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Ofgem's response to BERR consultation on the UK Renewable Energy Strategy

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Target audience: This document is addressed to BERR, but may be of interest to renewable energy generators, environmental bodies and agencies, energy suppliers, energy market participants, customers and other interested parties.

Overview:

In this document, we set out our response to the Government's Renewable Energy Strategy consultation on measures to deliver 15% renewable energy by 2020. We agree with the main thrust of the strategy – in particular, we support the importance of further integrating heat, energy efficiency, consumer behaviour and demand management into the strategy.

The target for renewable energy is very challenging and the costs to customers of delivering the strategy will be significant. With rising energy bills and fuel poverty, Government must aim to improve the cost-effectiveness of the main subsidy mechanism. Building on ideas set out in the consultation, the existing Renewable Obligation can be substantially improved to provide better value for consumers while reducing risk for renewable developers. One way to do this would be to link the level of financial support to the wholesale electricity price so that the cost of support falls if prices rise and vice versa. This will reduce the cost to customers but provide predictable returns to renewable generators reducing their risk.

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Context

Tackling the effects of climate change is one of the most significant global challenges we currently face. The energy sector is responsible for around 44% of greenhouse gas emissions in the UK, and therefore has a considerable role to play in meeting this challenge. The development of a low carbon energy sector is therefore a priority for Government at both a National and European level. The UK Government has put in place a number of measures to encourage the development and further deployment of renewable energy generation technologies. However, in recognition of proposed EU targets, the Government has published a consultation on a Renewable Energy Strategy to make the step change required to meet these targets. Ofgem has two separate roles which are relevant to responding to this consultation. Firstly, we are the independent regulator of the gas and electricity sector, with a primary duty to protect the interests of present and future customers. We are also responsible for administration of a number of support schemes including the Renewables Obligation.

Associated Documents

- Ofgem's response to BERR consultation on reform of the Renewables Obligation (ref 222/07)
- Reform of the Renewables Obligation 2006: Ofgem's response (ref 11/07)

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Summary

Ofgem welcomes the opportunity to respond to the Government's consultation on the UK Renewable Energy Strategy (RES). Ofgem is the executive body of the Gas and Electricity Markets Authority. In addition to our Statutory Duties (set out in Appendix 1) we carry out an administrative function for a number of energy-related Government environmental support schemes.

The renewables challenge

The Government's commitment to meet 15% of energy consumption from renewables by 2020 is a key part of the move to a low carbon energy sector. This is a step change from current levels and, as the RES consultation makes clear, the costs to consumers will be substantial. BERR estimates that it could cost in the range £5bn to £6bn per annum in 2020, with increases of 10-13% for a typical domestic electricity bill and 18-37% for a typical domestic gas bill. This comes at a time when business and domestic consumers' bills have already increased considerably, so it is all the more important to ensure that the policy interventions to achieve the target are efficient.

In Ofgem's view, this is best achieved through an approach which promotes competition between different renewable technologies and is consistent with other policies such as energy efficiency. Renewable heat has so far been neglected in policy measures and the RES consultation provides some good ideas to address this. We must also look to a wider range of associated solutions, such as greater demand side management. On both heat and electricity, support for micro-scale schemes should be practical and reflect thinking through the customer perspective. And for larger scale electricity generation, we see merit in giving more predictability on prices to developers, removing what is currently an effective link between their revenues (and returns) and gas prices.

Our suggestions in response to the consultation seek to build on the Government's proposed strategy and make it more effective, but also avoid the cost to customers being more than necessary to achieve the target. There will still be a substantial cost to customers and the Government needs to do more to find ways to mitigate the impact of this on fuel poverty.

Support schemes for electricity

BERR has consulted twice in the last 18 months on reforming the Renewables Obligation (RO). We have consistently suggested ways to deliver a more effective and better value support mechanism. We estimated that the RO has so far cost between £65-140/tCO2 saved - this is much more expensive that other means of carbon abatement and the Government's own estimate of the value of carbon reduction (£26/tCO2). This additional expense has benefited those renewable developers that managed to get their projects through planning, connected to the grid and operational – or the suppliers that have bought their power under long-term contracts. The additional cost has been and will be met by consumers.

We recognise that the RO has supported increases in deployment of renewable electricity, but it has not delivered to the extent of the Government's targets. Despite having some good features in theory, the RO has proven not to be robust to planning constraints or other supply side barriers, or responsive to progress with the EU ETS and increases in fossil fuel prices which make renewables more competitive. Experience suggests that, in its current form, the RO is not a particularly reliable way to deliver a given target.

Significant increases in energy bills and the step change in the target level of renewables both make it all the more important to learn the lessons from this experience. The RO needs to be reformed to deliver better value for money for customers whilst delivering the challenging new renewable targets. The consultation envisages around 120 TWh of renewable electricity, which under the current RO would cost well over £4bn per year for electricity alone. In 2006/07, production of 14.6 TWh under the RO cost each domestic consumer about £10 per year. Unless the mechanism becomes more cost effective, increases in costs to customers will exceed the estimated £32 to £53 per domestic customer set out in the consultation.

We note the Government's "strongly minded" position is to retain the RO as its primary support mechanism. We have therefore concentrated in this response on proposals to improve the operation of the RO. One way to do this would be to index the level of financial support under the RO to the wholesale electricity price – so that as the wholesale price increases, the additional financial support to renewables falls (and vice versa), leaving the total price they receive unchanged. This should reduce the cost to customers of the subsidy scheme but improve its effectiveness in supporting new renewables.

We also set out in this document other ways to improve the functioning of the RO. For example, if the RO target levels are to be increased now to incorporate the 2020 target levels, the complexity of the head room mechanism should be dropped. This would give developers more clarity about the framework and provide some protection against excessive costs to customers, through sharing the impact of further rises in wholesale prices or reductions in technology costs more equitably between customers and producers.

Support schemes for heat

We support the introduction of a financial incentive for renewable heat, not least to reflect the value of carbon abatement. In terms of the mechanism, we see merit in seeking to rationalise the many different policy interventions, or at a minimum to achieve more consistency (for example between renewable heat and micro-generation electricity as each MWh of either has the same value towards the renewables target). As can be seen from current experience with biogas, there is a real risk that investment decisions are distorted to seek out the most generous subsidies, rather than the most efficient use of each renewable resource. It is also important to avoid undue complexity so, for example, renewable gas should be rewarded at the point of injection to the gas grid.

We agree that renewable heat measures may be best targeted at customers currently off the gas grid (ie who use carbon intensive heating fuels such as oil or coal). This has the dual benefit of both displacing more carbon and in targeting

measures at customers who are more likely to be fuel poor. However, we also note the benefits of extending the gas grid where cost-effective, and believe both policies in coordination could provide benefits to off-gas communities.

