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## **Electricity Market Reform**

DONG Energy welcomes the opportunity to respond to DECC's consultation on Electricity Market Reform.

10<sup>th</sup> March 2011

Our ref. EMR\_100311

Tel 020 7811 5200

By 2020, DONG Energy aims to have reduced our CO<sub>2</sub> emissions per kWh of generation by 50 per cent, and by 85 per cent by 2040. In order to achieve these targets, growth is focussed on renewable power generation where the United Kingdom is a significant market.

DONG Energy is one of the most active offshore wind operators and investors in the United Kingdom. We currently operate four offshore wind farms with a total capacity of 352MW and have a stake in a further four sites currently under construction. DONG Energy also possesses a strong pipeline of over 2GW of potential future renewable projects. In thermal generation, DONG Energy has recently completed a new gas-fired power station of 824MW output at Severn in South Wales.

In general, DONG Energy supports the objectives of the EMR proposals and our main position can be summarised as:

- We welcome the Government's commitment to maintaining the renewable obligation (RO) for existing projects and those gaining accreditation before 1 April 2017;
- We support the proposal to introduce a Feed-in Tariff (FIT) in parallel with the RO up to 2017, providing an option for a time period to ensure a smooth transition;
- Introducing a Premium FIT is our preferred option as it provides similar features to the current system and as known for current project pipelines. A FIT with CFD is only a credible option if greater liquidity is introduced to the wholesale market;
- In determining the appropriate level of feed-in tariffs we believe an administered approach is the right solution, in order not to disrupt energy asset investments;
- We do not believe the fundamental causes of poor market liquidity have been properly addressed. DONG Energy advocates an initial target of at least 25% physical volume traded as Day-Ahead and Intra-day; and

- Finally, DONG Energy agrees that the projected growth of wind energy cannot be considered without appropriate measures to secure reserve capacity.

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Whereas the main concerns are further elaborated below, the specific questions raised in the consultation document have been answered in Appendix 1.

#### *Grandfathering the RO*

DONG Energy welcomes the Government's commitment to maintain the renewable obligation (RO) for existing projects and those that will gain accreditation before 2017. In any market it is fundamental that companies can invest with the confidence that the regulatory framework will remain stable and will not change retrospectively.

Of the options set out in the consultation document, we believe the "Headroom only" option is the most appropriate for calculating the RO post-2017. This option will be least disruptive to existing projects: both for those projects that have long-term power purchase agreements with supply companies and for those projects where third-party investment has been introduced.

#### *Transition to a Feed-in tariff*

The consultation document makes two proposals for dealing with the transition: to allow the FIT to run in parallel with the RO up to 2017, or to have a clear change between the RO system and the FIT system in 2017. DONG Energy believes there is merit in the proposal to allow the two systems to run in parallel and that this flexibility should be extended to allow existing projects to opt for a FIT.

However, in order for developers with projects due to be accredited before 2017 to opt for a FIT over the RO, it will be necessary to establish the detail of the mechanisms and the level of FIT by 2013. For new projects, it is desirable to have at least a 3-4 year view of the subsidy level ahead of any investment decision being taken. Therefore, it will be necessary to have this information available by 2013 in order to allow investment decisions to be made for projects due to be accredited in 2017 and beyond.

#### *Feed-in tariffs (FITs)*

The Government should consider introducing a Premium FIT as the next best alternative to continuation of the RO. This option will be least disruptive to the existing renewable project pipeline, reducing risks and costs for investors, and so allow the highest level of certainty to the Government's renewable targets. However, DONG Energy understands from the consultation document that a Feed-in Tariff with a Contract for Difference (FIT with CFD) is the Government's preferred option. Whilst this mechanism could work successfully, implementation cannot be done before other structural market issues are addressed. These include addressing market liquidity and reforming the

balancing mechanism to better reflect the costs and requirements of a system with a high volume of low carbon generation.

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Looking at the FIT with CFD option specifically, the consultation document raises a number of questions and lacks detail about the design of the instrument. There are a number of specific areas of concern that are discussed below.

#### *Setting the level of support*

The Government has indicated that its preferred approach is to use an auction or tender to determine the level of support available under a FIT system. In delivering the UK's ambitious targets for renewable energy and carbon reduction, certainty in the process and a clear view of the level of support available is fundamental. DONG Energy does not believe auctions will achieve the necessary level of certainty for projects and will represent a significant risk to future delivery of new projects, and hence the Government's targets. If auctions are used to set the level of FIT they will be disruptive to project pipelines, preventing cross-project synergies from being developed, thus limiting opportunity to reduce costs. Auctions present a major barrier to investment because they provide no guarantee that a project will be able to secure a CFD and then be built once external factors have been considered, thus raising capital for any investor will be an issue.

Furthermore, experience under the RO has shown the need to consider the individual technologies in their own right. The level of support under a FIT system must be technology specific to ensure that the right level of support is available to technologies at different stages of commercial development.

DONG Energy believes an administered approach, similar to the current RO Banding review process should be used. If necessary, the process could be amended to set out a clear methodology against which Government can assess and benchmark the tariff levels.

