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10 March 2011

Dear EMR Team

RE: 2OC Response to Electricity Market Reform document

Thank you for the opportunity to respond to the Electricity Market Reform consultation ("EMR").

2OC is a renewable energy company at the vanguard of developing the world's most efficient power stations through its joint venture business Blue-NG Ltd. The technology 2OC has developed can be deployed at sites throughout the UK and Blue-NG presently has the opportunity to develop 8 sites in the UK capable of delivering of the order of 1.3 GWh/annum of decentralized renewable baseload electricity.

Our first site at Beckton already has all the necessary consents to commence construction. It could be live well before the advent of the reforms proposed in the Electricity Market Reform ("EMR") consultation, but this will only happen, if the technology is grandfathered under the current Renewables Obligation ("RO") and the 0.5 ROC uplift remains available through the RO for power led bioliquid CHP plants meeting the GQCHP criteria. It is now essential that clear and unambiguous support is provided through the RO for such first of a kind renewable technology as that proposed by Blue-NG Ltd.

Highly efficient fuel based renewable baseload technologies are an essential part of the renewables mix if the UK is to avoid over reliance on a narrow pool of established intermittent technologies. A point well made in the Electricity Market Reform consultation.

I note, from the recently published Low Carbon Plan, that the Government believes a low Carbon future, is a future that involves the doubling of electricity demand by 2050 at a time when 25% of the UKs existing generating capacity will be retired. A plan that indicates that 30% of all electricity generated in the future will need to come from renewable sources if decarbonizing power generation is to be achieved. Getting the structure of the market-based incentives right now will reduce the cost to consumers of renewables deployment in the long term.

2OC is broadly supportive of many of the initiatives outlined in the consultation, particularly the Carbon price support mechanism, capacity payments and emissions performance standard. However, in respect of the introduction of FITs to replace the Renewable



Obligation, it has a number of concerns relating to fuelled renewable generators described in detail later in this response.

2OC is not an established business with an existing portfolio of projects, and neither are any of its competitors. In this situation, the high fixed overhead costs relating to operating a business in this sector inevitably requires a number of potential sites to be developed to attract necessary investment from debt and equity providers. The hiatus caused by changing Government policy now means that some of these projects will necessarily operate under the regime proposed in the EMR consultation. Therefore, it is essential that the final detail be developed quickly if this hiatus is not to continue, causing planned investments to be delayed or aborted.

The enclosed attachment sets out our detailed response to the questions in the consultation, focusing on those areas of most importance to 2OC. The questions are answered in reverse order, since many of the main concerns affecting us right now appear only at the end of the consultation.

In the meantime, I would be delighted to have some of my team work with you to establish a generic structure of a FiT with a contract for difference that would work for both fuelled renewables and renewables without fuel costs; one that ensures that the cost of capital of all technologies and risk to renewable generators can be reduced whilst delivering price stability to consumers.

If you wish to discuss any aspect of this response please do not hesitate to contact me on the number above.

[REDACTED]

Enc.

2OC response to questions in the Electricity Market Reform Consultation

Taking the issues from the consultation in reverse order:

38. From 2017 2OC believes there is no need to calculate a supplier obligation level under the RO since the scheme will no longer be open to new entrants. Consequently, fixing the value of the ROC price and indexing it seems a sensible solution. However, whilst this may appear sensible in principle it is only an acceptable way forward if the ROC price chosen reflects the reward generators receive from both the ROC face value and the recycle element. Setting the price at a level lower than this represents a reduction in revenues legitimately expected by investors in projects eligible to receive support.

Setting the ROC price in this manner reduces the administrative costs of the RO; a direct saving to consumers. The RO would then broadly mimic a premium FiT as set out in the consultation.

37. Whilst the original logic for not grandfathering certain technologies can be understood, for it to work it requires absolute trust from investors that the review will reward increasing costs and will be measured in any response if costs do genuinely reduce.

However, without grandfathering implementation of any new projects has at best been very limited. This shows that investors only see the review process as adding risk for which they are not adequately rewarded. Investors typically require long-term certainty of future revenues from support mechanisms to enable firms to increase their gearing to lower costs to consumers.

The only impact of not grandfathering these technologies is to effectively extinguish any expectation of their delivery.

Since the global credit crisis banks are being more prudent than ever and grandfathering all technologies at 2017 as an appropriate band is essential, if an investment hiatus is to be avoided. Our own advisors are clearly telling us that lack of grandfathering at an appropriate level is the number one barrier to investment. From this it follows that no further banding reviews are necessary and there would be no need to move these projects out of the "vintage" RO.

36. 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.