A new support scheme will require an administrator. Through our experience of administering similar schemes, we offer advice on aspects that need to be taken into account when designing any support scheme. These include consideration of whether the powers the administrator will require; the mechanism for funding administration costs; and the potential up-front costs and lead times, particularly for the development of IT systems.

Other issues

Balancing

The expected increase in renewable electricity generation will have a significant impact upon the balancing system that is used to maintain real-time security of supply in the electricity network. The scale of these impacts cannot be predicted accurately, and neither can all the solutions be anticipated now. It is therefore better to ensure we have appropriate governance arrangements to develop solutions through the industry, rather than imposing solutions now. Ofgem's Code Governance Review will ensure that there are robust arrangements. We recognise that there will also be a need to address new areas, such as greater focus on demand side management.

Grid access

We have been jointly involved with BERR in undertaking the Transmission Access Review. This addresses short term operational issues and allocation of existing capacity as well as facilitating enduring reform to the access arrangements. Following the conclusions of this review, it is now for the industry, with the oversight of Ofgem, to ensure the relevant reforms are taken forward. If industry does not meet this challenge, we would support the Government delivering change through legislation.

1. Response to questions

Overview

1.1. In this section, we respond to each of the questions raised by BERR within the Renewable Energy Strategy (RES) consultation document. We have responded to those questions that we consider relevant to our remit as economic regulator of the gas and electricity markets as well as in relation to our role as administrator of the Renewables Obligation (RO), the Carbon Emissions Reduction Target (CERT) and the Fossil Fuel Levy. Where we have not incorporated a response to a question, it can be assumed that we either do not consider that the area falls within our remit or that we have no relevant information to provide. The consultation on the RES addresses renewable sources of energy in the electricity, heat and transport sectors. Our remit includes electricity, and also heat to a certain degree. We have no remit in respect of transport and only comment on proposals for transport to the extent that they impact on the electricity and heat sectors.

Renewables and the Energy and Climate Challenge (Chapter 1)

Q1: How might we design policies to meet the 2020 renewable energy target that give enough certainty to business but allow flexibility to change the level of ambition for a sector or the level of financial incentive as new information emerges?
Q2: To what extent should we be open to the idea of meeting some of our renewable energy target through deployment in other countries?

1.2. While the principles in policy design may be similar in this area to other aspects of Government policy, there are a number of key points that we would emphasise in light of the current position and recent history. These are:

- Reflecting uncertainty and learning: the costs of alternative technologies will change over time, in ways that are difficult to predict. It is widely recognised that Government should avoid seeking to pick winners in this environment. Instead, we consider Government's role to be to design a framework which encourages the market to choose the best way to meet the policy target. An important aspect of this is that competition is a very effective way to encourage learning over time.

- Coherence: it is important to send clear and consistent messages to the market across the incentive mechanisms to ensure the overall renewable energy target is met in the most efficient way. It is important to avoid the main determinant of success for potential producers of renewable energy being their ability to seek out the most generous subsidies, but instead to provide a framework that encourages the most efficient mix of technologies to meet the target.

- Robustness to constraints: one of the difficulties with the RO has been its vulnerability to supply-side constraints in reducing value for money to

consumers. While it is clearly crucial to address the constraints that are now evident, including planning and grid access where reforms are underway, it is also important to design policy that is robust to less than perfect conditions.

- Efficiency and effectiveness: in accordance with our statutory duties, we are very keen to see that the target is met in a way which does not impose higher burdens on consumers than necessary. This is most acute for vulnerable customers, but all customers have a strong interest in avoiding further increases in bills beyond what is required, which will inevitably mean some increases as the consultation makes clear.

1.3. To the extent that the most efficient means of meeting the renewables target is through development in other Member States or third countries, we would support this, provided the projects are genuine and verifiable, and that their inclusion towards the target does not reduce environmental benefits overall.

Saving energy (Chapter 2)

Q3: In the light of the EU renewable energy target, where should we focus further action on energy efficiency and what, if any, additional policies or measures would deliver the most cost-effective savings?

1.4. We welcome the Government's decision to focus upon energy efficiency as the starting point for energy policy. We agree this will help to reduce carbon emissions and reduce the need for additional generation, thereby reducing the overall costs faced by consumers.

1.5. As identified in the RES this rationale also extends to the renewables target in that where overall consumption of energy is lower, the absolute target for energy sourced from renewable generation will also be effectively reduced if only by 15% of the amount. We note in passing that this rather undervalues energy efficiency - saving 1 MWh of consumption is likely to be better for the environment than increasing renewable production by 1 MWh, so it is unfortunate that it is only valued at 15% of the value in this scheme, although of course there are other incentives and this feature of the renewables target is now unlikely to change.

1.6. Despite the Government's increased focus upon the achievement of further gains through energy efficiency, the RES itself does not include any proposals for measures that could be implemented to facilitate additional energy saving by either domestic or non-domestic consumers. Although there are a range of policies currently in place, or scheduled to be implemented shortly, which have as their focus the achievement of further energy efficiency, we think that given the scale of the targets we are facing, more could be done to reduce consumption of energy within the UK. In particular, it will be important to develop measures addressed at consumer behaviour as well as "supplier-push" initiatives. In this respect it is disappointing that the RES reinforces the message that demand for energy will continue to increase by 1.5% per year.

1.7. At the beginning of this year the Commission published its first assessment of National Energy Efficiency Action Plans (NEEAPs) which were required to be implemented by all Member States under the Energy End-Use Efficiency and Energy Services Directive. The NEEAPs are put in place by Member States to provide details of the initiatives that they intend to implement and the actions that they will take to facilitate further energy saving. The assessment highlighted the differential approaches adopted by member states in seeking to facilitate further energy efficiency and we consider that the UK Government could draw upon the experiences of best practise demonstrated by some Member States in seeking to meet their targets. We welcome the commitment of the Government to undertake a consultation regarding a strategy for energy savings shortly and would be keen to contribute further as part of that process.

Centralised energy (Chapter 3)

Q5: What more could the Government or other parties do to enable the planning system to facilitate renewable deployment?

1.8. We consider the issues associated with planning remain the single biggest barrier to renewable deployment in the UK. Whilst the planning bill in England and Wales has the potential to improve the situation, it needs to work alongside a consistent approach in Scotland, where a good deal of onshore renewable will be located, in order for the full benefit of these planning reforms to be achieved.

Q8: Taking into account decisions already taken on the offshore transmission regime and the measures set out in the Transmission Access Review, what more could the Government or other parties do to reduce the constraints on renewable development arising from grid issues?

