators and new entrant generators)? How would the different models impact on contract negotiations/relationships with electricity suppliers?**

No comment

**10. How important do you think greater liquidity in the wholesale market is to the effective operation of the FIT with CfD model? What reference price or index should be used?**

The successful implementation of EMR and in particular the CfD FIT is highly dependent on wider work being undertaken by Ofgem on market liquidity in the wholesale market which will be key to establishing reference prices. There is a danger of loss of liquidity by government intervention or as the market becomes more dominated by low-carbon sources that could undermine the objectives of the EMR process

**11. Should the FIT be paid on availability or output?**

We agree that FITs should be paid on output and availability could be covered by capacity payments when applied in the future.

### **Emissions Performance Standards**

**12. Do you agree with the Government's assessment of the impact of an emissions performance standard on the decarbonisation of the electricity sector and on security of supply risk?**

An EPS is a viable regulatory supplement that can drive 'dynamic efficiency' as investors know they will have to invest in new technologies in the future. An EPS can also increase the future market opportunity for CCS, by ensuring low carbon options are not undercut by high carbon generation.



This is particularly important as it allows suppliers such as GE, to support investments in the technology development and supply chain capacity now that is necessary in order to begin deployment in 10-20 years' time.

13. Which option do you consider most appropriate for the level of the EPS? What considerations should the Government take into account in designing derogations for projects forming part of the UK or EU demonstration programme?

The current levels proposed (450g or 600g Co2/kwh) an EPS would simply provide back-stop options and could be somewhat redundant given that generators cannot get consent for unabated coal. If Government is keen to introduce an EPS now it should be set no higher than the grid average and build in assumptions to 2030 to ensure investor certainty.

It may be preferable for Government to delay application of an EPS until CCS is commercially demonstrated where levels could possibly trend from 350g Co2/kwh or be consistent with Best Available Technology (BAT) at the time of implementation as any standard set higher risks penalizing fuel advantages provided by natural gas by unnecessarily increasing capital and operating expenditures.

14. Do you agree that the EPS should be aimed at new plant, and 'grandfathered' at the point of consent? How should the Government determine the economic life of a power station for the purposes of grandfathering?

Grandfathering at point of consent is needed in order to safeguard investments. This will need to be further defined as Government policy develops.

15. Do you agree that the EPS should be extended to cover existing plant in the event they undergo significant life extensions or upgrades? How could the Government implement such an approach in practice?

We would like to see more detail to define a significant upgrade and how any system could be administered. To implement such an approach, incentives will be needed otherwise the economic case to close plant will be strengthened.

16. Do you agree with the proposed review of the EPS, incorporated into the progress reports required under the Energy Act 2010?

Implementation of an EPS can be usefully determined by the reviews as long as there is a clear timeline and understanding of the overall policy to avoid uncertainty.

17. How should biomass be treated for the purposes of meeting the EPS? What additional considerations should the Government take into account?

No comment

18. Do you agree the principle of exceptions to the EPS in the event of long-term or short-term energy shortfalls?

No comment



## **Options for Market Efficiency and Security of Supply**

**19. Do you agree with our assessment of the pros and cons of introducing a capacity mechanism?**

Yes. Proposals in the EMR are a welcome step in recognising the link between supply and demand and the growing role that flexible and demand side management will play in the future.

**20. Do you agree with the Government's preferred policy of introducing a capacity mechanism in addition to the improvements to the current market?**

A capacity mechanism is not as urgent as clarity on the Government's incentive for low carbon generation. Final design of the mechanism can usefully be informed by the development of energy mix post-EMR and must take a long-term view to supporting innovation and supporting low carbon investment in existing assets.

**21. What do you think the impacts of introducing a targeted capacity mechanism will be on prices in the wholesale electricity market?**

A capacity mechanism will lower average wholesale market prices as there will no longer be a high premium for power at the margin of supply. This will particularly impact the operation of other mechanisms (such as a Premium FIT) and so the introduction of a capacity mechanism would need to be carefully managed.

**22. Do you agree with Government's preference for the design of a capacity mechanism:**

- a central body holding the responsibility;
- Volume based, not price based; and
- a targeted mechanism, rather than market-wide.

More work is needed to define how capacity payments might work. However any capacity mechanism should be long-term, targeted and managed by a central body such as the grid operator who is best able to assess capacity requirements.

**23. What do you think the impact of introducing a capacity mechanism would be on incentives to invest in demand-side response, storage, interconnection and energy efficiency? Will the preferred package of options allow these technologies to play more of a role?**

GE's experience in other markets shows that demand response can be successfully integrated into capacity markets (e.g. NYISO, PJM and ISO-NE). However challenges remain including a lack of infrastructure, performance risk and short term capacity availability.

Any capacity mechanism will need to provide certainty and reflect the more long term pricing view that should drive investment in flexible and distributed generation to be fully transparent to participation by the demand side, enabling all the possibilities opened up by smart grid functionality to be exploited in a way that is commercially viable.



We see demand response i.e. changes in use by demand-side resources from normal consumption patterns, as a core element of smart grid value proposition and offering a range of economic, environmental and reliability benefits.

**24. Which of the two models of targeted capacity mechanism would you prefer to see implemented:**

- Last-resort dispatch; or
- Economic dispatch.

Further consideration is needed on the benefits of economic dispatch before any decision can be taken to understand how the current STOR (Short Term Operating Reserve) could support a capacity cushion.

