**EMR SCOTTISHPOWER RESPONSE - EXECUTIVE SUMMARY**

1. The Government's consultation rightly stresses the benefits that the UK has achieved through the development of open energy markets. These have led to competitive prices, low costs and an excellent performance in cutting carbon. We agree with the general position that markets are the most efficient mechanism to reward investment and allocate resources and we applaud the progress the UK has made in taking forward a market led approach and the results it has achieved.

2. The requirements of policy in the UK have now changed – especially with the requirement to seek decarbonisation of the UK electricity sector at an accelerated rate. The policy choices needed to achieve this will inevitably involve an increase in the extent of Government involvement in energy markets. This has the potential to create political risks which may in turn impact investment incentives. It will be of the utmost importance, if investor confidence is to be maintained, that these interventions are well designed and that changes should not be made which adversely affect plants for which investment decisions have already been made.

3. It will be crucial to manage the changes so as to avoid any risk of a hiatus in investment. Such a risk is not an abstract issue; in the US, uncertainties about future renewables incentives have led to major cutbacks, including by Iberdrola which has cut its wind investment plans there from 1.04GW in 2010 to 350MW in 2012. We are particularly concerned that proposals for auctions could deter investors.

4. In broad terms, we agree with the Government's diagnosis of the problem. Given a policy requirement for rapid decarbonisation of the domestic power sector, including a large scale deployment of renewables, well designed interventions, which preserve the market led approach to the greatest extent possible, are likely to be necessary to create a framework in which these changes can happen. We also agree that the rapid deployment of low carbon generation, much of which will be intermittent, is likely to interfere with the energy-only market's ability to achieve security of supply naturally, therefore requiring new measures to guarantee supplies. Security of supply is in any event facing a huge challenge with the closure of many older coal plants over the next 10-15 years. This risk would be exacerbated if policy interventions force this plant to close earlier.

5. It is essential in making these changes to keep focussed on maximising the role of the market. History tells us that state control of industrial activity, embarked on with the best intentions, often produces the worst results. It will be important that interventions are undertaken with care, recognising the risks of unintended consequences. These could arise in both the wholesale and retail markets as a result of high levels of plant earning essentially regulated returns. In taking forward the interventions needed for decarbonisation, a strong market role will help deliver optimum solutions with dynamic as well as static efficiency.

<u>Carbon price floor</u>

6. In our response to the consultation on the carbon price floor, we argued that that mechanism, applied in the UK alone, would be likely to be ineffective in bringing forward additional low carbon generation; would be detrimental to supply security; and would be highly expensive. We also expressed concerns that much of the benefit would go to existing, rather than new, low-carbon plant. A better result for consumers would be achieved by a mechanism that facilitated new investment in the various low carbon technologies in a manner suited to their needs. For this reason, we think that the Government is right to identify varieties of feed in tariff as the principal strategic option to deliver the desired result.

FIT Options

7. Looking at the three broad models set out by the Government, we would observe that:

- A *Premium FIT* is the least radical change from the existing Renewables Obligation (RO) which has worked well and is delivering for renewables. But we do recognise that setting a fixed level of premium for technologies whose costs are not materially affected by fossil fuels (including wind and nuclear) requires making an estimate of future power (and therefore fossil fuel and carbon) prices. This is difficult to do with any precision, especially over the long term; and the closer a technology's costs are to market levels – and therefore the larger proportion of total income comes from power sales – the more this uncertainty matters. This issue is manageable for wind under the RO, but a fixed premium appears to be very challenging for nuclear.

- A *Fixed FIT* has been used in many jurisdictions and Iberdrola has invested in renewables under this mechanism. It insulates the generator fully from market issues. This is helpful to the generator in that it reduces risks, but only by isolating the generator from the signals needed to secure the economic despatch of plant in the market. At the levels of intermittent and baseload low carbon generation that are being considered, we think that a fixed FIT regime could cause significant system operation issues. We think that, to the extent practicable, all but the smallest plant in the UK market should be incentivised to play its part in balancing the system. The fact that much of the plant on the system would be receiving fixed regulated returns could also adversely affect the dynamics of the retail market.

- A *FIT with Contract for Difference (FIT with CFD)* is the Government's proposal to get the best of both worlds, by combining exposure of the generator to the short term market with protection of the generator against longer term movements in average power prices. It is intended to eliminate the market price risk from low-carbon investment decisions while keeping the plant in the market. The contractual approach could allow a number of other issues arising from the decarbonisation agenda to be addressed and is robust against subsequent policy change. However, FIT with CFD is a highly complex approach involving a very high level of Government intervention in the market and looking a bit like a Single Buyer. Much work is still needed to establish how FIT with CFD would work and whether there are unintended consequences to avoid (including in relation to liquidity, the retail market and Government accounts). It would also be necessary to establish how this approach would fit with the EU's vision and rules for electricity markets. We could not endorse the FIT with CFD approach with any confidence until this work has been completed.

