

DECC Electricity Market Reform

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10 March 2011

Dear Sir,

### **DECC ELECTRICITY MARKET REFORM CONSULTATION**

Peel Energy welcomes the opportunity to comment on the Government's proposals for Electricity Market Reform.

We have provided our initial thoughts based on the available information but stress that while the information presented generally supports future investment in renewables and nuclear, insufficient detail has been presented to understand the true implications for investments in existing renewable plant, new fossil fuel generating plant and Carbon Capture and Storage infrastructure that will be critical to ensuring security of supply. We believe a further round of consultation is required once further details of the policy have been clearly articulated.

We would welcome the opportunity to discuss our response with you and your colleagues in other departments in DECC, e.g. CCS and Tidal.

We have set out our main comments in this letter and attach detailed responses to the consultation questions.

#### **Stabilising the price of electricity**

While consumer prices are influenced largely by a volatile electricity price that is driven primarily by the price from gas generating plant, the economy and society (particularly those in fuel poverty) will be vulnerable to the international gas market and geo-political events.

Peel Energy supports the introduction of a low carbon support mechanism, such as a Feed-in Tariff with Contract for Difference (FIT with CfD), that breaks the link between the volatile (and rising) gas price and the returns for investors in the low carbon sector. Breaking the link between gas price and the cost of energy will not only benefit the economy and the consumer, it will also support the transition to low carbon electricity for heat and transport. However, such a mechanism will only have sufficient impact once it accounts for a significant majority of the supply. We therefore believe it should be applied across as many technologies as possible.

## **Transition to the low carbon economy**

In the longer term, the differential cost between electricity and fossil fuel prices may (based on DECC's forecast prices) mean that further regulation will be required to encourage the transition. Developers and investors will be looking for clear signals before factoring increased demand for low carbon electricity capacity into their investment decisions.

## **Integrated market between generator and end consumer**

The current market does not provide the necessary signals down the chain to change the behaviour of the end consumer. In a market dominated by intermittency measured within hours, the consumer signal and response needs to be within the same timescale to truly influence consumer behaviour.

Given that the UK will be dependent on gas and coal to bridge the gap between demand and intermittent low carbon supply for at least a few decades, it is imperative that the principle of polluter pays (in higher prices) is able to be passed on to the end consumer through more advanced market mechanisms including the use of real time pricing through the Smart Grid and Smart Meters.

Given the life of equipment and appliances (i.e. typically 10 to 40 years) such market mechanisms must also be implemented in line with this legislation to encourage and enable consumers to make the necessary investment decisions and avoid the impact of peak electricity prices.

## **Balanced portfolio of efficient low carbon generating assets to support the transition to 2050**

Peel Energy believes that while there is no clear view of the commercial dynamics of the low carbon energy market in 2050 (i.e. 80% reduction in emissions) a managed portfolio of generating assets is the best strategy to see us through the transition and provide the necessary flexibility to respond to technological and economic events in the industry and international markets.

While the proposals largely reflect support for all technologies, careful consideration needs to be given to the influences on incentivising or dis-incentivising particular technologies. An ill-conceived market will lead to inefficient use of generating plant whose cost will be passed on in the electricity price and the level of support required from new plant in order for it to reach financial close. It may also lead to the loss of skills and supply chain for established technologies while failing to provide sufficient incentives for emerging supply chains such as CCS and marine renewables.

## **Long term strategy and plan**

With investments in the generating plant and supply chain looking at a time horizon beyond 2030, we believe a longer term horizon is required in the analysis and policy framework. Many of the investments in generating plant will be made on the basis of 15 to 20 year time horizons which by 2015 will lead beyond the 2030 horizon currently being modelled. The investment case for very large capital projects such as clean coal, CCS and tidal range will be made on longer term horizons. The effect on investment cases for new generating stations supported by the RO (potentially up until 2037) cannot be assessed without this longer term view. If the policies are to be effective, they and the

influences they have on the market, need to support investment decisions through the 2020s and 2030s to lead us towards our 2050 targets.

A long term plan, developed in the context of the wider UK energy market, would provide the basis for successive government decisions while providing the long term certainty needed for investments in the electricity sector.