Offshore transmission

1.9. We have been working closely with BERR since 2005 to develop the offshore electricity transmission regime. Following consultation with stakeholders, the Government has determined that offshore electricity transmission should be a price regulated activity and that licences for this activity should be issued via a competitive tender which Ofgem will be appointed to run. We are currently in an implementation phase for the regime and, prior to Go-Active in April 2009, will be consulting jointly with BERR on the industry code and licence modifications required to support the regime as well as the details of the draft tender regulations, which will set out the framework for running competitive tenders. We therefore do not consider there to be any further regulatory barriers to the development of offshore wind generation.

Role of Government in access arrangements

1.10. We have been jointly involved with BERR in undertaking the Transmission Access Review (the TAR). Through the TAR work a range of measures have been identified which are designed to expedite the connection of new generation, both

renewable and conventional. This work is intended to address short term operational issues and allocation of existing capacity as well as facilitating the initiation of enduring reform to the access arrangements and reviewing the investment incentives on the transmission licensees. Whilst enduring reform to the transmission arrangements is not expected to be implemented until April 2010, the other elements of the TAR package will be implemented considerably more quickly.

1.11. We therefore consider that the Government has made a useful contribution to identifying the challenges and potential solutions to grid access issues. It is now for the industry, with the oversight of Ofgem to ensure the relevant reforms are taken forward.

Planning

1.12. The key barriers to getting new renewable generation to market through grid infrastructure are investment, which Ofgem has a long track record of successfully incentivising and which we continue to develop; industry arrangements for grid access, which the TAR has sought to address; and planning issues, which are under the remit of the Government and devolved administrations. As we set out under our answer to **question 5** above, we currently consider that the major obstacle to the development of infrastructure to be planning issues.

Investment

1.13. During the Transmission Access Review, we considered the need for investment on the transmission networks in addition to those triggered by firm financial commitments from generators. It was concluded that to help address the challenges of the renewable targets on the transmission networks, the transmission companies should be incentivised to take on some risks of stranding transmission assets in return for higher reward for more timely provision of transmission capacity where it is needed.

1.14. We are now working with the transmission companies to develop new incentive arrangements for strategic investment in transmission networks to deliver timely capacity required by the achievement of the 2020 targets. These incentives will allow transmission companies to invest faster in capacity that they believe to be required, although not yet fully backed by firm, financial commitments from generators. If generators do take up the additional capacity once constructed, the transmission companies will be rewarded with higher returns on such investment than the standard price control terms. However, if the capacity is not utilised, the transmission companies' shareholders will take some of the risk of stranding of such new investment. We will be consulting on the proposals from the transmission companies shortly with a view to implementing the new incentive mechanism from April 2009. In addition to new incentive mechanisms for the incumbent transmission licensees, we are also considering whether there would potentially be benefit in some significant new projects being opened up to competition.

Equitable grid access

1.15. The TAR arrangements identified measures to speed-up the connection of both renewable and conventional generation. We are very firmly of the view that in principle grid access should be available to all generation types on a non-discriminatory basis. From a system security point of view, it is essential that sufficient reserve generation should be available, in particular where there is a high penetration of intermittent generation, such as wind. We expand on the system security issues raised by intermittent generation further in our answer to **question 12**.

Current issues: constraint between Scotland and England

1.16. A significant proportion of the renewable generation needed to meet the 2020 target is likely to be located in Scotland and the majority of this will need to be transmitted to areas of higher demand in England. The RES consultation foresees up to 14 GW of onshore wind generation, with the majority locating in Scotland (in addition to conventional generation and any nuclear generation that may deploy in Scotland). Total demand in Scotland is approximately 6GW, and this is not expected to rise greatly by 2020. Therefore Scotland, which already is a net exporter of electricity, is likely to export a far greater quantity of electricity by 2020.

1.17. At present the Scotland-England interconnectors have a combined capacity of 2.2 GW and this is set to rise 2.5 GW. While this increase in capacity is welcome, it is unlikely to be anywhere near the scale required to accommodate the expected volume of renewable generation in Scotland. Constraints are regularly experienced on this section of the network under current arrangements and it is likely that as the proportion of renewable generation in Scotland increases, this effect will become further evident. To ensure that there is sufficient capacity to allow the transmission of renewable generation into England further interconnection is required, particularly if significant constraint costs are to be avoided. There are currently no firm plans for a third interconnector to be constructed between Scotland and England, but we are aware that preliminary studies are being undertaken by the transmission companies and others to look at possible options for providing additional capacity.

1.18. In addition further upgrades are planned within Scotland under the Transmission Investment for Renewable Generation (TIRG) works[1]. While these ultimately will not improve interconnection between Scotland and England, they will improve capacity within the Scottish boundary.

1 These include the proposed upgrade to the overhead electricity transmission line between Beauly to Denny, Sloy, B5 Boundary and South-west Scotland

Current issues: network reinforcements in England

1.19. The RES consultation suggests that the scale of reinforcement needed onshore, over and above current investment plans, may be relatively modest with the majority of new investment required being to bring offshore generation to the most suitable onshore connection point. We consider that this underplays the significant new investment required to reinforce networks to accommodate increases in both onshore and offshore renewables. While we recognise that planned plant closures will free-up some capacity, these closures are unlikely to be sufficient to offset the additional capacity that will be needed to accommodate new renewables as well as the attendant back-up generation that will be required. Significant reinforcement of the onshore network will be needed to accommodate the changing location of electricity supply onto the grid. For example, it is likely that a significant volume of offshore transmission will be located around The Wash, with investment needed to reinforce this relatively weak part of the network to ensure that the electricity can be transmitted to final consumers. Additionally, in the context of the overall energy strategy, additional nuclear generation will have a significant influence, absorbing some of the released capacity, creating a requirement for further network reinforcement, and influencing when works to upgrade networks will be undertaken.

Current issues: speculative applications

1.20. As identified in the TAR, the short-term problem of speculative applications being made by new generators as a way to hold a place in the queue, also needs resolving via the industry codes process.

Q10: Do you agree with our analysis on the importance of retaining the Renewables Obligation as our prime support mechanism for centralised renewable electricity?
Q11: What changes (if any) should we make to the Renewables Obligation in the light of the EU 2020 renewable energy target?

1.21. Given the scale of the challenge implied by the 2020 target, there will clearly need to be a huge increase in financial support for renewables. We see the two main justifications for this subsidy being the need to compensate for the carbon price externality and the support for technological development of immature technology. As technology develops, the expectation must be that support to reflect the carbon abatement benefits will continue, but that subsidies will move towards that level in the long term.

1.22. At the moment the RO meets the objective of providing support and incentives for investment through either providing a reward for meeting a set target of renewables production or through the "stick and carrot" of buying out of the obligation and those complying with the obligation receiving the recycled funds.

1.23. Additionally the Government is planning to introduce "banding" from April 2009 to vary the level of support provided according to the costs of the technology. It is also planning to introduce a "headroom" mechanism to guarantee that there will not

be a significant fall in the ROC price in the event that the targets set under the RO are nearly reached.