#### *Setting the reference (market) index*

The consultation document does not provide any detail on how a market index price would be derived. There is currently no credible market index to use to form the reference price on which to base the CFD. This is due to the lack of liquidity in the wholesale electricity market, the consequence of which is a low confidence in market prices derived and thus uncertainty on the financial impact for both the companies and the Government.

Wind generation will, on average, struggle to outperform any market index not based on a production average price. It will also struggle to capture high market prices because at times of high wind, prices are likely to be low and vice versa. The proposal to require repayment of any revenue over the strike price will further decrease the incentive to respond to price signals. The FIT with CFD will make wind generation insensitive both to long-term and short-term

prices, with the result of increasing balancing costs as no investment will be made in technology that allows wind turbines to respond to market signals and system requirements. It will further decouple the link between electricity prices and incentives for investors to meet electricity demand, thereby reinforcing the need for corrective and intrusive capacity measures.

#### *Balancing costs*

Balancing costs and imbalances prices in the GB market are currently very high, with future balancing costs being difficult to forecast due to the growth of wind generation on the system. This is a result of the intermittency issues associated with a high volume of wind and exposure to the gas price as a consequence of the increasing role of gas plant in balancing the system. Under the current RO and a Premium FIT, there is a natural hedge against rising balancing costs because in a properly functioning market, increased balancing costs are generally accompanied by rising power prices. The introduction of a FIT with CFD will limit this hedge as the income of the renewable generator will be capped by the two-way nature of the CFD, thus any return over and above the strike price will be paid back by the generator.

There are two options for managing this exposure under a CFD either by taking the risk of rising imbalance costs into account when setting the strike price or by including imbalance costs as a component in its own right, as in the current Dutch methodology. The latter option is preferable as it will allow an incentive to manage balancing costs to be retained.

#### *Market liquidity*

DONG Energy welcomes the acknowledgement in the EMR consultation document that market liquidity in the GB electricity market is of fundamental concern and that changes to improve the operation of the current market are necessary. However, it is disappointing that solutions and processes for achieving change are not more fully addressed. Without significant improvement in physical traded volumes in the wholesale electricity markets, the Government's proposals for a FIT with CfD will not work effectively and signals for investment in new thermal capacity will be suppressed. Solutions to this issue should not wait until all the Government's proposals have been resolved. Remedies must be agreed and implemented ahead of any wider market reforms as poor liquidity and a subsequent lack of confidence in the market price is already impeding investment in all generation types.

Lack of liquidity in the GB market is caused by a market structure which encourages physical and financial settlement of bilateral contracts as opposed to market-based traded volumes. In addition, the existing dual-price cash out creates incentives to effectively "self-balance" by holding back generation capacity to insure against a plant trip, which removes market liquidity. The long-term reserve contracts have further reduced liquidity by removing more capacity from the balancing mechanism and traded markets. Introduction of a single-price cash out mechanism should therefore be considered. This has

been proven to work well in many other markets, and it removes one of the current disincentives to introduce liquidity to the GB market.

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Mandating market-coupling on existing and new interconnectors with other markets would also add liquidity to traded markets. Cross-border trade has been an essential source of liquidity in the early stages of market development in several markets. In general, greater interconnectivity and further market integration with continental Europe should be pursued.

In considering the remedies for improving market liquidity there must be improved transparency relating to internal transfers within vertically integrated companies, at the very least. To this end, all volumes and prices should be reported. To ensure a liquid wholesale market is developed DONG Energy propose mandatory trading of for example, 25% of physical volume on the intra-day and day-ahead markets compared to current level of around 2%. DONG Energy advocates an initial target for improvement in wholesale market liquidity of at least 10 times the current physical volumes. Improving liquidity in the short-term will act as a foundation for improvement along the curve and allow development of physical and financial products for all market participants.

In its final decision on EMR the Government must conclude what action should be taken to improve liquidity and intervene as it did with the Transmission Access Review. We think specific political positions and actions need to be taken, which goes beyond the responsibilities of the regulator.

#### *Capacity Mechanisms*

Over the next 10 years, there will be a significant change in the type of generation connected to the transmission system. This will be driven by the retirement of existing (mainly nuclear, coal and oil) generation and the projected volumes of renewable and new nuclear generation due to be built in response to the UK's carbon reduction and renewable targets. This transition will inevitably place new demands on the system and change in its mode of operation.

Models to support the expansion of wind-based renewable energy must be considered with the appropriate and necessary measures for reserve capacity. DONG Energy believes there will be an increased need for to manage intermittency, and much of this capability is likely to be provided by thermal generation. However, generation-only solutions to capacity and intermittency requirements are not desirable. Any mechanism that is introduced must be flexible enough to accommodate smart grids, smart meters and demand side measures that will develop in order to provide an effective response. Additionally, an increase in interconnection will assist in a European-wide approach to managing variability in generation.