8. In the light of these considerations, we have looked at a fourth variant – a Premium FIT with cap and collar (or, for short, a "Variable PFIT"). It is possible that this approach might achieve substantially the same economic results as the FIT with CFD, but with less complexity and Government intervention, and with a greater role for the market. In broad terms, a Variable PFIT would pay a fixed premium in normal conditions, but if the year-ahead wholesale price rose above a determined threshold, the premium would taper, eventually to zero (leaving the plant supported by the wholesale price alone). Conversely, if the wholesale price were to fall below a lower threshold, the premium would be increased up to a maximum value. This achieves similar risk mitigation to the CFD approach, both for the consumer and the generator, while maximising the role of market mechanisms. A similar idea emerged a few years ago in the context of wholesale price adjustment mechanisms for the RO, but it was incompatible with RO banding and grandfathering, which led to the initial emergence of the CFD concept. These incompatibilities do not arise in a FIT context.

9. We think that a Variable PFIT approach might have some advantages over the FIT with CFD. In particular, it might avoid:

- the need for a large part of the electricity in the market to be traded under state direction, including any associated balance sheet issues for Government;
- the need to set a fixed price for low carbon investments; such decisions can, within a reasonable band, be left to the market;
- complexities around the contracts themselves, settlement and counterparties and interaction with EU directives;
- changes to the nature of the retail market caused by much of the energy portfolio being essentially on regulated prices; and
- some of the discomfort which a number of existing generators (especially smaller ones) have with the CFD proposal.

10. The Variable PFIT approach does however have its own issues, including the need to design the premium taper and uplift mechanisms, and the need to establish effective grandfathering. Care is also needed to set the width of the band between the cap and collar to get the right balance of static and dynamic efficiency. At this stage, we believe that this approach may well work better than the FIT with CFD option, but further work is needed on the detail of both options before this conclusion can be drawn with certainty.

11. For both the FIT with CFD and Variable PFIT options, it would be sensible to integrate the development of the mechanism with decisions on capacity payments. Making low carbon firm plant eligible for the capacity payment would be logical and would comprise a useful (if relatively small) component of the support and risk reduction package needed by firm low carbon plant, whether the FIT with CFD or Variable PFIT applies.

12. Among the issues which should be considered, especially in relation to the FIT with CFD proposal, are:

(a) *Wind divergence (also known as "cannibalisation").* Because wind will be a large proportion of total capacity, there will tend to be excess supply (and therefore prices will tend to be low) when the wind is blowing. The "wind-weighted" power price will therefore diverge increasingly from the "time weighted" average power price. One estimate puts this effect at 10% by 2025. Increasing baseload nuclear generation, promoted by EMR, will tend to exacerbate this effect. Both the Variable PFIT and the FIT with CFD models provide options to mitigate the impact, as discussed below.

(b) *Capacity element.* It may be possible to mitigate wind divergence by having a capacity element in the support mechanism. This would mean that wind and nuclear plants make marginal run/switch off decisions based on the wholesale price rather than the wholesale price plus the subsidy, thus reducing the extent to which prices are driven negative in times of excess supply and the extent of the divergence. A capacity element could also mitigate some volume risks for capital intensive low carbon generation, although it could be more complex to administer and reduce incentives for plant to work well. There are a number of models, discussed in our response, for achieving a capacity element, of which the most promising may be concentrating the necessary support into a reduced load factor.

(c) *CFD index period*. It is likely that nuclear plant would settle against an annual index as this provides the right market price signal for timing of non-forced outages and to manage seasonal availability. For renewables, the choice is more complex. An annual index maximises the market incentives but because of divergence, a CFD supported wind farm would receive a figure significantly below the strike price. This would require a divergence related uplift to be incorporated in the CFD (or indeed Variable PFIT) in order that it paid out the intended total price. That uplift might need to be calculated in terms of the total amount of wind and nuclear plant in the system. An alternative might be to have a much shorter index period for renewables, reducing the risk and any incentives, and moving the system closer to a fixed FIT.

(d) *Liquidity and hedging impacts (basis risk).* At the point where the index price under a CFD is fixed, this transfers market risk from the consumer to the generator. This creates an unhedged price risk for the generator which may affect the risk limits that are generally imposed on traders. By applying the index (whatever its period) to generation in weekly or monthly tranches, this may help avoid problems with liquidity in forward markets and may also help reduce the risk of manipulation of the price index. Hedging issues will be problematic in any event for intermittent generation due to unknown volumes until close to dispatch, leading to more trading on the spot market, for both the CFD and variable PFIT options.