1.24. In theory, recycling the buy-out fund is a good idea since it provides an automatic signal as an incentive for new investment. However, it assumes a perfectly functioning market with the ability to respond rapidly to the signal. In practice there are a number of constraints, including in particular planning constraints and also grid constraints that are to a large degree beyond the control of renewable generators. In addition the variability of the wholesale price is a source of uncertainty for future revenues and makes it hard for independent generators to finance projects, which arguably provides incumbents (the "big six") with an advantage.

1.25. The result of the practical imperfections is that the model does not function well. The constraints which limit the amount of renewable electricity produced result in excessive profits on average for renewable generators and even higher profits when wholesale prices are high (as they are now). Overall the RO has not so far proven to be a reliable way of meeting a designated renewables target as illustrated by the significant headroom that has existed since its inception, which represents a straight deadweight loss to consumers.

Ways of addressing the issues

1.26. Any reforms should seek to ensure effective competition at the stage of investment decisions to realise the best value and deliver predictable prices to generators (which should fall over time for new installations as the technology development justification falls away). Put simply, it should ensure the best deal for consumers to achieve the maximum return of renewable energy for the subsidy invested. While the Government is seeking to address the planning constraint and the Transmission Access Reform project seeks to address grid constraints, complete success cannot be assumed, especially in the short and medium term. Any policy solution therefore needs to be robust.

1.27. Greater predictability for renewable developers, and better value for money for consumers, could be achieved through indexing the subsidy to vary inversely with the wholesale price. We would also like to see a gradual digression of the subsidy per MWh over time. We have considered practical measures for achieving these outcomes. In our proposals below we focus on principles rather than operational detail, but we acknowledge that each raises practical operational issues.

Varying the buy-out price ("indexation")

1.28. The level of the buy-out price could be amended to reflect variations in the wholesale price. In effect, where increases in the wholesale price were seen, the level of the buy-out price would be reduced. As the ROC price is largely driven by the level of the buy-out price, this would have the ultimate effect of reducing the ROC price, thereby reducing the extent to which renewable generators would be able to earn super-normal returns when wholesale prices are high (and therefore retail

prices and fuel poverty numbers are high as well). To ensure that the incentives were not skewed under this approach it would be appropriate that where relative reductions were observed within the wholesale price, the buy-out price would be increased which would have the effect of raising the price of ROCs, thereby fixing the returns earned by renewable generators.

1.29. There are some practical issues to address, such as how to determine the appropriate reference price against which to vary the buy-out price. A more tricky issue is the interaction with banding. For example a base case might see a wholesale price of £50 and a ROC price at about £40. A generator receiving a banding of 1 would see a (notional) return of £90. A generator receiving a banding of 2 would see a (notional) return of £130. Should the wholesale price rise to £80 and the buyout be adjusted such that the ROC price became £10, then the first generator would still receive £90, but the second only £100.

1.30. The most promising approach to resolve this issue appears to be to treat the first ROC granted differently from any additional ROCs where banding exceeds 1. Only the first ROC would be indexed to the wholesale price, so ensuring the same degree of indexation for all technologies. The additional subsidy from the second ROC would be fixed in absolute terms. This approach would add to the complexity of administering the scheme, and further thought would be needed for technologies banded below 1. But the main point is that there are ways to address the practical issues and we would be happy to work with Government to find the best approach if it supports the concept of indexation.

Recycling the buy-out fund

1.31. Another way to adjustment the RO to reflect variations in wholesale prices would be to reduce recycling of the buy-out fund. Indeed, ceasing redistribution would simplify the arrangements and so could help with the points above, and could be neutral to renewable developers at the point of introduction through an offsetting increase in the buy-out price.

1.32. It could be possible for the funds collected through this means to either be smeared back to consumers in light of the increased costs that they face or be invested into alternative renewables projects. This would reduce the risk of super-normal profits being earned by generators whilst also having positive benefits for consumers by either reducing the level of the subsidy they pay for a given amount of renewable generation or by delivering additional renewable generation for the same level of subsidy.

Further issues

1.33. As noted above, in principle the need to support technology development should, for any given technology, reduce over time. This suggests some form of digression of subsidy, as can be found in some feed-in tariffs (in Germany for example). We consider that similar principles could be applied within the RO, so that the level of subsidy is highest in near term and falls in a predictable way. This could

be applied either through the buy-out price or through adjustments to the band values. In principle this could have the benefit of encouraging faster development, although the incentives are such that the practical impact in the near terms is unlikely to be great.

1.34. The proposed "headroom" mechanism (to be introduced in April 2009) adds complexity to the scheme and the benefits are unclear. Evidence on the rate of build and constraint issues so far also indicates that it is unlikely to be utilised. We therefore question its value if targets are set now consistent with the 32% share of electricity from renewables envisaged for 2020, although as the RES consultation implies that there is a low chance of exceeding the new targets, we do not see this as a major issue.

1.35. Within the context of a banded RO, we agreed with the Government's commitment to regular reviews of which technologies sit in which bands. We would note, however, that it places additional burdens on the scheme in terms of the complexity of administration. We anticipate that this would be outweighed by the greater efficiency of the scheme and therefore would deliver benefits to consumers. To complement this arrangement, it would be necessary to ensure that the RO target, in terms of the number of ROCs, was amended to reflect the increased/reduced number of ROCs that would be awarded to certain technologies (recognising that this would not affect the overall level of the target in MWh terms).

1.36. In suggesting these reforms to the RO, we recognise that further analysis would be required. We would be keen to work with BERR to find the best approach to both meeting the targets and delivering value for consumers.

Q12: What (if any) changes are needed to the current electricity market regime to ensure that the proposed increase in renewables generation does not undermine security of electricity supplies, and how can greater flexibility and responsiveness be encouraged in the demand side?

Addressing unpredictable issues

1.37. The increase in renewable generation outlined in the RES consultation will have a significant impact upon the balancing system that is used to maintain real-time security of supply in the electricity network. The scale of these impacts cannot be predicted accurately, and neither can the solutions. The industry, led by NGET in its role as Great Britain System Operator (GBSO) responsible for balancing the system, and overseen by Ofgem are already aware of and seeking to address the effects on system balancing from a relatively low penetration of intermittent generation. The principle mechanisms for addressing these issues are the codes modification process, an industry-led process that can be expected to deliver efficient solutions, and the System Operator incentive which is set by Ofgem.

1.38. As the scale of the challenge grows with greater deployment of intermittent renewable generation, the codes modification process and the System Operator incentive which is set annually can adapt and provide solutions that will evolve to meet the challenges. This will include amongst other things a greater focus on

demand side management. Alternatives, such as trying to predict problems and to engineer solutions, would most likely be less effective and less efficient, increasing complexity for the industry and increasing costs for consumers.