The case for introducing a broad capacity mechanism to promote investment in new generation in general is more difficult to justify at this time. There is little

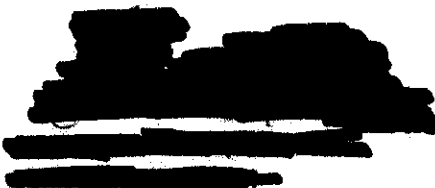
conclusive evidence that these intrusive mechanisms have been demonstrated to improve the performance of electricity markets, and the case for signalling the need for new investment in the UK is not proven as the underlying fundamentals clearly indicate that new capacity will be needed to replace that which is closing. Improvement in market liquidity and the consequent creation of a credible reference price will itself provide a signal for new investment. There is also a significant risk that a capacity mechanism sitting alongside the proposed FIT for low-carbon generation will remove more generation from the market, further reducing market liquidity. The natural consequence of these measures could ultimately be that all but a small segment of generation is operates under fixed-price contract and therefore becomes indifferent to market price.

#### *Conclusion*

DONG Energy believes that the EMR proposals are timely and have the potential to ensure that the UK continues to be an attractive market in which to invest. The transition between the RO mechanism and the FIT system can be achieved without undue disruption to current project pipelines. The option of choosing between RO and FIT should be provided for a time period to ensure efficient transition and finally, the support level should be set in an administered process as opposed to auctions to allow technological and commercial efficiency gains and thus improved cost position of technologies as well as equally important effective capital allocation. Finally, the fundamental underlying issue of poor wholesale market liquidity must be addressed to ensure these proposals are a success.

DONG Energy would be pleased to discuss any of the issues raised in this consultation response and looks forward to engaging with Government in the period leading up to implementation. Should you have any questions relating to our comments, please contact Danielle Lane on 020 7811 5200.

Yours faithfully

A large, solid black rectangular redaction box covering the signature and name of the representative.

DONG Energy

**Appendix 1: Questions raised in the EMR Consultation****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?

DONG Energy supports the Government's objectives of the Electricity Market Reform (EMR). The assessment of the challenges faced by the market in meeting the carbon reduction targets set out in the consultation is fair. In particular, there is a significant investment required in new generation assets over the next decade. There will be competition for this capital from within the UK electricity sector, from other electricity markets and from alternative investments. In order to achieve the transition to a low-carbon economy and to attract the necessary level of investment needed, the regulatory environment must be clear, credible and stable. Whilst the current market arrangements have delivered some investment, reform is necessary to bring online new low-carbon generation and to improve market liquidity to give confidence to investors in conventional technology that an adequate return can be made.

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

Yes, the Government's assessment of the level of plant retirement and the need for future investment in new plant is reasonable. In addition the requirement to increase demand side response and the availability of flexible generation to assist in managing a system where the majority of generation is nuclear or renewable plant is rightly recognised.

**Options for Decarbonisation**

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 consultation document has identified a number of pros and cons for the different FIT models by assessing the models against the Government's objectives (decarbonisation, security of supply and cost to the consumer) and performance criteria (cost-effectiveness, durability and flexibility, practicality and coherence). Taking each of these aspects in turn:

***Decarbonisation***

We agree with the Government's analysis that all three models of FIT could enable the UK to meet its renewable energy and carbon targets. However, we do not believe that a Premium FIT will necessarily give a lower confidence of meeting the Government's targets. In all cases, the speed and volume of delivery will be correlated with the level of FIT available. Additionally, it is not desirable to insulate generators from long-term price signals. This will lower

the incentive on those generators to respond to market signals and invest in technology that allows them to respond to the market rather than being must-run plant.

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#### *Security of Supply*

The consultation document contends that a market price incentive to despatch electricity efficiently is necessary to maintain security of supply. DONG Energy agrees with this. However, we do not agree with the conclusion that the FIT with CFD will maintain this incentive for wind generation in particular, and potentially other generation (depending on its flexibility).

Whilst the FIT with CFD exposes a generator to a short-term price through a requirement to perform against a market index, in the case of wind generation it will, on average, struggle to outperform any market index not based on a production average price. Nor will it be able to capture high market prices because at times of high wind, prices are likely to be low and vice versa. Wind generators will generally therefore sell below an average price and fail to make the contracted tariff. The consequence of this will be to remove any incentive to despatch electricity efficiently, increasing balancing costs to the system as a whole.

#### *Cost to consumer*

DONG Energy agrees with the assessment that compared to the baseline, the FIT models all have the potential to reduce costs to the consumers. We also agree that revenue certainty arising from a FIT with CFD has the potential to reduce the cost of capital and hence the cost to consumer to a greater extent than other models. However, this benefit is likely to be minimal and may be offset by the greater cost of balancing that arises from the removal of any incentive for efficient despatch.

#### *Cost effectiveness*

We agree that a Premium FIT will expose generators to price risk. As noted above, we do not believe this is the case for FIT with CFD as the cost effectiveness will, to a large extent, depend on the design of the reference price. We also note that the poor liquidity in the wholesale electricity market will reduce the cost-effectiveness of any FIT model.

#### *Durability and flexibility*

The long-term contracts and support offered by the UK Government for renewable generators is welcome. Stability in the political and regulatory framework, with clear sight of long-term market pricing allows investment decisions to be made with confidence.

We agree with Redpoint's analysis that the risk of zero and negative pricing increases as the volume of low carbon generation increases towards 2030. This will be an issue under all FIT models but note that exposure to price



signals under a Premium FIT will encourage generation to become more price responsive.