## **CCS**

We strongly believe that unless Carbon Capture and Storage is applied to the majority of fossil fuel uses the UK and the rest of the world will not achieve the rapid reduction in emissions required to meet 2050 targets. A long term investment plan in shared CCS infrastructure (akin to the investment programme in the National Electricity Grid) is required to reduce the unit cost of CCS and ensure the necessary market mechanisms, which take into account the likely commercial structure of the CCS market, are in place to guide design decisions and incentives in demonstration projects as well as the retrofit programme.

In the absence of a shared infrastructure programme for CCS, all investment decisions (and FIT negotiations) will be based on one-off project costs leading to a higher cost to the consumer (or Nation). There is the danger that without the economies of shared infrastructure future investment cases fail, particularly for retrofit on existing plant. We do not wish to see a repeat of the heat networks experience where neither the heat source nor heat network can justify the investment case without the other party's commitment to achieve the necessary economies of scale.

Peel Energy believes that there is insufficient consideration of CCS as applied to clean coal and gas in the consultation documents (see also paragraph on gas below). The combined complexity of justifying investments in the power plant (new or old) and the CCS infrastructure, as well as each of their operating strategies, needs careful consideration in the design of the support mechanism and market regulations.

## **Clean coal**

The current and previous Governments have continued to emphasise the need for clean coal with CCS as part of the UK's future energy mix. DECC's own figures (see below) demonstrate that coal has experienced a more stable price than gas and therefore support the arguments already outlined above. In addition, the UK's indigenous resources, offshore assets and skills will ensure security of supply through the transition to 2050, and if necessary beyond.

Peel Energy believes that there is insufficient consideration of clean coal in the consultation documents to fully assess how the combination of mechanisms will affect investment decisions.



Source: DECC Quarterly Energy Prices December 2010, Chart 3.2.2

With respect to the FIT with CfD, consideration needs to be given to the definition of a low carbon plant and under what circumstances the FIT would apply to a clean coal or gas plant fitted with CCS. The definition needs to cover the situation of a plant partially fitted with CCS, such as a demonstration unit.

Under a FIT with CfD, the gains or losses associated with fluctuating fuel prices and the effect of the carbon price floor mechanism needs to be taken into account to ensure there is sufficient incentive to develop new efficient low carbon coal plants to maintain security of supply beyond the Industrial Emissions Directive's 2023 regulations.

The FIT mechanism will also have to take account of CCS demonstration project funding mechanisms for both the demonstration window and beyond. Greater detail and certainty also needs to be provided on the proposed EPS and its future tightening to achieve 2030 and 2050 targets, as well as how it will apply to gas and existing coal plants. Consideration needs to be given to the grandfathering of the EPS to provide clarity on the need for future retrofit. It would make sense for the grandfathering to apply at the point of consent for the power station (tying in with current consenting legislation) to provide clarity on the sizing of CCS infrastructure in the development, consenting, procurement and funding processes.

Capacity payments for clean coal should be considered, particularly where the payment will help to support the building of the most efficient, flexible and economic plant, which in turn will support a more stringent EPS and lower cost of energy. The application of the EPS to such capacity (on coal and gas) needs to be clearly defined.

With regard to the Carbon Price Floor, new supercritical coal plants will fare better than existing stock with up to 25% saving on fuel consumption and corresponding carbon emissions. However, the proposed carbon levy adds greater uncertainty to the future economics of such plant (on top of the CCS risk). The timing of the escalation of the Levy on coal (and rebate for sequestered carbon) must be clearly set out in combination with the proposed feed in tariffs and capacity payments for new coal

power stations with CCS. (Please refer to our response to HM Treasury's Carbon Price Floor consultation for further comments on the proposed mechanism).

The additional uncertainty around the supply-demand imbalance makes it difficult to predict the ability to compete in the wholesale market and maintain sufficient load factors to justify the capital expenditure. Investment decisions for a new coal plant (that has a design life of over 40 years) will undoubtedly be affected and potentially deferred until greater certainty is achieved on the future economics of the electricity market and CCS. This delay in decisions on new clean coal plant, in combination with the closure of existing plants, presents a real risk for the UK's security of supply and affordability of electricity during the transition to a low carbon economy.

### **Impact on CCS demonstration programme**

This uncertainty will also affect investments in the CCS demonstration programme, as experienced during the first CCS demonstration competition. A robust long term policy that supports plants involved in CCS demonstration projects must be implemented to ensure a timely, comprehensive and affordable demonstration programme.