35. Delays in, or abandonment of, planned investments can be avoided now for high efficiency bioliquid CHP plants if the Government

- Retained the 0.5 ROC uplift for GQCHP power led CHP plants (i.e. plants that are greater than 30% electrically efficient) and energy crops.
- Grandfathered support for all sustainable bioliquids (irrespective of whether they are from wastes, residues, advanced conversion technologies or crops)

This is essential to create the necessary level of income support for these technologies that can help the Government to deliver decentralised, urban, low carbon power and heat.

Sustainable bioliquid CHP plants are cleaner and smaller and require fewer baseload fuel deliveries than their solid biomass counterparts. DECC and its consultants NNFCC, have confirmed that deployment of high efficiency bioliquid CHP plants can make an important contribution to reducing GHG savings in the areas mentioned above. Yet, at the moment the structure of the RO and the support offered continues to be uncertain to enable these benefits to be secured for UK consumers.

The introduction of mandatory sustainability criteria is welcomed by 2OC and this ensures no barriers, on grounds of sustainability, exist that prevent the Government treating bioliquids the same as solid biomass in respect of grandfathering.

The changes described above can be done now as part of the banding review and do not need to wait for the White Paper on EMR.

34. 2OC broadly agrees with the assessment of the risks presented that could delay planned investments. However, the analysis presupposes that investments take place on a plant-by-plant basis. This is not entirely correct since the large fixed development overhead and costs of administering the RO essentially

require new entrants to seek to finance a portfolio of sites that once will not all be commissioned under the RO only. Therefore, it is imperative that the Government commits quickly to the detail of its FIT solution beyond 2017 now. It is only then can investors see the investment proposition in the round and price the risks accordingly; and if acceptable this will avoid any delays in investments that are planned for the near future.

33. No comment

32. Upwards of 15% of the costs of delivering a renewable generator at circa 20MWe relate to an uncertain and uncapped cost of connection to the local DNO network. The current RO framework and the FITs proposed require subsidy to enable these connection costs and risks to be funded by investors. These costs arise largely from regulated monopolies under a connection cost recovery principle that seeks to recover as much of the connection cost from the developer as possible. In effect, this pushes up the total cost and risk of the project and consequently, in the absence of an increase in income via the RO or FIT, increases the projects cost of capital by requiring more equity.

From 20C's experience the major driver in choosing to locate a project in one place over another is more to do with finding suitable sites with the correct physical characteristics, than the price of connection. Therefore, the Government should consider reforming the manner in which connection charges are levied on developers, as the current arrangements increase developer's costs of capital, which requires a greater level of support through the RO or FIT.

Given that connection costs are not the lion's share of the cost of investment, it ought to be possible to construct a mechanism where the network monopolies lower cost of capital could be used to fund more of these connection costs. The net effect should be a reduction in developer's costs that should permit higher project gearing, lowering the overall cost of capital for the project: hence a lower cost of support. Albeit there will be some relatively minor redistribution effects to consumers located in a network where more renewable generators connect than in neighbouring DNO networks.

31. The theory goes that auctions allocate scarce resources to those with the highest willingness to pay. In effect they are a good mechanism to reveal efficient market prices. That said it is well known that auction design plays a significant role in shaping the price level that is revealed. The literature is littered with many examples of auction structure, all designed, usually, to maximize revenue to the seller. These include – first price auctions, second price auctions, descending clock, English auctions, sealed bid etc, etc.

It is well known that auctions dominated by a single participant reveal less efficient prices than if the auction comprises participation of a homogenous group.

In the absence of a clear auction proposal it is difficult to conclude whether what is being proposed is better or worse than an administrative approach to setting price for a feed in tariff.

What is clear is that the impact arising from the point in the process when the auction takes place differs markedly. Too early in the development cycle and the price revealed is likely to be too optimistic; with planning uncertainty playing a large part in cost escalation, along with design and development costs in a first of a kind technology also being an important factor. All successful bids will inevitably include a premium to cover costs of unsuccessful development costs. Whereas, in the RO or a guaranteed FIT developers know that they bear the development risk but that if the project receives all its consents, then it will receive the published FIT. In an auction or tender developers have no certainty even after a project is fully consented that it will be able to win the auction and go ahead.

Development and planning costs are a significant sum. If the intent of these reforms is to ultimately lower the cost of capital for developers, and hence costs for consumers, careful regard has to be shown for the creation of new risks and how investors may price these into their required hurdle rates and interest charged by funders. No evidence is presented in the consultation as to what increase in hurdle rates auctions pose for investors.

Furthermore, if all technologies compete in a single auction, then the outcome will not ensure a diverse technology mix, since those deployed will follow in ascending order with least marginal cost technologies being deployed first. New technology, unless immediately revolutionary on cost, will not be commercialized until all lower cost opportunities of similar existing technologies are deployed. This will slow innovation in the UK, undoing one of the guiding principles of introducing banding into the RO in the first place. The UK will then be firmly set on course to be a technology follower, not a leader and green jobs in the UK will fail to materialize. Furthermore it is unlikely that all bidders will be at the same stage in their development cycle when the auctions are held and consequently bids will reflect different degrees of optimism.