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*Practicality*

We agree with the assessment that implementation of the Premium FIT will cause least disruption to the current investment pipeline than the other options. The uncertainty around the design and implementation of the FIT with CFD is likely to cause the most delays.

*Coherence*

DONG Energy agrees that all the different policy measures can work as a package. We note that, depending on the design of the FIT and capacity mechanism, there is a risk that market liquidity could be further eroded and that all generation would end up with a contract with a guaranteed electricity price.

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

DONG Energy believes that the FIT with CFD mechanism could allow continued project development but a Premium FIT is a preferable option. If a FIT with CFD is introduced however, there must first be improvements in wholesale electricity market liquidity and the detailed design of the instrument must be fully established. Any mechanism must be simple, transparent and long-term in order to provide confidence to investors.

As discussed above, wind generation will, on average, struggle to outperform any market index not based on a production average price. Nor will it be able to capture high market prices because at times of high wind, prices are likely to be low and vice versa. The proposal in the consultation document to require the repayment of any revenue over the strike price will further decrease the incentive to respond to price signals. The FIT with CFD will make wind generation insensitive both to long-term and short-term prices, with the result of increasing balancing costs as no investment will be made in technology that allows wind turbines to respond to market signals and system requirements.

In addition, balancing costs and imbalances prices in the GB market are currently very high, with future balancing costs being difficult to forecast due to the growth of wind generation on the system. This is a result of the intermittency issues associated with a high volume of wind and exposure to the gas price as a consequence of the increasing role of gas plant in balancing the system. Under the current RO and a Premium FIT, there is a natural hedge against rising balancing costs because in a properly functioning market, increased balancing costs are generally accompanied by rising power prices. The introduction of a FIT with CFD will limit this hedge as the income of the renewable generator will be capped by the two-way

nature of the CFD, thus any return over and above the strike price will be paid back by the generator.

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There are two options for managing this exposure under a CFD either by taking the risk of rising imbalance costs into account when setting the strike price or by including imbalance costs as a component in its own right, as in the current Dutch methodology. The latter option is preferable as it will allow an incentive to manage balancing costs to be retained.

The FIT system is intended to apply to both the renewable sector, where there is a large range of different technologies at varying stages of commercial deployment, as well as CCS and nuclear projects. It is critical that the design of the instrument does not disadvantage any particular technology. Any unintended consequences resulting from the design of a FIT could jeopardise delivery of the 2020 target and reduce the diversity of low carbon generation.

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?

The EMR proposals aim to address both price and policy risk for generation. DONG Energy believes that all generation, including electricity from low carbon generation should be exposed to long-term price signals as it is these signals that will drive efficient operation and maintenance. Removing these signals will reduce the incentive to optimally manage generation maintenance and despatch.

With respect to the policy risk, the introduction of a long-term contract is welcome. However, we note that this does not remove policy risk, particularly with respect to how changes to the wider electricity market framework may impact on the FITs agreements.

The proposal to auction the tariff for low carbon support will add risk to generators, and may bias investment decisions towards one-off projects rather than portfolios of projects. This will reduce the opportunity to develop cost saving techniques and reduce the overall cost of delivery of renewable generation.

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?

Price signals allow a generator to assess whether it is better to operate or postpone operation until a later time, balancing revenue against deferred operation and maintenance costs. Currently, generation with a high upfront

capital expenditure, such as nuclear and offshore wind technologies, is considered 'must run' that is to say, that it generates at every opportunity in order to recover costs in the shortest timescale. The presence of a subsidy paid on output encourages this behaviour.

This behaviour is not of concern at the current levels of penetration of wind generation. Indeed, it is to be welcomed as it positively contributes to the UK's CO<sub>2</sub> reduction targets. However, as the volumes of subsidised low carbon generation increases, so does the risk of zero and negative prices. The subsidy, including the proposed CfD model, removes the sensitivity of generation receiving the subsidy to these price signals and so impairs the efficient operation of the market.

In addition, the FIT with CFD when applied to wind technology in particular, will reduce the incentive to balance effectively. As wind generation, will on average fail to outperform the market index and is unlikely to be running at times of peak prices, there is little incentive to respond to price.

**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?**

There is very little difference in the cost of capital likely to be achieved under the various models, albeit DECC's analysis shows a marginal improvement compared to the baseline. As noted in the Impact Assessment, a FIT is unlikely to reduce the cost of capital for generators who can already mitigate revenue risk under the current market arrangements. The long-term price risk is currently managed through power purchase agreements with supply companies or through vertical integration. We expect these models to continue, although we welcome any reforms that allowed alternative business models to develop, including an improved ability to manage risk through wholesale markets.

The cost of capital is also driven by perception of risks other than price. For offshore wind generators these risks are largely related to construction and technical operational risk. Investors need to see high reliability and operating performance from the wind farms to achieve a lower cost of capital. Neither of these categories of risk can be managed through a FIT.

**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?**

Investors require a stable, predictable revenue stream within a transparent and stable regulatory and political framework. The Fixed FIT and Premium FIT models achieve this, to varying degrees. As proposed, the FIT with CFD model currently poses more questions than it answers, although it has the potential to deliver these requirements, depending on the detailed design.