The scale of the challenge today

1.39. According to NGET, an increase in intermittent forms of generation such as wind will increase its balancing costs through reserve costs, frequency response, and constraints costs.[2] NGET did not specifically measure the contribution made by wind to its System Operator costs in 2007-08, but it estimated that the reserve costs associated with the 2.5GW of installed wind capacity were around £17m. It further estimated that the additional costs of the 500MW of extra wind capacity that are expected to be operational in 2008-09 will increase its costs by a further £10m. The majority of this increase (£8m) would be spent on ensuring sufficient reserve generation, which is required due to the high error factor associated with wind forecasting, £2m of the increase would result from fast reserve and frequency response costs, and around £70k would be spent on constraint costs[3].

1.40. It is likely that the annual cost of reserve will increase significantly as the proportion of wind generation increases. Predictions for future costs range from £4-£7.50 for each additional MWh of wind placed on the system[4]. A cost of £7.50/MWh applied to the projected level of wind capacity of 14 GW by 2014-15 would cost an additional £275m in balancing costs in that year (assuming a 30% load factor). By way of comparison, balancing costs for the whole system in 2008/09 are forecast to be around £530m. The challenge therefore, is to ensure appropriate incentives are in place to ensure these costs are managed and the available reserve capacity is used in the most efficient way. This is manageable under current arrangements.

The new challenge of surplus energy

1.41. The System Operator's role of balancing electricity supply with demand at all times could impact on the output of wind generators. At times when supply exceeds demand (either in GB as a whole or in specific areas where transmission constraints are active), some generators are instructed by the GBSO to reduce their supply. In

2 Gas and Electricity System Operator Incentives, National Grid consultation document, 2007, http://www.nationalgrid.com/NR/rdonlyres/CD1B073C-77E6-4235-86F0-4F46E375B5DF/21919/GasandElectricitySOIncentivesInitialProposalsConsu.pdf and Ofgem's Final Proposals Consultation for National Grid's incentives, 2008, http://www.ofgem.gov.uk/Markets/WhlMkts/EffSystemOps/SystOpIncent/Documents1/Final_proposals_main_doc_.pdf

3Gas and Electricity System Operator Incentives, National Grid consultation document, 2007, http://www.nationalgrid.com/NR/rdonlyres/CD1B073C-77E6-4235-86F0-4F46E375B5DF/21919/GasandElectricitySOIncentivesInitialProposalsConsu.pdf

4 2008 GB Seven Year Statement , National Grid Electricity Transmission http://www.nationalgrid.com/uk/sys_08/default.asp?action=mnch4_20.htm&Node=SYS&Snode=4_20&Exp=Y#Balancing_Mechanism_Participation

these circumstances, generators will still receive revenues from any contracts they have struck to sell their output, but would not actually be producing any output. Each generator attaches a price to their willingness to deviate from their expected output levels, and the GBSO will instruct deviations in price order, so that, for example, thermal plants, which tend to be relatively flexible, will submit lower prices than a nuclear plant which has very limited flexibility. The extent to which wind generators are instructed to reduce their output will therefore depend on the prices they submit into the balancing mechanism. Given that renewable generators receive a ROC payment for each unit they generate, it would be reasonable to expect them to attach a high cost to reducing their output. In addition, bids from wind generators tend to reflect their low flexibility and are therefore higher than the compensation that they would need.

1.42. The GBSO often has to issue instructions to decrease generation when a transmission constraint on the Scotland-England border means an excess of supply over demand within Scotland cannot be exported across the border. An increase in generation in Scotland (whether wind, nuclear or other generation) is likely to result in increased incidences of such constraints, and therefore more actions taken by the GBSO to reduce supply in Scotland whilst increasing supply south of the interconnector. In the case of constraints, the GBSO takes actions out of order, so it will not necessarily take off from the grid those plants that require the cheapest compensation, in contrast to the case of balancing.

1.43. Another issue that is likely to arise is a potential "conflict" between a new fleet of nuclear reactors and wind generation, both of which are inflexible and cannot respond to variable demand and are therefore best suited for base load generation. At times of low demand combined with windy weather their combined output could exceed demand, leading to a dilemma as to which should be curtailed: nuclear which operates at its cheapest and safest levels when run continuously, or wind with the associated ROC costs. This also raises the matter of the generation mix as a whole that will be required in order to provide back-up for wind generation. In addition to the costs of contracting reserve generation, it may necessary to build new capacity specifically for this purpose.

The utilisation of demand side management

1.44. Currently there is a lack of economic storage mechanisms for electricity, lack of sites for the development of extra pumped storage facilities, and lack of interconnection to European power markets all of which means there is little to counter the peaks and troughs of electricity demand. With higher levels of intermittent generation there may be few alternatives to constraining wind generation at times of low demand. However, although demand side management is currently limited, it could be increased if distribution network operators (DNOs) became more active in this area, or if other demand side management tools were activated. This would see the utilisation of excess generation at times of low demand, reducing constraint costs, or reducing demand at times when generation is insufficient.

1.45. An increase in intermittent renewable decentralised and small scale generation on local networks may result in technical problems in future if the penetration of such technologies becomes high. On such cases, the connection of distributed generation under a 'plug and play' basis may need to be replaced by a more flexible approach able to manage the connection of a larger amount of micro-generation and distributed energy. In addition, the roll out of smart metering will allow some real opportunities on the demand side.[5] Together these two developments could open up the prospect for an association between the local distribution network, micro-generators, and demand loads having some local coordinated functions through active network management. Although there is uncertainty about how the market will respond we will note in our response that we are looking at including measures in our current distribution price control to accommodate the potential new demands that may be asked of energy infrastructure owners going forward.

Heat (Chapter 4)

1.46. In addition to our comments on the policy issues associated with renewable heat (below), we note the possibility that Ofgem might be proposed to administer any new financial support mechanisms. We can see some links to our existing administration work, which also gives us some insight into important issues that would need to be resolved at the outset, whoever administers the programme.

1.47. The administrator is likely to need additional powers through primary legislation for levying charges on diverse suppliers of heating fuels within this type of scheme. The Government will need to consider how the costs of on-going administration of these schemes (which may be of a significant level) will be paid for. Should Ofgem be the chosen administrator, we are firmly of the view that this cost should not be borne by the licensed distributors of gas and electricity. In addition, we note from previous experience of administering similar schemes that there will be considerable up-front costs for setting up a heat incentive, particularly for the development of an IT system. Any administrator would require additional funds beyond on-going running costs to be made available for this purpose.

1.48. From our experience with existing schemes, we consider that the administrator could need around 2 years from the time that enabling powers are made in primary legislation to the point where the scheme commences operation, to go through the stages of design and setup mentioned above. Development of supporting IT systems is of particular note, as this is likely to require at least a 12 month lead time once all supporting secondary legislation/conditions are complete. Of course, funding would need to be confirmed to pay for the resources before this development work could proceed.