The UK needs to be aspirational in its outlook and this requires some commitment from its citizens to take some risks in developing its green economy. An over pre-occupation with efficiency does not generate the

step change in revolution needed to be a leader in this sector.

Even if the auction product is defined differently, a single auction will not deliver a diverse technology mix. There is a marked difference between fuel less wind turbines and bioliquid CHP. Yes, they are both renewable but their inherent characteristics lend themselves to different pricing structures. A one size fits all, rarely fits anyone well. Bioliquid CHP is baseload at worst with some upward flex. Wind turbines generate when it is windy. Bioliquid CHP is probably more expensive than an onshore wind turbine but their different generating characteristics mean that reliability of delivery is not a feature that a simple auction will allow to be revealed. Maybe the solution is to define the product the Government wants more clearly i.e. renewable baseload power. If this is the case, then wind farms would have to aggregate together to create a bid comprising a number of wind farms that exhibit adequate diversity to ensure there is always some output. This markedly increases the bid price for wind, closer to that of bioliquid CHP. However, the upfront development costs of a number of wind farms would now be huge: is this risk one an investor is willing to make?

At the present time competition across the renewables sector is inadequate to ensure an efficient price outcome.

In conclusion, it is very hard to see how an auction process can be made to work over a diverse range of technologies that operate in different ways and at different stages of development that gives developers sufficient certainty of outcome for them to want to engage in the auction in the first place.

30. The main implementation risks to the proposed package is lack of adequate definition and the speed with which this is required if a hiatus in investment is to be ended. Any delay in publishing the detail of what is proposed will postpone investments and introduce a concentrated demand spike for investment funds shortly after. This will push up debt costs and erode the savings predicted in the consultation. The ball is in the Governments court firmly and squarely. However, rushing and publishing poorly developed proposals will cause investors to hold back until they believe the prospect of meddling has diminished sufficiently. The recent announcement concerning the review of FIT for solar PV is an example of a poorly implemented policy. Investors, in today's investment climate, post the global downturn, need certainty – not a never ending set of reforms. It is important that FIT design and access rights to those FITs use the experience of market players to help design an appropriate FIT and access arrangements.
29. No comment
28. No comment
27. No Comment
26. The Government's preferred package seems sensible for the reasons the Government sets out in the consultation, **if you have no fuel costs.**

The main issue with the package of reforms is the detail of where the CfD strike price is made and what happens if the market price is above the strike price. The notion of paying back revenues under the CfD FIT option should cause all generators with substantial fuel costs concern.

If your fuel costs are correlated with electricity costs, and electricity costs are above the CfD strike price, the proposed FIT regime may incentivise you to switch off. This is because the residual income (after income above the strike price is paid back) only equals the product of the CfD strike price and volume which may be insufficient to cover the short run variable costs of the generator. This is despite the fact that the market is signalling that your output is valued and you ought to be generating (in the absence of the CfD). Therefore, in these circumstances the CfD would reduce security of supply and push up costs to consumers as the supply side unexpectedly contracts. This is an undesirable feature of the proposals and contradicts the objective of introducing capacity payments to increase security of supply. This perverse behaviour is only created by the introduction of the FIT proposals as written. For a modified FIT with CfD generic design that addresses this problem and preserves the correct market incentives as to when to generate please see our response to question 9.

This scenario does not appear to have been considered in the consultation. It only affects fuelled renewables whose input fuel costs are a high proportion of the operating costs of the station. These are likely to be those technologies in the RO that require the greatest level of support and presently do not benefit from grandfathering. The Government recognise the requirement to increase subsidy for these technologies when it is appropriate as this is the reason stated in the EMR consultation as to why grandfathering of these technologies was not implemented for them previously. However, the Government did listen to the investment community and has subsequently chosen to grandfather solid biomass renewable generators.