In all cases, the prerequisite for a FIT system is a liquid wholesale electricity market and reform of the balancing mechanism to better represent the costs to the system of a predominately low carbon generation mix. Currently, the lack of liquidity in the wholesale electricity market represents a risk to generators as it is difficult to hedge wind generation at a reasonable price. We welcome any reforms that will improve wholesale market liquidity.

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?

DONG Energy is an independent generator with a predominantly wind-based portfolio. On the basis of our experience of FITs in other markets and the proposals outlined in the consultation document, the proposed FIT models have the potential to improve our net working capital position by improving the timescales associated with payments. However, this is dependent on an improvement in the administrative arrangements surrounding the cash flow and improved payment times over those currently in place for the RO.

Subject to improvements in wholesale market liquidity, the Premium FIT model and wider reforms will allow us to manage our own imbalance risk more effectively. They also offer an effective business model for independent generators, other than sale of power through a PPA or vertical integration.

The disadvantage of a FIT with CfD for a wind farm operator is the ability of the generator to consistently 'beat' the average market price, given that a large volume of wind on the system will naturally depress the electricity price. Wind generators are therefore unlikely to be operating at times when market prices are high.

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?

#### *Liquidity*

Improved liquidity is a critical precondition to successful implementation of the FIT with CfD model. High liquidity in the electricity market implies high physical and financial trading volumes, a large number of trading participants and narrow bid-offer price spreads. This will result in transparent and reliable electricity pricing with low entry barriers for new independent generators and suppliers. As Ofgem has previously acknowledged, there is a need to

improve trust in the price discovery and access to a reliable and robust price data<sup>1</sup>.

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DONG Energy believes one of the restrictions on liquidity developing in the UK is the current market structure, where bilateral over the counter (OTC) trade dominates over standardised exchange trade. In fact, volumes traded on exchanges represent only 2% of the total demand. Price discovery on these exchanges therefore raises concern and lack of trust.

To date there has been little or no improvement in liquidity through voluntary action and so a more stringent measure is required. We believe the Government should mandate all generators and suppliers to buy and sell at least 25% physical volumes of electricity through the exchanges.

Compliance with such a requirement by all wholesale market players and publication of prices by the exchanges will lead to increasing day-ahead spot volumes, and resulting in transparent and reliable spot prices. As traders' trust<sup>2</sup> in pricing improves, these prices will become the building-blocks for financial forward and future contracts, including CFDs that supplement technology-banded FITs. Use of day-ahead prices as reference prices will lead to increased volumes of standardised contracts traded on the exchange further aiding liquidity improvements.

Our proposal to mandate 25% of the physical volume trade on the exchanges is based on the difference in market attitude to exchanges with large and small volumes relative to the total physical demand. As an example, EEX has been gradually improving its liquidity over the past decade. It now has more than 30% of the total spot volumes traded in Germany and the exchange is perceived as having a reliable and transparent price discovery mechanism. It is increasingly used for reference price-setting by market participants, including DONG Energy.

In addition, we believe market liquidity will be improved by "market coupling". This means coordinated action between neighbouring power exchanges in price discovery, trade settlement and implicit congestion management. The success of market coupling in improving market liquidity has been demonstrated following the integration of a number of neighbouring markets, including the Nordic region ( and later between the Nordic region and Germany), and trilateral coupling between the Netherlands, Belgium and France. In each of these cases market coupling played a key role in harmonising arrangements by implicitly auctioning cross-border interconnection capacity. As a result market coupling has led to increased

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<sup>1</sup> Ofgem: "Liquidity in the GB wholesale energy markets" (2008).

<sup>2</sup> According to the APX Energy Viewpoints (2008) survey, the majority of market participants believe that increased trade on exchanges, because they provide standardized products, observable benchmarks and reduced credit risk, is increasing market liquidity. They also, via market coupling, in case of electricity, offer a necessary and efficient platform for the cross-border trading.

efficiency in balancing supply and demand at lower marginal costs and efficient allocation of transmission links between respective markets.

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#### *Reference Price*

With respect to creating reference prices for the FITs with CFDs, we believe different indices should be considered for different technologies. An index based on an annual average of wholesale prices (as suggested in the consultation document) could significantly disadvantage intermittent generators. As the proportion of intermittent generation on the system increases, the prices they are able to capture fall: it has been estimated that the difference between the time-weighted average wholesale price and the price captured by an offshore wind generator may differ by 20% by 2030<sup>3</sup>.

Wind generation will require a short-term index, preferentially based on production average price, if it is to be properly incentivised to 'beat' the index. Without this there will be less incentive to trade and increased balancing costs and wind generators could run a substantial risk of consistently failing to capture high enough prices, not receiving compensation up to the strike price, and thus not making a sufficient return on their investments.

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

Whilst there are arguments to support an availability payment in order to reduce the risk of zero or negative prices, it would be practically and administratively challenging to implement. Such a system would also need rigorous oversight to ensure that all participants were actually physically available in order that a payment was not made erroneously.