5 Smart meters are to be rolled out to small business customers over the next five year and will potentially be mandated for domestic customers in November 2008 with around a ten year roll out timetable.

Q13: Assuming financial support measures are in place, what more could the Government do to realise the full potential of renewable Combined Heat and Power?

1.49. If the required financial incentives are in place then the market should be free to choose how to respond, and which technology to use. That said, it is important to consider the different approaches to information dissemination for domestic and industrial audiences as information will be a key part of a successful renewables strategy. Practical issues, such as fuel delivery and storage, will also need to be overcome, particularly for domestic consumers.

1.50. Micro-CHP would require targeted information for installers and domestic consumers, particularly with regard to new housing and off-gas networks which are seen as more viable than existing gas-heated housing.

1.51. When renewable CHP generators connect to heat networks they may be contributing to an energy mix that includes non-renewable sources, and should be able to do so. For this reason, any advice or support in relation to heat networks should not be renewables-specific, since non-renewable heat sources (which may also offer carbon-abatement benefits) may make development of a heat network commercially viable.

Q14: Are our assessments of the potential of renewable heat deployment correct?

1.52. We cannot comment on the assessment of potential directly. However, we would note that the projections show the importance of renewable heat and its cost-effectiveness. It is also unlikely to attract the opposition that renewable transport fuels face where production potentially diverts land away from food and feedstock usage, or relies on clearance of rainforests or other ecologically significant sites. For these reasons we support the Government's proposals to encourage renewable heat. We would emphasise that, as far as the household sector is concerned, there is much more to achieving the potential than just allocating generous subsidies - the scheme must be easy to access for domestic consumers and supported by initiatives to change behaviour.

Q15: Have we captured the key features of a Renewable Heat Incentive and a Renewable Heat Obligation as they would apply to the heat sector correctly? Would both of these schemes be workable and are there alternative ways of structuring the schemes to ensure they can operate effectively?

1.53. We consider that the key feature of the RHI is that it would give investors more predictability as to the return on their investment, and small producers (particularly at the domestic level) may respond positively to upfront payments that could be made under the incentive. With the RHO, the market value of RHCs may fluctuate, leading to uncertainty for investors which may affect the cost of capital and/or the availability of renewable heat for suppliers to purchase.

1.54. However, careful thought should be given to the interplay of various incentives and policies in this area, such as our network extension incentives, additional CERT obligations and the new Community Energy Saving Programme recently announced by Government. We would strongly support efforts to rationalise the different schemes or at least improve the consistency of measures as this will be important for the effective operation of either an RHI or RHO scheme.

1.55. More information is needed on the type of assistance available to different types of consumers. Households need information and upfront payments, whereas larger customers need long-term certainty and heat networks to feed into. For low income consumers and those in, or at risk of fuel poverty, financial incentives for upfront costs will need to be close to 100% to stimulate switching heat production to renewables. We think it is likely that domestic consumers will require more than information and awareness campaigns. For example, early results with smart metering from Warm Front and the EDRP show that more tailored messages and substantial support and hand-holding are required to deliver a step change in consumer behaviour and attitudes. We look forward to the forthcoming consultations in the autumn to address these issues.

Q16: Do you agree with our assessment that a Renewable Heat Incentive would work better in the heat market?

1.56. Ofgem supports a market mechanism to generate demand for renewable heat. Both the RHI and the RHO would to some degree allow the market to choose the technology, and find the lowest-cost way of providing growth in renewable heat.

1.57. Through our experience of the RO, we know that for small generators the requirement to obtain certificates and then trade them has proven to be particularly inefficient when compared to giving them a direct payment. We understand that small generators receive only around 60-70% of the actual value of a ROC when they sell them to an agent. This would appear to argue against the RHO approach.

1.58. The advantages of the RHI include the possibility of upfront payments, and a guaranteed return for investors, though it would be important to set the incentive at the correct level to deliver the target (flexibility to change this is needed). A disadvantage may be that the scheme may be at risk of shortfalls. However, at a high level we agree that the RHI would work better than the RHO in the heat market.

Q17: What more could the Government or other parties do to encourage renewable heat deployment with regard to:
a. awareness raising;
b. air quality;
c. building regulations;
d. planning;
e. anything else?

1.59. **Awareness-raising:** for renewable heat to be a major contributor to the targets there needs to be a critical mass participating in the scheme; for household

CHP, heat pumps and solar thermal this could mean millions of individuals. This would involve a major effort in terms of demonstrations to prove efficacy, information campaigns to communicate the existence and benefits to consumers, and industry initiatives to prompt skills development and investment within the housing sector.

1.60. **Other issues:** We think that the appropriate way to develop a fledgling renewable heat industry is to use incentives to let the market decide how to provide the necessary sectoral growth. Regulation should be introduced only where necessary, and in a proportionate manner according to the principles of Better Regulation.

Q18: How far should the Government go in focusing on areas off the gas grid as offering the most potential for renewable heat technologies?

1.61. We agree that off-gas communities provide an opportunity for the Government to boost renewables uptake, given that alternative fuel sources to natural gas are currently significantly more expensive. Awareness-raising would be an important part of any campaign to increase uptake. Another option could be a strong Government steer or obligation applying to new developments and/or replacement/retrofitting, perhaps tying in with the zero carbon buildings legislation.

1.62. The off-gas communities in the UK are concentrated in rural areas, particularly in Scotland, and have a higher than average proportion of households in fuel poverty, due in part to the higher cost of heating fuels. If these households are to pay for the RHI it is important to also target renewable heat solutions at this sector. Levying this additional cost on this sector will increase the number of households in fuel poverty unless due consideration is given to the issue.

1.63. Around one in ten houses are heated using fuel oil, coal and other products supplied by a large patchwork of small suppliers. The mooted incentive and obligation would both redistribute funds from consumers (via suppliers) of fossil fuel heating to consumers of renewable heat. Given that these types of fossil fuels are the most carbon intensive, and also the costliest, it would be sensible to target these consumers first as prime candidates for renewable heat.

1.64. We think that all consumers of fossil fuel heating should contribute towards the RHI/RHO, providing this is practical. To this end we would welcome an assessment of the off-gas fossil fuel suppliers' landscape and the potential to levy fossil fuel charges on different categories and sizes of supplier. It may be that the smallest fossil fuel suppliers are difficult to detect, or that they may not respond to requests to register with the scheme administrator given the detrimental effects to their businesses; while larger suppliers may have the scope to diversify into other forms of energy and services, it may be that smaller players simply go out of business. If the costs of administering and enforcing such a scheme on suppliers below a certain size outweigh the benefits then it may be worth considering an exemption for small suppliers, provided that the consequence of this was not a proliferation of small fossil fuel suppliers.