**25. Do you think there should be a locational element to capacity pricing?**

A locational element to capacity pricing will be required because low carbon generation tends to be influenced by geographical factors such as the source of fuel, clusters of infrastructure and pipelines and transportation. Some form of locational element for most efficient transmission will be needed together with sufficient upgrades in infrastructure to support investment projects.

### **Analysis of Packages**

**26. Do you agree with the Government's preferred package of options (carbon price support, feed-in tariff (CfD or premium), emission performance standard, peak capacity tender)? Why?**

GE views the transition to feed-in-tariffs as a priority for EMR. The capacity mechanism and the emissions performance standard can also play a significant role in future depending on their final design and timing of implementation.

**27. What are your views on the alternative package that Government has described?**

Please see 04

**28. Will the proposed package of options have wider impacts on the electricity system that have not been identified in this document, for example on electricity networks?**

No comment.

**29. How do you see the different elements of the preferred package interacting? Are these interactions different for other packages?**

No comment

**30. What do you think are the main implementation risks for the Government's preferred package? Are these risks different for the other packages being considered?**

GE's main concerns are twofold a) implementation and b) the transition leading to a short-term hiatus in investment:

- a) Implementation: there are concerns about the liquidity of the electricity market needed to support CfDs and resource to establish a visible reference price. If this is not addressed any instrument could inadvertently become a barrier to investment, new entrants and cost more than the current regime
- b) Transition: There are 3 important elements highlighted in relation to the transition – the RO Review, grandfathering and the wholesale electricity price, particularly for R3 ROCs accredited before 2017.

In relation to the hiatus, EMR will create a lull in work for the supply chain lasting 2 to 3 years with evidence of this already materialising. This presents a problem for the supply chain trying to build businesses to meet huge expected demands in the following years. A steady build-up is needed to meet 2020 targets.

**31. Do you have views on the role that auctions or tenders can play in setting the price for a feed-in tariff, compared to administratively determined support levels?**

For technologies such as offshore wind there would not be sufficient liquidity in the market where there are relatively few vendors and the products/projects are not homogenous. Auctions tend to work for more mature technologies where there are more developed supply chains. In the UK, a great deal of the wind capacity contracted under later rounds of the Non-Fossil Fuel Obligation system did not materialise due to the failings of the tender process.

**32. What changes do you think would be necessary to the institutional arrangements in the electricity sector to support these market reforms?**

The EMR gives little attention to governance and institutional issues given that the proposals potentially shift key decisions away from market players to government agencies. Of particular concern is the counter-party needed to be identified for the CfD or other variants of the FIT.

**33. Do you have view on how market distortion and any other unintended consequences of a FIT or a targeted capacity mechanism can be minimised?**

This is contingent on the types of final mechanism and how it is implemented. The current EMR document does not provide sufficient detail to allow an assessment to be undertaken.



**34. Do you agree with the Government's assessment of the risks of delays to planned investments while the preferred package is implemented?**

EMR is taking place at a critical time for GE's commitment to invest in a UK Offshore Wind Manufacturing Facility. There is considerable concern that the final proposals ensure a smooth transition to avoid damaging investor certainty.

There is evidence that investors are waiting for the outcome of the EMR, ROC Banding and clarity on how benefits will be preserved under EMR, before making a commitment. As such, it is likely that this will create a short-term drop in orders for the supply chain. This creates a dilemma for those trying to build their businesses to meet the expected demands in the following years.

**35. Do you agree with the principles underpinning the transition of the Renewables Obligation into the new arrangements? Are there other strategies which you think could be used to avoid delays to planned investments?**

The rules for grandfathering of existing investments under the RO are vitally important to and must ensure that investment can continue in line with investors original expectations.

There is insufficient detail on how grandfathering will work in practice. The principle of grandfathering should not be restricted to preservation of the RO to 2017; but to ensure the economic case investors expect when power purchase agreements (PPA's) were signed under the RO regime is maintained.

As such the current system should be preserved as much as possible in the run up to 2017 as any project being developed at present may have to be suspended until the details of this proposal are worked out.

**36. We propose that accreditation under the RO would remain open until 31 March 2017. The Government's ambition to introduce the new feed-in tariff for low carbon in 2013/14 (subject to Parliamentary time). Which of these options do you favour:**

- All new renewable electricity capacity accrediting before 1 April 2017 accredits under the RO;
- All new renewable electricity capacity accrediting after the introduction of the low-carbon support mechanism but before 1 April 2017 should have a choice between accrediting under the RO or the new mechanism.

We believe that that existing system for accreditation (10% Headroom) should be maintained until 2017 to ensure policy certainty and a quick transition

37. Some technologies are not currently grandfathered under the RO. If the Government chooses not to grandfather some or all of these technologies, should we:

- Carry out scheduled banding reviews (either separately or as part of the tariff setting for the new scheme)? How frequently should these be carried out?
- Carry out an "early review" if evidence is provided of significant change in costs or other criteria as in legislation?
- Should we move them out of the "vintaged" RO and into the new scheme, removing the potential need for scheduled banding reviews under the RO?

Changes should be minimised.

38. Which option for calculating the Obligation post 2017 do you favour?

- Continue using both target and headroom
- Use Calculation 8 (Headroom) only from 2017
- Fix the price of a ROC for existing and new generation

We believe that that existing system for accreditation (10% Headroom) should be maintained until 2017 to ensure policy certainty and a quick transition

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