Additionally, part of the purpose of a subsidy is to bring forward low carbon generation with the aim of replacing existing carbon based plant. As the intent is for the actual electricity delivered to come from low-carbon sources, the generation should therefore be rewarded for delivery and not just being available.

Any payment should be paid on the basis of output rather than availability as this can be verified simply and independently. Other mechanisms could be developed to disincentivise generators from producing at times of low or negative prices. A premium FIT mechanism will limit negative prices as a rational generator will not continue to generate when price falls below the level of the subsidy. A fixed FIT or FIT with CFD would, on the other hand, require specific measures to prevent subsidies from being paid when prices are negative.

#### **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?

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<sup>3</sup> Poyry, GB intermittency study

The consultation document has identified security of supply to be one of the key drivers for reform. Two aspects of this are identified:

1. the expected level of plant retirements; and
2. an increasing need for flexibility to answer the characteristics of an increasing volume of low carbon generation on the system.

As it currently stands, Britain is an "energy-only" market i.e. the market only pays for the energy and/or ancillary services that providers deliver and does not pay explicitly for capacity which is considered to be included in the price. It also relies on market prices to signal the requirement for new investment and to assure investors that they will make a sufficient return. In essence, before they commit their money, investors in conventional generation need to be confident that prices will be allowed to spike and that ancillary service markets are designed to provide the necessary revenue streams to guarantee a sufficient return.

At this time, the prices seen in the markets do not provide this level of surety. One cause of this is the lack of liquidity in the wholesale markets which reduces confidence in visible market prices as the majority of transactions are settled on a physical and financial basis through bilateral agreements.

In future, the predicted volume of renewable and low carbon generation will suppress the market prices at times of high wind, and cause peak prices at times of low wind. The need to forecast wind generation, in addition to peak demand, will increase the difficulty for peaking plant to capture high prices. As such, it is possible that there will be reduced confidence in investments in thermal generation.

Given the difficulties for peaking plant to forecast prices, a key question remains over the best way to provide appropriate incentives to new conventional generation in order to ensure replacement of existing plant with new flexible capacity. Whilst capacity mechanisms are an effective means of stabilising the income of generators, there is no clear evidence that they encourage investment in new generation. Generators do not have any obligation to use the income from capacity mechanisms for new investment or to upgrade their existing assets. Arguably, a capacity mechanism is only required where market prices are capped, thus preventing price spikes from occurring and effectively guaranteeing a lack of clear signals to encourage investment.

We welcome the assessment of options available to the Government to ensure adequate capacity in a future low carbon electricity system. We also acknowledge that the evaluation of pros and cons of introducing a capacity mechanism is based on modelling and analysis of the impact that various capacity instruments would have on the capacity levels among other cost benefit performance measures. As the details of the assumptions behind the

model and the subsequent analysis were not included in the consultation material, we are only able to comment on the findings based on our own views of the impact and implications of such options.

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

As mentioned earlier, DONG Energy believes that the primary driver of forward price improvement is increased market liquidity which would enable investment decisions to be taken with greater confidence. However, in considering a future where there is a higher proportion of intermittent generation and relatively inflexible baseload generation from new nuclear plant, it may be appropriate to introduce more explicit and additional rewards for flexible capacity. In these circumstances, the mechanism should be complementary to an existing energy market and allow the participation of both the generation and the demand sides. The mechanism should not simply offer a payment for capacity installed on the system but recognise flexible and available plant.

The EMR consultation proposes the introduction of a capacity mechanism to provide security of supply by incentivising long-term investment and improving response to intermittency. The consultation appears to favour a centrally administered mechanism that will rely on the System Operator to agree contracts with providers. This is not dissimilar to the existing STOR contracts offered by National Grid. Whilst there may be merit to this approach, DONG Energy believes that a more transparent, market-based approach is more desirable.

There are risks associated with a centrally administered approach, not least as it would necessitate the creation of a single entity to determine the level and type of generation required, rather than allowing the market to determine and deliver the necessary capacity. Also, it is not immediately evident that contracts will be transparent to the market or available to an investor before an investment decision is made. It therefore cannot be wholly relied upon.

As discussed above, changes to the electricity market structure are necessary to create conditions for greater liquidity and confidence in the investment incentives. Namely, we expect improvements in transparency of the wholesale electricity prices to increase the likelihood of investments by independent power producers. Provided there is clarity in the type of generation that is required for adequate functioning of a future low-carbon electricity system along with transparency in procuring energy and reserves, investment will follow without a need to create a full capacity mechanism, as established in other markets such as PJM or SEM

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



In the short term, the introduction of this mechanism is unlikely to have a significant impact on wholesale electricity prices. However, over time, the introduction of capacity payments together with a FIT will lead to the majority of generation receiving an administered price. This will leave only a residual volume of generation with full exposure to market prices. In these circumstances, it is questionable whether any future investment in generation not eligible for a capacity payment or FIT would be made.

Notwithstanding the above, current market arrangements make it unlikely that any further investment in peaking gas-fired power stations will be made. At the same time it is uncertain whether investment in flexible generation and demand will yield sufficient returns for companies such as DONG Energy to introduce Smart Grid solutions and demand management to the UK market. The EMR has the potential to improve this situation.