### **Gas is part of the answer, not the only answer to intermittency**

Peel Energy believes there is inappropriate emphasis in the consultation document on commercial scale gas generating plant bridging the gap between intermittent supply of renewable and fluctuating demand. It is also silent on previous CCS policy matters that included the requirement for new gas plants to be CCR compliant thereby implying retrofitting CCS at a later date. Locking the UK electricity market into unabated gas will not help us to achieve the 2030 and 2050 carbon reduction targets, provide security of supply, lead to affordability nor encourage transition from gas to electric heating.

Gas also plays an important role in the wider economy (i.e. not just domestic, commercial and industrial heating, but also plastics, fertilisers and other products derived from natural gas). We believe it is a valuable resource that should not be wasted to conveniently fill a gap in the deregulated electricity market. Decoupling the electricity market from gas would help to provide more stability across the wider economy and encourage more consumers to move across to electricity rather than continue to invest in gas, particularly for low grade heat. This argument also applies to oil uses such as transport while oil and gas prices are linked.

The efficiency of CCGT and open cycle gas turbines will be taken into account by investors when considering their potential role in fulfilling intermittent supply. It is not clear how this has been taken into account in the analysis. In the transition period, small gas units used for embedded generation with CHP (such as that installed at MediaCityUK) will provide an effective and efficient solution that is responsive to demand signals and reduce the load on the national and local electrical network. In the context of a volatile electricity market these on-site solutions may represent a better solution than centralised plant that are run sub-optimally and without the possibility of CHP. While they do not provide an option for CCS, the current proposals do not place the obligation of CCS on gas fired plant in the same timeframe.

## **Biomass and Energy from Waste**

As with other thermal plants, the definition of low carbon in the context of the FIT and the applicability of the EPS needs further clarification. This also needs to be considered in the context of the RHI for CHP plants. An index for fuel prices will also be required for a CfD mechanism to put these plants on a level playing field with other technologies.

## **Price versus value and security of supply**

Judged on price alone, gas would be the dominant fuel source for the foreseeable future. As the UK increases its reliance on imported gas, so more of the value in the UK energy sector will be flowing overseas. Conversely the development of new technologies such as CCS and tidal could see an increase in UK exports.

Onshore wind, with the help of the Carbon Price Floor, will provide price competition but will not provide sufficient capacity or overcome intermittency to achieve security of supply objectives.

On price alone, onshore wind will beat offshore wind and other intermittent marine renewable technologies. This may help to keep the price for the consumer down and encourage development of sites that might gain (or have gained) a planning consent but are uneconomic under the current level of support provided by the Renewables Obligation.

Competition on price alone will not however promote diversity and the level of investment in marine renewables, CCS and other technologies required to achieve the future growth (required for the transition to low carbon electricity), self-sufficiency and wider economic benefits from the industry.

We believe a strong domestic low carbon energy sector should build on the country's assets to increase the long term security and value for the UK citizen. We therefore believe that a simple mechanism providing different levels of support by technology, and potentially by project, is required.

These arguments also lead us to believe that auctions are not the appropriate mechanism to agree levels of support for each technology.

## **Off-take guarantees**

In the current market where a considerable proportion of the generating capacity has paid off its capital and intermittent renewables make up a small proportion of overall supply, the RO has had a positive effect on incentivising investment in renewables as it can be assumed that all the electricity able to be generated from renewable projects will be sold and dispatched to the grid with old plants (operating mostly on variable operating costs) able to earn sufficient revenues and margins to remain in operation.

Under a scenario in the mid-2020s (and beyond) when new nuclear power stations have been built and there is in excess of 30GW of wind capacity, the gap between their peak output and lowest daily demand (currently less than 20GW) means that wind farms may need to start competing with each other in order to avoid having to shut down.

Any investors in new plant will need to maintain a reasonable level of dispatch (and price) in order to meet capital payments thereby in the absence of off-take guarantees, any uncertainty in the ability to compete on price will seriously affect the investment decision on new generating plant. Plants operating under FIT with CfDs can afford for the average price to fall, while plants operating without support or under the RO will be seriously affected on both price and dispatch.

A clear trajectory for capacity by technology (or technology type) in a long term plan (just as the RO escalator) would help to inform investment decisions and reduce the political risks associated with a market in transition.