1.65. It is also important to consider consistency with existing policy. Alongside BERR, we have recently restated our position that connection to the gas grid remains a favoured option for many off-gas communities, and have identified communities with a suitable size and location for connection. Aside from site-specific practical concerns, we would support, other things being equal, renewable heat projects being given priority. Even with more communities closest to the gas network being connected, there would nonetheless be considerable potential for renewable heat. For example, the smallest settlements, unaffected by the gas grid connection policy, may also be better suited to biomass CHP plants than urban areas due to air quality issues. Whilst the two policies could coexist we suggest that further discussions are required to reach an agreed position between those leading on the two work streams.

Distributed energy (Chapter 5)

Q19: Do you agree with our analysis of the mechanisms for support of small-scale renewable electricity?

1.66. There are large upfront costs involved in the purchase and installation of micro-generation technologies. For households with short pay back horizons, it takes too long to pay back the initial investment given current import and export electricity prices and the small volumes of output generated by renewable energy (RE) micro-generation technologies. In addition the current revenue support provided by the RO and capital grants available under the Low Carbon Building Programme are not a large or certain enough incentive to fundamentally improve the economics or reduce the risks of investing in RE micro-generation.

1.67. A combination of the RO for large scale renewable and a FIT for small scale renewables could be beneficial to increasing green innovation in the energy industry. Arguably there is a role for both measures at different phases of the development cycles for RE technologies on their way to the mainstream energy market.

1.68. Greater certainty about the incentives and resources for innovation could help drive efficiency improvements and cost reductions in the micro-generation industry. But even if there is competition among technology producers and installers, there is little incentive for developers to pass on these cost reductions to consumers. One way to reduce the financial burden on consumers and the risk of producer surplus is to structure FITs so that financial support is adjusted in line with changes to the underlying economics of micro-generation. This is signalled through tariff digression and by regular reviews of the level of support (see answer to **Question 20**).

1.69. A FIT that replaces the existing support measures would also reduce the complexity to the potential customers looking at the options for installing micro-generation.

Q20: Given the analysis on the benefits, costs and potential, in what way and to what extent should we direct support to micro-generation electricity?

1.70. The costs of a micro-generation FIT scheme are likely to be passed through to electricity customers and would be additional to the costs for the RO for large scale RE. Therefore, it is important that the design of the scheme delivers value for money and objectives are achieved in the most cost-effective manner. The aim should be to make sure that the extra financial effort really benefits the development and diffusion of new technology.

1.71. Two key factors that influence the economics of micro-generation are the initial costs of the technology and installation, and electricity prices. These factors are likely to change over time - perhaps as the result of developments in the micro-generation industry and likely upward pressure on energy prices from meeting climate change targets. Tapering the intended level of support to anticipate expected improvements in the economics of micro-generation over time will also encourage early adoption.

1.72. It is unlikely that changes in technology costs and electricity prices will be perfectly anticipated through tariff digression. Therefore it would also be necessary to regularly review the level of support to ensure it was appropriate given actual changes in retail electricity prices and the best technologies available on the market.

1.73. The basis for revisions of support levels need to be transparent and well understood so that it does not introduce uncertainty about the medium term price signal and increase risk for investors. As noted above, consideration needs to be given to coherence with other mechanisms - for example to provide relatively consistent rewards as between heat and electricity as each counts the same towards the renewable energy target.

1.74. Government also need to continue support to improve the quality of information available to inform investment decisions about micro-generation options, reduce the hassle factor and provide greater assurance about the different technologies (for both suppliers and customers). This would include specific initiatives to accredit suppliers and installers and streamlining planning requirements.

Q21: If you agree that better information will aid the development of distributed energy, where should attention be focused?

1.75. We have worked with BERR on distributed energy issues on joint projects for several years. Throughout this work we have consistently supported improving information and advice. To summarise, we consider that better advice could be provided on the end to end process of developing DE opportunities, including what developers need to do, when they need to do it, who they should be working with, and how they do it – eg what is involved. There may be particular value in good case studies and in identifying best practice for DE in different settings.

Q22: Do you agree with the Government's current position that it should not introduce statutory targets for micro-generation at this stage in its development?

1.76. We agree with this view - given the change in the context from the renewables target, it is particularly difficult to judge the level of any statutory target for micro-generation at this stage and any official view could soon be seen as too high or too low and may then be counter-productive.

Q23: What more could the Government do to incentivise retrofit of distributed energy technologies?

1.77. As noted above**,** we have worked extensively with Government on distributed energy issues over the past few years and we are currently in the process of implementing the most recent proposals from this work, to deliver more flexible arrangements for new distributed energy schemes coming to the market. Responses to our joint consultation supported the proposed approach, subject to review to ensure it is effective. With further work streams on heat and energy saving underway, we would suggest that it is important to be clear on the problems that need to be addressed before launching another policy initiative in this area.

Transport (Chapter 6)

Q25: What potential is there for the introduction of vehicles powered through the electricity grid in the UK? What impact would the widespread introduction of these kinds of vehicles have on:
a. energy demand and carbon emissions;
b. providing distributed storage capacity;
c. smoothing levels of electricity demand on the grid?

1.78. The proposals regarding electric cars are interesting, although we acknowledge that these are at a very early stage of development. From the perspective of both energy markets and networks, a significant penetration of electric cars could require significant investment in both generating plant and network (especially low-voltage distribution networks). However, there appears also to be the potential for benefits in terms of storage potential and the consequent possibilities in terms of smoothing load profiles and absorbing the output of off-peak base load generation. At this stage, we consider this to be a longer-term development prospect but would be interested to participate in further work to assess the potential impact.

Bioenergy (Chapter 7)

Q27: How can we best ensure that our use of biomass is sustainable?

1.79. The RES consultation highlights that the best use of biomass (in terms of tonnes of carbon abated) is in heat generation, either in heat only or via CHP. Currently the RO provides an incentive for biomass to be diverted to electricity generation. An RHI might address this, but we reiterate again the need for consistency across support schemes to ensure that each unit of biomass is efficiently subsidised and is deployed in the most efficient manner.

1.80. The consultation does not specify the Government's 'sustainability ambitions'. A lack of clarity could inhibit the development of the biomass market. The inclusion of lifecycle GHG emissions as a measure of sustainability could significantly increase the cost burden to users of biomass, a cost that would be passed back to consumers. Guidance or deeming could reduce these costs. No indication is given as to whether these factors will be used to determine access to benefits. Again this might inhibit the growth of the biomass market and increase the risk to renewables projects. Current and proposed measures under the RTFO and the RO place the burden of proof on the producer of the final product (fuel/electricity). The burden could alternatively be moved to the fuel/feedstock provider, which could benefit small generators who have little bargaining power.