Therefore, there is a need to improve mechanisms for signalling scarcity in the electricity system to provide investors with clarity and confidence in the type of capacity needed. We believe that a centrally determined price for capacity reserved for balancing is a necessary measure (through introducing a reserve market<sup>4</sup>) in addition to improving allocation of reserve contract costs. It is essential that clear and transparent information is made available to market participants. This could be achieved by publishing details of the volume of capacity reserved and the price at which it is reserved and procured by the System Operator on a daily basis. There is precedent for this in the Nordic marketplace, where it is possible for any market player to access historical prices and volumes procured in short term services in order to make investment decisions.

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.

Notwithstanding the reservations over the introduction of a capacity mechanism expressed above, if a capacity mechanism is to be introduced in the short term, we agree with the Government's preferred approach.

The implementation of the measure must ensure that the rules for participation are clear and transparent. Also, the costs associated with the management of the tender and outturn costs must be transparent. This process should not be an extension of the existing reserve tenders as currently run by NGET.

<sup>4</sup> As described in "Improvements to procuring of balancing services", EMR Consultation document, p. 81.

A capacity mechanism as described in answer to Question 21 would require a) an exchange and b) the System Operator to be responsible for price discovery and publication of energy and reserve data in the balancing mechanism. The System Operator would also be the single-buyer of balancing energy and reserves, hence they would be setting the margin on an ongoing basis.

Procuring energy and contracting reserves for the balancing mechanism should remain organised based on the "merit-order" approach, hence more cost-efficient and flexible technologies will be chosen by investors.

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?

Introducing the capacity mechanism outlined in answer to Question 21 would strengthen investment incentives for demand response, storage, interconnection and energy efficiency by improving the signalling of scarcity and introducing transparency in the value that the wholesale market puts on energy, reserves and imports/exports. These technologies would be adequately valued by the capacity mechanism as they provide flexibility.

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

- Last-resort dispatch; or
- Economic dispatch.

DONG Energy prefers the economic dispatch model of the targeted capacity mechanism to the last resort dispatch alternative. Strategic reserve creates market distortions as it implies capacity is removed from the market and used at the discretion of the system operator. The economic dispatch model on the other hand provides conditions for more transparent and fair competition both in the energy delivery and reserves markets.

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

We generally agree with the Government's observation that a locational element in the capacity mechanism would create only marginal improvement in the investment incentives and utilisation of both low-carbon generation and flexible resources, e.g. demand response. Furthermore, in the capacity mechanism outlined in the answer to Question 21 we do not believe it necessary to introduce an explicit locational differentiation in the investment incentives. However, a locational element could be included in the contractual agreements between the System Operator and the reserve providers.

**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?

As set out above, DONG Energy believes the Government's preferred package of measures to be a credible alternative to the existing market arrangements. However, the success of the package will depend on the detailed design and improvement in wholesale market liquidity.

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

The alternative package, replacing the CfD with a premium FIT, is preferable as it could be introduced with minimum disruption to the existing project pipeline and will deliver the benefits the Government seeks. Also, without significant action to introduce greater market liquidity and intervention to reform the balancing mechanism to better reflect the costs and requirements of a system with a high volume of low carbon generation, DONG Energy believes the FIT with CFD will not operate effectively.

**Implementation Issues**

30. What do you think are the main implementation risks for the Government's preferred package of options (carbon price support, feed-in tariff (CfD or premium), emission performance standard, peak capacity tender)? Why?

The predominant risk surrounding the Government's proposed reforms is one of delay to investment decisions. Any changes to the market framework and existing support mechanisms will increase the perception of risk for investors and lead to delay in investment decisions.

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?

- Can auctions or tenders deliver competitive market prices that appropriately reflect the risks and uncertainties of new or emerging technologies?
- Should auctions, tenders or the administrative approach to setting levels be technology neutral or technology specific?
- How should the different costs of each technology be reflected? Should there be a single contract for difference on the electricity price for all low-carbon and a series of technology different premiums on top?
- Are there other models government should consider?
- Should prices be set for individual projects or for technologies?
- Do you think there is sufficient competition amongst potential developers / sites to run effective auctions?

- Could an auction contribute to preventing the feed-in tariff policy from incentivising an unsustainable level of deployment of any one particular technology? Are there other ways to mitigate against this risk?

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The implementation of auctions and tenders in setting the price for a FIT will increase risk and uncertainty for offshore wind developments. Auctions present a major barrier to investment because they provide no guarantee that a project will be able to secure a CFD and then be built once external factors have been considered. They will:

- damage the ability of offshore wind companies to develop pipelines of projects that allow synergies between projects and associated cost savings to be discovered;
- decrease the likelihood of offshore wind developers being able to attract third-party finance pre-construction; and
- introduce unnecessary and costly delay to the timescales for delivery of the UK's offshore wind programme.

In practise, it is difficult for auctions or tenders to deliver competitive (but still economically viable) prices that properly reflect the risks and uncertainties for any type of project.