*(e) Price setting methodology.* We do not think that auctions are viable, at least prior to 2020. There are well established difficulties with integrating auctions with the project development cycle (prior to planning permission, the project is too uncertain to be a viable bid in an auction, but if the auction takes place after planning permission, it is unclear how the development phase is to be funded). These were experienced in the UK with the Non-Fossil Fuels Obligation and international experience has also been negative, with tenders for wind abandoned in countries such as France and Ireland. Furthermore, with nuclear and offshore wind, the key sites are already in the hands of developers so it is unclear how price tension can exist. Nevertheless we would be happy to work with the Government to address long term alternatives to administered pricing, which we think will initially have to operate in a manner akin to banding reviews. It will be important that the positions of all significant developers of a technology, and not just those whose plans are most advanced, are taken into account in setting the FIT terms. For long lead time projects, it may be appropriate to consider parameterising the tariff to take account of such issues as construction industry indices, steel prices etc. during the construction period. It will be important that any first of a kind allowance for nuclear or round 3 offshore wind applies to the first reactor or windfarm built by each consortium.

*(f) Duration.* Consideration should be given as to the optimum contract or PFIT duration and any profiling of payments. The duration should not exceed the economic life of the asset, but could be at a higher price or premium and shorter (possibly with the price/premium front loaded) if it was intended to accelerate the payback to make projects easier in cash flow terms. We currently think that the optimum duration may be around 20 years for wind and perhaps 25-35 years for nuclear, with commensurate impacts on the price/premium level.

*(g) Institutional design for CFDs.* It is necessary to consider who the counterparty might be to a CFD and how the costs are charged to suppliers. It would be appropriate as a matter of principle for the FIT with CFD system to be voluntary (especially if the CFD is two-way); if a generator wishes to take its chance in the market rather than have the Government's price, it must be entitled to do so. In general, these issues look less complex for a variable PFIT.

*(h) Other funding sources.* It may be sensible for the Government to review, having regard to the overall level of electricity prices and competitiveness issues, whether some support for low carbon generation might also come from other funding streams such as tax credits or $CO_2$ auction receipts, as envisaged by the EU ETS directive.

13. Rates of return required for technologies like offshore wind are high principally because of the very significant up front construction risk. We do not think that financial investors are likely to be attracted to that risk, though they might be interested in buying operating projects. We do not think that the use of the FIT with CFD approach (as opposed to Premium FIT) would significantly reduce the rate of return required by renewables, though the absence of the need to debate long term price forecasts could be helpful in the successor to banding reviews. In the case of nuclear, we think that a fixed Premium FIT approach faces severe challenges because the market price risk is not resolved and is too large a part of the total income. However a Variable PFIT approach would seem to be viable.

14. We think that it would be a mistake to cut returns to onshore wind through the EMR process. Although onshore wind is getting more expensive due to current and forecast above-inflation increases in turbine costs, transmission charges and land/planning costs (rents, rates, community benefit etc.), it remains the least expensive large scale option for addressing the UK's renewables targets. There is a broad range of project returns onshore and we think the system should encourage as many of the projects as possible to proceed. The attached note prepared for us by Oxera indicates that cutting the returns for new onshore projects could significantly reduce delivery. If the resulting deficit in the renewables target was made up by increased construction of offshore wind, the additional costs to consumers would substantially exceed the savings in onshore support payments.

<u>EPS Proposal</u>

15. We are yet to be convinced that there is a need for an emissions performance standard. It does not seem likely to promote the construction of any low carbon generation and, unless carefully designed, could be detrimental to security of supply. As carbon prices rise to meet global decarbonisation targets, the amount of running that would be economic for high carbon stations is bound to be curtailed. An EPS does not help Europe reduce its total $CO_2$ emissions, as any reductions in the UK are likely to be balanced elsewhere. In contrast, the EU ETS is effective as a way to move Europe toward decarbonisation targets,

16. Nevertheless, the design of EPS set out in the consultation document seems unlikely to have significant negative impacts on security of supply, providing that the grandfathering arrangements are clear and set out in primary legislation. We think great caution is needed in making any exception from grandfathering around plant upgrades if investment is not to be deterred. We favour converting the rate to an annual total, based on baseload operation, as this reflects the likely mode of operation of the current comparator - a new CCGT. Of the EPS cap options proposed by DECC, we favour the simple figure of 600 g $CO_2$/kWh.

<u>Capacity Mechanism</u>

17. As discussed above, we believe that the rapid expansion of renewables and nuclear in response to Government policy will tend to make load factors for conventional plant lower and less predictable. This will interfere with the natural ability of an energy-only market to balance supply and demand and put existing plants, which currently guarantee security of supply, at risk of premature closure. In addition to the large scale closures that must happen between now and 2015 under the LCPD, some 20 GW of coal, old gas and nuclear plant may close in the following 10 years. This is a huge loss of firm capacity which will require strong action to avoid the risk of significant shortfalls, especially during periods when there is

little wind. In consequence, despite our normal preference for energy-only markets, it is clear that a well designed capacity mechanism will be needed in GB in order to ensure that there is sufficient backup, especially given the low level of interconnection capacity.