We look forward to commenting on further details of the proposed mechanisms.

In the meantime, please do not hesitate to contact me should you require any further information.

Yours faithfully

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## **Peel Energy Response to DECC Electricity Market Reform Consultation questions**

These responses should be read in combination with, and in the context of, additional points made within the covering letter.

### **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, broadly speaking. However, there is little recognition of the influence that future plant utilisation, i.e. its ability to compete and dispatch to the grid, has on investment decisions.

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

Yes, broadly speaking.

### **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)?*

Yes, when considered in isolation, although there are other details in the context of a market containing existing plant supported by the RO, or not supported at all, that have not been explored.

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

Yes, we believe this is the most appropriate option if a single mechanism is to be applied across all technologies, however an alternative to a single mechanism is to introduce different mechanisms for different technologies and scales of project.

The consultation document is lacking detail on the proposed mechanism to provide a thorough assessment of the options and unqualified support for the preferred policy. We have outlined our current concerns below.

#### **Low carbon obligation / No change**

The banded RO (with grandfathering and the buyout price but without indices) is a blunt instrument that is inflexible in the context of variable electricity prices; under a scenario where the wholesale electricity price rises to £100 (driven by gas prices and Carbon Price Floor) onshore wind projects that are receiving 1 ROC don't need any support whereas offshore wind projects that receive 1.5 or 2 ROC

still need considerable support. The reverse is true on a falling price. We therefore don't believe the current RO system will serve the future diverse energy mix.

#### **FIT premium versus CfD versus fixed**

We believe that a FIT with CfD with indices for electricity price that reflect the basis on which the electricity is sold would make for a fairer and more workable mechanism than the premium FIT. It also helps to stabilise the electricity price (see covering letter).

Market participants with a high proportion of FIT with CfD contracts can afford to drag down the average price by bidding lower (and thereby guarantee dispatch) while those supported by the RO would lose out. The possibility of having to shut down would deter further investment under the RO. It does however make the FIT with CfD more attractive for new investments.

A banded premium FIT would provide continuity from the RO mechanism and ensure wind projects are competing on a more comparable basis in a market where off-take is no longer guaranteed. A banded Fixed FIT would also provide greater incentives for smaller projects where the complexity, risk and administration cost of FITs with CfD may become too onerous.

An alternative to a single mechanism is to introduce different mechanisms for different technologies and scales of project.

#### **Banding versus negotiated levels of support**

A banded support mechanism such as the Renewable Obligation (RO) that applies to a technology installation ranging from single megawatts up to hundreds of megawatts leads to winners and losers. In the case of wind, tidal and wave, the natural resource has the biggest influence on output (often in a cubic relationship) whereas the installed capacity usually has the biggest influence on cost (in a largely linear relationship). The current RO disproportionately incentivises premium sites while leaving others undeveloped. The current banded FIT (sub 5MW) results in sub-optimal project decisions, usually downsizing a project to take advantage of a higher tariff within the lower capacity band.

The cost and complexity of a negotiated FIT might deter smaller schemes and lead to an administrative burden. Many smaller schemes are contracted under a Power Purchase Agreement (PPA) and therefore do not participate directly in the wholesale market. It may therefore be appropriate to extend the current banded FIT up to the threshold for local authority planning decisions with levels by technology based on installed capacity.

Currently PPAs typically discount electricity prices and ROC payments to take account of the balancing obligations of the supplier. This, as well as any off-take guarantees, needs to be taken into account in the design of any new support mechanism.

For one-off or few-of-a-kind projects, such as new thermal plant with CCS, tidal range and other marine renewable projects whose costs will not be clear until consents and licenses have been obtained and contracts tendered, a negotiated FIT contract may be more appropriate. A negotiated

approach also lends itself to these projects better than an auction (whose intention is to select the lowest bidder from a range of projects, rather than achieve the lowest cost on all projects).

In the absence of precedents and contract offers, a target or maximum price (if necessary adjusted as the technology or its supply chain matures) would need to be set at which the government is willing to consider supporting the technology otherwise there will be insufficient certainty to progress a project through the development and consenting process. This as part of the long term plan would help to define a comprehensive set of policies.