#### *New/emerging technologies*

Depending on the stage of development of a new technology, developers of new or emerging technologies may struggle to place accurate bids due to lack of actual operational cost data. In addition to this there is unlikely to be a mature and competitive supply chain focussed on cost reduction. This can lead, as experience has shown, to optimistic bids from developers or sudden cost shocks in the supply of key components. The result may be a low bid price at auction stage for projects that are later abandoned as they cannot be properly financed. This effect was observed under the NFFO process where only about 25% of projects were built despite apparently successful auctions.

Difficulties in accurate cost forecasting have been seen even under the existing administered process where offshore wind costs proved to be higher than first anticipated after banding was introduced to the RO. The flexibility under the RO banding review has ensured that more projects have been delivered that would have been the case if firm contracts had been agreed at the initial 1.5 ROC level.

#### *Established technologies*

A fundamental obstacle to auctions or tenders working well is the diversity of technologies and varying size of generator that would be included in the FIT system. This would range from large nuclear power stations to small, independent renewable projects. There would be a high risk of ending up with either a race to the bottom for technologies where there is competition, or uncompetitive outcomes in the case of single-bidder projects.

*Timing*

There is no point in the development process where an auction could be held without creating significant uncertainty and disruption. Early auctions would have to be based on preliminary cost information, or generators' expectations of cost developments based on earlier projects developed under different circumstances, thus risking the award of insufficient support levels and jeopardising delivery. Later auctions would result in significant uncertainty during the development process.

It is the ability to form a project development pipeline for offshore wind projects that will lead to synergies in project development, construction and operation and, ultimately, to cost efficiencies. The requirement to participate in an auction or tender will disrupt this process. Auctions and tenders will increase uncertainty that a project can be funded and that it will proceed. This will make it more difficult to attract third party investors.

*Administered approaches*

The advantage of the administered process was that it allowed an Early Review to be called and the support for offshore wind to be increased from 1.5 to 2 ROCs/MWh. DECC's own estimates show that without this intervention, around 1.3 GW of capacity would not have been economically viable.

The current administrative process has proven beneficial when price discovery is difficult for individual suppliers due to a developing supply chain. It has also been flexible enough not to jeopardise the development of projects which see a change in costs. Finally, it has allowed Government to aggregate commercially sensitive information from the industry and obtain a more complete picture of costs and risks than individual developers might otherwise have been able to provide.

Alternative approaches in Europe have not necessarily proved to be more successful in bringing projects forward. The German, administered process is time consuming, requires a detailed market survey and primary legislation. Auction approaches, such as that in Denmark, have also resulted in delay when the outcomes have been questioned, and subsequently required independent review before a winning bid could be approved.

*Risk of a single-bidder auction*

It is difficult to see how a single-bidder auction could be avoided for technologies such as offshore wind or nuclear where there are relatively few developers of large projects at a limited number of sites which have already been awarded on an exclusive basis.

*Technology specific approach*

Experience with the RO has shown a technology-specific administrative approach to work effectively. The first version of the Renewables Obligation

where all technologies received 1 ROC/MWh, was abandoned in favour of a technology-specific approach as the technology neutral version did not succeed in bringing forward a mix of technologies.

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The consultation document does not provide any detail on how a technology-neutral auction would work in practise, and how more expensive projects currently being planned would fare if such an option was implemented.

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

DONG Energy believes the following should be considered:

- The requirement for a new, credit worthy central agency to administer the FIT contracts and cashflows, in particular under the CFD model;
- The requirement for a central body to administer the capacity mechanism, if necessary; and
- The ongoing role of Ofgem e-Serve in the administration of the RO and the accreditation of new generation eligible for either the RO or a FIT.

These functions could be adopted by extending the role of an existing body or establishing a new agency. In any event, funding arrangements and scope of the agency must be agreed at the earliest opportunity, as must any credit requirements.

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?

Please refer to our answers to previous questions on the impact of the proposed measures on the wholesale electricity markets.

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

There is likely to be delay to projects whilst the package of measures is finalised and implemented. This is due to the level of uncertainty surrounding the detailed design of a FIT, and especially a FIT with CFD. The lack of clarity around how the strike prices will be determined and what reference prices would be used is of critical importance. Uncertainty around the institutional arrangements and management of cash flows is also key.

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 main focus of the transition arrangements must be to protect existing projects under the RO. This will maintain confidence in investments and encourage further renewables deployment.

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Developers must have visibility of the outcome of the ongoing Banding Review and also a clear understanding of the detail of the new FIT system. Without clarity there could be a delay in investment decisions, which will impact existing development projects and the Government's renewable energy targets.

36. We propose that accreditation under the RO would remain open until 31 March 2017. The Government's ambition is 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.

DONG Energy supports the option to allow generators to choose their preferred mechanism up to 2017. However, there is a considerable lack of detail with respect to the design of the FIT with CfD. If this detail cannot be fully finalised by 2013/14, early implementation will increase risk and uncertainty. In this event, it would be preferable to implement the new arrangements in 2017 rather than overly rushing to meet an earlier target.

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?

For those technologies that are not grandfathered, it may be preferable to move them into the new FIT mechanism. This would prevent the need for regular RO banding reviews.

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

DONG Energy supports the second option, Calculation B (Headroom) only from 2017.