18. It is important to be clear where the security of supply problem is likely to arise. The consultation paper suggests that a key concern is the very short term ramp rate, caused by sudden or unexpected changes in wind velocity. However the attached analysis by Nera suggests that this should be manageable with typical thermal plant, especially when supported by demand side actions. The more difficult problem is likely to be the need for large amounts of power during sustained periods, such as calm intervals in winter where low temperatures and low wind generation can coincide for up to a fortnight – well beyond the time horizon of currently envisaged demand side options. This will need substantial generation assets – it is unlikely that a few new open cycle gas turbines will be a sufficient and effective solution in such cases.

19. The Nera analysis demonstrates that the Government's current proposal for a targeted capacity mechanism will not work in this context, unless the "target" is so broad as to encompass substantially all firm plant. This is because, if the mechanism alleviates shortages, it will depress the peaks in the wholesale price. This will reduce the remuneration of plant that is not within the targeted sector causing it to close or not be built. Inevitably, this ends up with the Government, and not private industry, being the dominant force commissioning electricity generating plant.

20. A broader mechanism, applying a suitably determined capacity payment to all firm plant, does not have this disadvantage. Plant investment decisions remain with the industry and Government has a much smaller role. Because the additional capacity built or maintained in operation will reduce price spikes, we judge that most of the gross cost of the scheme will be returned to customers, the balance being the cost of providing the additional supply security. Our detailed response and the paper by Nera explore these issues in much more detail.

21. We think that the capacity mechanism should apply to firm plant supported by a low carbon FIT. This is logical, since the plant will be contributing to security of supply, and such an approach would comprise a useful (if relatively small) component of the support and risk reduction package needed by firm low carbon generation, whether the FIT with CFD or Variable PFIT applies. Nera's paper has analysed a slightly different case, where FIT supported plant did not qualify for capacity payments and the level of FIT support for firm low carbon generation was correspondingly greater; however this does not affect the fundamental conclusion about the need for a broad scheme. Clearly, it would make sense to reach conclusions on the FIT terms and any applicable capacity payments in a joined-up manner to achieve the desired total support package.

22. There is however a separate impact from the proposed capacity mechanism on renewables supported by the RO, in that it will put a downward pressure on wholesale prices and therefore returns. Investors will expect a suitable solution to this to be found. One option would be to increase the headroom level to compensate RO-supported renewables; another might be for such renewables (or their output) to be exempted from whatever levy funds capacity payments. We suspect that paying a capacity credit to RO supported renewables is the least favoured solution as it could defeat the point of the mechanism, which is to support back-ups to wind.

23. Nera's paper raises the prospect of a CFD based approach to capacity payments as a way to address the double payment issue, if it exists at all. They conclude that it could have adverse liquidity impacts. We agree and would further add that such an approach would constitute a substantial further rolling back of the market and increase of state

intervention for a problem (double payments) that is at worst only transitional. Any excess profits created by a capacity system would be eliminated by further market entry with the by-product of more assurance over supply security. This part of Nera's paper is also based on the option of FITs with CFDs set out in the Consultation Paper and not the Variable PFIT alternative which we have proposed in this response.

Transition

24. We think that the Government is correct to identify transition as a matter which needs to be got right. If these arrangements do not command investor confidence, especially for renewables, the market could be seriously damaged as has happened in the US. The proposed approach to transition seems to us to be a good starting point. However, we would observe that:

(a) The effectiveness of the grandfathering arrangements for RO-based renewables (taking account of any negative impacts of EMR on the wholesale price) will be crucial in maintaining investor confidence in that sector;

(b) It will be important that key areas of policy including the initial CFD or Variable PFIT terms are determined as soon as possible, so that nuclear developers can consider investment decisions and renewables developers who might not be ready for 2017 can proceed with their investments.

(c) There should be an option for developers currently developing under the RO to switch to the FIT with CFD (or Variable PFIT) system. This is important as otherwise Government will feel a need to set the FIT to be less generous than the RO (to avoid developers waiting for the new system), only to find investment slowing thereafter.

(d) There needs to be a system to award a suitable FIT to wind farms intending to accredit under the RO in 2017, but which are delayed past the cut-off date because of construction problems.

(e) We think a hybrid approach to the RO – guaranteed headroom up until 2027 and then an equivalent fixed ROC or premium FIT thereafter – seems the best way to deal with the need to avoid disturbing Power Purchase Agreements in the next few years while avoiding unintended effects as 2037 approaches.

ScottishPower
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