### **FITs for emerging technologies**

The risks and costs associated with emerging technologies such as CCS and tidal that are at the demonstration stage need to be taken into account with very clear signals on the level of support that will be provided. Other potential support mechanisms such as capital grants and low cost loans (potentially provided through the Green Investment Bank) may provide more appropriate means to promote these technologies rather than a 'mass market' mechanism such as the FIT. If the technologies are not supported within the EMR then these sectors may never attract investors in the UK.

### **Timing of contracting**

The timing of contracting (or 'accreditation') and market signals (such as banding reviews) is key to providing certainty for investment in the development of generating plant. For technologies with high development costs and long development cycles, such as CCS, it is critical that commitment is provided and reinforced by government through the development process, not just at the point of commissioning. Without such commitments, the market will revert to the lowest cost / lowest risk technologies that will typically not provide the wider socio-economic benefits, nor leave a legacy for future generations.

### **FIT CfD average wholesale electricity price**

The mechanisms for calculating the average electricity price against which the CfD contract is based and for the purpose of calculating the on-going CfD payments (if in fact one and the same) needs careful consideration. Factors that need to be taken into account include how the generator is likely to sell the electricity (e.g. through a PPA or on the market) and the extent to which the technology is affected by price volatility due to demand/supply imbalances (e.g. prices may rise during periods of low wind output due to the reduced supply and/or a greater proportion of supply coming from more expensive technologies, and fall during high wind output due to excess supply thereby reducing the ability of wind to achieve the true average market price).

The proportion of electricity traded on the wholesale market will also have to increase dramatically to provide a suitable basis for such calculations. Careful consideration should be given to any obligations within a contract to sell through the wholesale market to avoid deterring a wider group of investors or restrict terms within PPAs.

### **FIT CfD contract length**

The length of contracts for FITs with CfD should be defined to support the financing terms and capital depreciation of the various technologies. For technologies that have a life beyond their capital depreciation, such as CCS transport infrastructure, the government should consider how the assets can provide future value to the consumer.

### **Impact on RO post 2017**

Further detail on the treatment of the RO post 2017, including how the headroom and buyout price will be set, needs to be articulated to enable investment decisions to be made between now and the closure of the RO scheme.

### **Impact on Biomass and Energy from Waste**

As with other thermal plants, the definition of low carbon in the context of the FIT and the applicability of the EPS needs further clarification. This also needs to be considered in the context of the RHI for CHP plants. An index for fuel prices will also be required for a CfD mechanism to put these plants on a level playing field with other technologies.

### **Impact on low carbon thermal plant with CCS**

Peel Energy believes that there is insufficient consideration of CCS as applied to clean coal and gas in the consultation documents (see also paragraph on gas below). The combined complexity of justifying investments in the power plant (new or old) and the CCS infrastructure, as well as each of their operating strategies, needs careful consideration in the design of the support mechanism and market regulations.

The current and previous Governments have continued to emphasise the need for clean coal with CCS as part of the UK's future energy mix. In addition, the UK's indigenous resources, offshore assets and skills will ensure security of supply through the transition to 2050, and if necessary beyond. We believe that there is insufficient consideration of clean coal with CCS in the consultation documents to fully assess how the combination of mechanisms will affect investment decisions.

With respect to the FIT with CfD, consideration needs to be given to the definition of a low carbon plant and under what circumstances the FIT would apply to a clean coal or gas plant fitted with CCS. The definition needs to cover the situation of a plant partially fitted with CCS, such as a demonstration unit.

Under a FIT with CfD, the gains or losses associated with fluctuating fuel prices and the effect of the carbon price floor mechanism needs to be taken into account to ensure there is sufficient incentive to develop new efficient low carbon coal plants to maintain security of supply beyond the Industrial Emissions Directive's 2023 regulations.

The FIT mechanism will also have to take account of CCS demonstration project funding mechanisms for both the demonstration window and beyond. Greater detail and certainty also needs to be

provided on the proposed EPS and its future tightening to achieve 2030 and 2050 targets, as well as how it will apply to gas and existing coal plants. Consideration needs to be given to the grandfathering of the EPS to provide clarity on the need for future retrofit. It would make sense for the grandfathering to apply at the point of consent for the power station (tying in with current consenting legislation) to provide clarity on the sizing of CCS infrastructure in the development, consenting, procurement and funding processes.