25. No Comment
24. No Comment
23. No Comment
22. No Comment
21. No Comment
20. No Comment
19. No Comment
18. No Comment
17. No Comment
16. No Comment
15. No Comment
14. No Comment
13. No Comment
12. No Comment
11. This all depends on how the FiT is defined and there is insufficient detail to warrant a preference of one route or the other. Until the FiT design is established the scenario analysis performed makes certain presumptions over behaviour and overlays that with a scenario of low demand, very windy days and incredibly low fuel costs for fuelled renewable generators. The scenario chosen appears to be too quirky and uncommon to be germane to the design of the FiT. It is acknowledged that wind is only 30% efficient, the Government's expects demand to double and fuel costs are only really like to be high. It is important that the proposed FiT design is able to deliver the intended outcomes under this scenario as well as the unlikely scenario described earlier.
10. Liquidity in the wholesale markets must be important to FiTs since it is the difference between the price in this market and the CfD strike price that dictates the amount of subsidy paid to renewable generators. Liquidity in the wholesale markets will ensure an efficient price is revealed. However, liquidity in the market is a poor reflection of individual technology costs since these will be very different across technologies and so technology specific strike prices will need to be established. Please see our response to question 9 that describes a generic FiT with CfD structure that can be used for wind where fuel costs are zero and fuelled generators who fuel costs are high.
9. As an independent generator using bioliquid fuel, the aspiration is that FiTs should provide investors with greater certainty over future revenues. Or as investors see it, positive returns. For a renewable generator that has no fuel costs, or stable predictable fuel costs, the design of a FiT is a simple straightforward matter. For fuelled renewable generators, whose fuel costs are volatile and on occasion very high relative to the power price, the design of the FiT regime is crucial. First of all a FiT needs to be set at a level that enables certainty over future positive cash flows for investors. If set too low or includes a requirement to pay back revenues earned above the strike price without any consideration of the fuel costs incurred the FiT will plainly not deliver the certainty of positive cash flows investors require for the generators cost of capital to be reduced.

For these types of generator a different form of FiT and CfD may be required to that proposed, whereby calculation of the strike price as the difference between a fuel price index and power price index. If the measured margin defined by the two indices is on a day is greater than a predefined amount, then the generator pays the surplus to the Government under the CfD. If the margin is less than the predetermined amount then the generator receives a top-up amount from the Government. If the margin is negative, then no payment to the generator should accrue and the generator, if it chooses to generate, takes the risk of income not being adequate to cover variable operating costs. Under this structure of a fit the generator is

incentivised to make sensible fuel price purchases at a price better than the market index when it can in order to make additional income. If it doesn't, it bears the risk of squeezed margins. That way the generator interacts with the market efficiently and the correct incentives to generate at the correct times are preserved.

8. Of the different models of FiTs proposed in the consultation only the premium FiT is likely to attract any significant investor interest for fuelled renewable generators. As indicated in our answer to question 9 you will see that a volatile and high fuel price does not fit well into the CfD as proposed. Having said that it could be made to work if it is amended as we have suggested here which will lower the cost of capital, preserve the efficiency of the market signals and contribute handsomely to security of supply.

In the absence of the amendments we describe the second best alternative is the P-FiT as this allows a margin to be extracted as power and fuel costs increase if set at the correct level. It does not provide adequate income when fuel prices are high and power prices are low and so will not reduce the cost of capital as much as the formulation we describe in question 9; hence it really is a second best formulation. It is however better for fuelled generators than having a CfD of the type proposed in the consultation where total revenues are capped as the product of the strike price and volume, exposing the generator fully to the full cost movements on the input side without any upside benefit from high power prices.

7. No. Please see our answer to question 9. The Government's assessment is only true for generators without significant fuel price exposure
6. The market should incentivise efficient behaviour i.e. if the market price indicates that a plant should be generating because it can at least cover its short run variable costs, then the proposed FiT regime should not prevent that from happening. The reforms should not incentivise wasteful or perverse behaviour such as generating when no demand exists. We have set out in our answer to question 9 some potential consequences of the proposed FiT with CfD that need to be addressed properly in the design of any FiT for use by fuelled renewable generators. Fundamentally, if the low Carbon aspirations are to be achieved the policy should ensure that all low Carbon sources of generation are amongst the first to be dispatched and last to be dismissed of all types of generator, otherwise the objectives of the policy will not be met.
5. Transferring risks from the generator to the Government will ensure the generator is able to secure as low a cost of capital as possible, provided the Government is able to take those risks and does not seek to pass them back to the generator or investors at some later date. The proposal to make the FiTs contractually binding for a long term and removing power price risk is a welcome development as the arrangements will be contractual and less likely to be subject to shifts in public policy. However, the structure of the FiT model with CfD and the means by which the support mechanism is to be accessed are likely to have an upward pressure on the cost of capital for fuelled renewable generators over the current RO mechanism for the reasons set out in our answer to question 9 above.
4. The FiT with CfD could be made to work if its structure is amended for fuelled generators as we have proposed in our answer to question 9 above.
3. The pro's and con's with each of the potential alternatives is well made but is only of relevance to those generators where fuel price is not a significant portion of their operating costs. For fuelled generators where this is not the case all of the proposals essentially expose the generator to either very low power prices or cap the income a generator may receive. In effect the proposals only work on the output side in isolation of wider consideration of volatile input costs. In effect the proposals assume that fuel costs are zero and this is only true for solar and wind. For an investor to reduce their hurdle rate a FiT needs to be designed to provide stable margins and not just stable power income.
2. No comment
1. No comment