The additional uncertainty around the supply-demand imbalance makes it difficult to predict the ability to compete in the wholesale market and maintain sufficient load factors to justify the capital expenditure. Investment decisions for a new coal plant (that has a design life of over 40 years) will undoubtedly be affected and potentially deferred until greater certainty is achieved on the future economics of the electricity market and CCS. This delay in decisions on new clean coal plant, in combination with the closure of existing plants, presents a real risk for the UK's security of supply and affordability of electricity during the transition to a low carbon economy.

#### **Impact on CCS demonstration programme**

This uncertainty will also affect investments in the CCS demonstration programme, as experienced during the first CCS demonstration competition. A robust long term policy that supports plants involved in CCS demonstration projects must be implemented to ensure a timely, comprehensive and affordable demonstration programme.

*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?*

With the introduction of the Carbon Price Floor, and a Feed-In Tariff, the electricity price and mix of generating assets will largely be in the hands of the government. It is therefore appropriate that the government takes on more risk. For technology supported by a FIT with CfD, an element of price risk stays with the generator/supplier, as more crucially does the risk of dispatch.

*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?*

See response to Question 4. Please also see relevant contextual argument in the covering letter.

*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?*

We have no comment to make at this stage.

*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 existing the investor base?*

See response to Question 4.

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?*

Given that most independent wind farms are contracted through PPAs to large suppliers, any reduction in the certainty to sell and dispatch the power will be passed on and reduce investment in this sector.

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?*

See response to Question 4.

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

The FIT options presented are all output based models which are suitable if a plant is able to dispatch. In the context of low carbon plant not being able to dispatch due to surplus capacity (introduced by excessive FIT contracting), a FIT for availability may be necessary to support the investment case.

A FIT for availability is in effect a capacity payment and has merit in this context.

## **Emissions Performance Standards**

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

The EPS as defined will have little effect on the decarbonisation of the electricity sector as it does not impact existing fossil fuel power stations or new gas fired power stations. If anything, it may reduce decarbonisation as it encourages the continued use of old coal fired power stations rather than replacing some of this capacity (enough to ensure security of supply and affordability) with new more efficient plant.

As acknowledged by DECC within the consultation document, it is envisaged that the EPS will function as a 'back-stop' mechanism, should the carbon price not rise sufficiently to drive further retrofit of CCS infrastructure.

Please also see relevant arguments in the covering letter.

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?*

We believe that in principle both EPS Option 1 and Option 2 could work provided the support mechanism for CCS and the low carbon generating plant is sufficiently robust to encourage investment in new generating plant. The scenario described for Option 1 does not take into account the operational risks associated with a CCS demonstration project and this option would deter investors if the detailed clauses of the EPS regulations failed to deal with the investment risks associated with demonstration projects, particularly where the risk is not within the control of the power station operator/investor. Both options would need to take into account exceptional events, for example, any extended down-time associated with a CO<sub>2</sub> storage site, and apply appropriate derogations in the interests of the ability to finance new infrastructure and to provide security of supply. Derogations would therefore need to go beyond any proposed approach to allocate 'annual' levels of CO<sub>2</sub> emissions to plant to provide flexibility.

Derogations will also need to be agreed in the context of the demonstration programme commitments (both for the 'New Entrant Reserve 300' and three UK Demonstration Projects) and the balance between performance, cost and risk that the UK and EU governments and investors are willing to bear. It would be unwise to assume uninterrupted operation of demonstration CCS infrastructure, as downtime in one element of the chain, results in downtime across the whole chain (albeit this can be reduced to a small extent by a process known as 'line-packing'), which under a scenario without derogations, would result in the generating plant ceasing operation. Consideration also needs to be given to the time periods and performance during the commissioning of new generating plant and the full CCS technology chain.

*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?*

There is little or no value of an EPS while CCS is still in its demonstration phase as new coal plants are already required to install demonstration scale CCS (at 300MW net), which will be funded through the demonstration programme and is likely to be governed by stringent performance conditions.

Grandfathering the EPS for new and existing plant (gas or coal) will remove an important regulatory lever to enforce the deployment of CCS once proven. However CCS will either be self-funding through an appropriate price of carbon (controlled by the Government through the Carbon Price Floor) or will require support through the FIT (or other mechanisms, such as capacity payments) to make it viable. Without a long term commitment from Government to a package of measures, no new fossil fuel plant will be built.

Consideration should therefore be given to an EPS trajectory (which reduces over time) that is clearly articulated in the context of the carbon price floor, the CCS demonstration programme and a FIT with CfD indexed to the electricity, fuel and carbon prices.

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?*

See response to Question 14.

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

See response to Question 14.

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

Emissions from standalone biomass plants should be exempt from the EPS. Emissions from co-fired biomass should be exempt when unabated but count as emissions captured and stored (i.e. negative emissions) when on a plant with CCS.

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

Yes, this is necessary to ensure security of supply and should be considered in the context of other derogations. All new mechanisms will need to take this situation into account.

### **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, broadly speaking. Please see concerns about capacity through the rest of the response.

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

Yes, broadly speaking. Capacity payments for clean coal should be considered, particularly where the payment will help to support the building of the most efficient, flexible and economic plant, which in turn will support a more stringent EPS and lower cost of energy. The application of the EPS to such capacity (on coal and gas) needs to be clearly defined. The efficiency of CCGT and open cycle gas turbines will be taken into account by investors when considering their potential role in fulfilling intermittent supply. It is not clear how this has been taken into account in the analysis.

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

We have no comment at this stage.

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

- a central body holding the responsibility;

Yes.

- volume based, not price based; and

Yes, but with a clear definition of the role of the capacity and when it can come into operation.

- a targeted mechanism, rather than market-wide.

Yes.

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?

If the level of incentives for each of these options is set at the right level, capacity payments should complement rather than impact a package of measures. They will no doubt each have a different economic model and the level of incentives will need to be defined and managed in conjunction with the FIT.

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

- Last-resort dispatch; or

- Economic dispatch.

Last resort dispatch would appear to be a simpler model that avoids distorting the market however it may not be feasible/attractive on technical or economic grounds.

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

Yes if required to support wider electricity infrastructure investments and security of supply.

### **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?

Further details are required on each of these mechanisms to provide a considered response. As noted in Question 4 an expansion of the existing banded fixed FIT may be appropriate for smaller schemes.

### **Market complexity/volatility**

The new dynamics of the Carbon price floor, RO buy-out price, FIT average market price, FIT strike prices and the increased proportion of supply from different intermittent technologies will increase the complexity of the market and thereby the complexity of investment decisions. It will also deter new players from entering the wholesale market. We believe this increased volatility in the market will encourage more businesses that are sensitive to the electricity price and guaranteed supply to look for their own solutions, off market, to secure their supply and price. We believe a further detailed assessment of such scenarios is undertaken as part of the detailed design of mechanisms.

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

See response to Question 26.

*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?*

We have no comment at this stage.

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

See response to Questions 4, 14, 26 and the covering letter.

### **Implementation Issues**

*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?*

See response to Question 4. Further details are required on each of these mechanisms and how they will be implemented to provide a considered response.

Please also see relevant contextual argument in the covering letter.

*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?*

### **Price versus value and security of supply**

Judged on price alone, gas would be the dominant fuel source for the foreseeable future. As the UK increases its reliance on imported gas, so more of the value in the UK energy sector will be flowing overseas. Conversely the development of new technologies such as CCS and tidal could see an increase in UK exports.

Onshore wind, with the help of the Carbon Price Floor, will provide price competition but will not provide sufficient capacity or overcome intermittency to achieve security of supply objectives.

On price alone, onshore wind will beat offshore wind and other intermittent marine renewable technologies. This may help to keep the price for the consumer down and encourage development of sites that might gain (or have gained) a planning consent but are uneconomic under the current level of support provided by the Renewables Obligation.

Competition on price alone will not however promote diversity and the level of investment in marine renewables, CCS and other technologies required to achieve the future growth (required for the transition to low carbon electricity), self-sufficiency and wider economic benefits from the industry.

We believe a strong domestic low carbon energy sector should build on the country's assets to increase the long term security and value for the UK citizen. We therefore believe that a simple mechanism providing different levels of support by technology, and potentially by project, is required.

These arguments and the nature of the development process and structure/functioning of the market lead us to believe that auctions are not the appropriate mechanism to agree levels of support for each technology.

See also the response to Question 4 for relevant points to the detailed questions.

- *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?*

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

### **Balanced portfolio of efficient low carbon generating assets to support the transition to 2050**

Peel Energy believes that while there is no clear view of the commercial dynamics of the low carbon energy market in 2050 (i.e. 80% reduction in emissions) a managed portfolio of generating assets is the best strategy to see us through the transition and provide the necessary flexibility to respond to technological and economic events in the industry and international markets.

While the proposals largely reflect support for all technologies, careful consideration needs to be given to the influences on incentivising or dis-incentivising particular technologies. An ill-conceived market will lead to inefficient use of generating plant whose cost will be passed on in the electricity price and the level of support required from new plant in order for it to reach financial close. It may also lead to the loss of skills and supply chain for established technologies while failing to provide sufficient incentives for emerging supply chains such as CCS and marine renewables.

### **Off-take guarantees**

In the current market where a considerable proportion of the generating capacity has paid off its capital and intermittent renewables make up a small proportion of overall supply, the RO has had a positive effect on incentivising investment in renewables as it can be assumed that all the electricity able to be generated from renewable projects will be sold and dispatched to the grid with old plants (operating mostly on variable operating costs) able to earn sufficient revenues and margins to remain in operation.

Under a scenario in the mid-2020s (and beyond) when new nuclear power stations have been built and there is in excess of 30GW of wind capacity, the gap between their peak output and lowest daily demand (currently less than 20GW) means that wind farms may need to start competing with each other in order to avoid having to shut down.

Any investors in new plant will need to maintain a reasonable level of dispatch (and price) in order to meet capital payments thereby in the absence of off-take guarantees, any uncertainty in the ability to compete on price will seriously affect the investment decision on new generating plant. Plants operating under FIT with CfDs can afford for the average price to fall, while plants operating without support or under the RO will be seriously affected on both price and dispatch.

A clear trajectory for capacity by technology (or technology type) in a long term plan (just as the RO escalator) would help to inform investment decisions and reduce the political risks associated with a market in transition.

### **Long term strategy and plan**

With investments in the generating plant and supply chain looking at a time horizon beyond 2030, we believe a longer term horizon is required in the analysis and policy framework. Many of the investments in generating plant will be made on the basis of 15 to 20 year time horizons which by

2015 will lead beyond the 2030 horizon currently being modelled. The investment case for very large capital projects such as clean coal, CCS and tidal range will be made on longer term horizons. The effect on investment cases for new generating stations supported by the RO (potentially up until 2037) cannot be assessed without this longer term view. If the policies are to be effective, they and the influences they have on the market, need to support investment decisions through the 2020s and 2030s to lead us towards our 2050 targets.

A long term plan, developed in the context of the wider UK energy market, would provide the basis for successive government decisions while providing the long term certainty needed for investments in the electricity sector.

Strong ownership of the long term strategy and plan and a competent body to negotiate and administer FIT contracts will be necessary in order to maintain confidence in the sector and the policy framework.

#### **Integrated market between generator and end consumer**

The current market does not provide the necessary signals down the chain to change the behaviour of the end consumer. In a market dominated by intermittency measured within hours, the consumer signal and response needs to be within the same timescale to truly influence consumer behaviour.

Given that the UK will be dependent on gas and coal to bridge the gap between demand and intermittent low carbon supply for at least a few decades, it is imperative that the principle of polluter pays (in higher prices) is able to be passed on to the end consumer through more advanced market mechanisms including the use of real time pricing through the Smart Grid and Smart Meters.

Given the life of equipment and appliances (i.e. typically 10 to 40 years) such market mechanisms must also be implemented in line with this legislation to encourage and enable consumers to make the necessary investment decisions and avoid the impact of peak electricity prices.

*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?*

We have no comment at this stage.

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

Yes, broadly speaking.

*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?*

Further details of the proposed mechanisms and timing of their implementation are required; see also response to Question 4.

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 lowcarbon 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.*

If the new mechanisms are designed appropriately and will deliver the intended benefits to the investor and the consumer then there should be no reason to keep the RO open any longer than necessary. Further details of the proposed mechanism and timing of their implementation are required; see also response to Question 4.

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?*

The principle of grandfathering should be able to be eliminated under a contracted mechanism with appropriate indices, assuming the timing of contracting aligns with financial close for a project.

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

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

Further details of the proposed mechanisms and timing of their implementation are required; see also response to Question 4.