Q32: What barriers exist to the cost-effective deployment of anaerobic digestion, biogas and the use of bio-methane injected directly into the gas grid, and what are the options to address them?

1.81. The main barrier to cost-effective deployment appears to be the policy bias towards renewable electricity. We would hope this would be addressed through supporting bio-methane injection into the gas grid through the renewable heat support mechanism, or otherwise at the point of injection. From an administrative point of view, reward of bio-methane through the renewables obligation would cause a number of issues for reconciliation and we would suggest this is not the best approach.

Innovation (Chapter 8)

Q35: How can we adapt the Renewables Obligation to ensure that it effectively supports emerging as well as existing renewable technologies? Are there more effective ways of achieving this?

1.82. We refer back to answers to **questions 10 and 11**. In general we would expect that as now, the Government may provide capital grants to certain projects in their infancy where it considers this appropriate. We assume that the Government intends to retain banding of the RO as a policy. In such circumstances, our proposals on the indexation of ROCs should ensure that the technology continues to receive support at a level which is as efficient as possible.

Business benefits (Chapter 9)

1.83. We have no substantive comments on the question in this chapter.

Wider impacts (Chapter 10)

Q39: Do you agree with our analysis of the likely impacts of the proposed increase in renewable deployment on:
a. carbon dioxide emissions;

b. the local environment;
c. security of supply;
d. energy prices;
e. fuel poverty;
f. the energy market;
g. the economy;
h. any other wider issues that we should be considering?

1.84. We recognise the security of supply benefits from a diverse portfolio of energy generation, but we consider that the net effect on security of supply of displacing fossil fuel generation with (largely) intermittent renewable sources of generation is at best neutral, but not beneficial. There are considerable management issues that arise in electricity generation (as our answer to **question 12** illustrates) and no evidence to suggest that the availability of wind is more reliable as a fuel source than imported fossil fuels (which in any case will still be required as a back-up source of generation).

1.85. A further issue which the RES consultation does not directly address is the reduced risk that would arise from a greater variety of suppliers of renewable generation infrastructure entering the market than at present. For example, production of a significant quantity of generating units of a relatively immature technology such as offshore wind from a limited number of sources leads to a risk that a type fault could lead to the temporary withdrawal of a significant proportion of renewable electricity generating capacity. Given the limited timescales to get a significant quantity of units to market, a broader supply base would dilute this risk.

Delivering the target (Chapter 11)

1.86. We have no substantive comments on the question in this chapter.

Feed-in tariffs for small-scale electricity generation (Annex 2)

QA1: Do you agree with our assessment of the basic starting principles that feed-in tariffs for small-scale electricity generation should adhere to? Are there other principles you think we should consider?

1.87. We agree with the principles outlined. In particular, it is important to ensure that owners of micro-generation (in terms of its renewable electricity) only have to interact with a single scheme. Allowing micro-generation to obtain support from two or more schemes adds unnecessary additional administration overheads and is likely to lead to inconsistent treatment. This will require legislation and scheme eligibility rules to be amended for these other schemes to ensure that they cannot obtain support under them.

1.88. It is also appropriate that the funding is sourced proportionately to suppliers' market share and that any reward/payment scheme is simple to access for customer/micro-generators.

QA2: What are your views on the option we have described? Factors we would like you to consider in your response include:

- **if there are problems with the option described or improvements you could suggest;**
- **if you can envisage a more effective way of implementing feed-in tariffs for small-scale electricity generation.**

1.89. We think that the general model as proposed is workable, with a levy feeding into a centralised pot and the allocation of the costs of payments to generators based on suppliers' market share (this is akin to the way the Fossil Fuel Levy was initially set up to cover the costs of NFFO contracts).

1.90. More clarity is needed as to exactly what power from micro-generation is to be rewarded or purchased and by whom (ie the respective roles of suppliers and the central administrator). A number of combinations are possible and analysis is needed on the impacts on suppliers' incentives to offer export tariffs, whether the scheme assists suppliers in realising the full value of the embedded benefits of micro-generation, and the costs of administering and policing such a scheme.

1.91. At this early stage we can see some merit in an option where total generation from an installed unit is purchased by a supplier at the FIT rate. This approach could increase the effective value of micro-generation relative to suppliers' costs to serve and costs to enter micro-generation electricity into Settlement. Other benefits include building on suppliers' expertise in customer service administration and using existing processes for metering registration to manage micro-generation sites. We would be happy to work with Government to consider the various issues further.

1.92. We expect that whatever approach is taken will eventually raise issues about metering. Assuming that the scheme is successful in encouraging the deployment of small scale generation it will be important that these are properly taken into account in Settlement to avoid any material impact on Settlement accuracy.

1.93. Other policy issues include setting the level of FIT for different technologies to ensure it consistent with other support schemes for renewable heat; how suppliers and the administrator can be sure that generation data is accurate and reliable and that renewable installations meet appropriate standards; and how to get the best value for consumers (see answer to **Question 20**).

QA4: Who do you think should have access to feed-in tariffs for small-scale electricity generation? Factors that we would like you to consider in your response include:

- **different generation technologies;**
- **size of generation station (i.e. to distinguish from eligibility of large-scale generation for support under the Renewables Obligation);**
- **whether generation is primarily for own use, supply locally or for export;**
- **whether generation is on or off-grid;**
- **whether or not energy efficiency measures should be required.**

1.94. **Size of generation station:** in terms of administrative simplicity and consistency, it would make sense for a FIT to apply to micro-generation of 50kW or less, in line with the current RO definition.

1.95. **Whether generation is on or off grid:** given the proposed key principles, it would be difficult not to include off-grid micro-generation, although there will clearly be a complexity here. We know from the RO that there are only a few sub-50kW generators that fall into this category, but this figure may increase if the kWe range is increased or the FIT proves to be popular. There will be a need to guard against fraud to prevent such generators obtaining payments from two or more suppliers. One approach to minimise this fraud would be to require this type of generator to register with a central administrator before being paid by a supplier.

1.96. **Different generation technologies:** we think it may be best to support certain classes of emerging technologies outside the FIT, given the difficulty in establishing appropriate support levels for them, and their limited applicability at small scale. Examples of this are wave and tidal devices, which may be 100-200kW in size for demonstration units, but longer term are expected to be 1-10MW or greater in size. The demonstration units typically receive capital grants, and the larger scale commercial units would be more appropriately supported under an RO. There may be certain classes of biomass generation that also fit this description, particularly gasification, pyrolysis and anaerobic digestion units.

1.97. **Whether or not energy efficiency measures should be required:** the scheme design should aim to provide the right incentives for households to use energy efficiently. Imposing requirements for energy efficiency measures would add to the costs and hassle factor for households wanting to install micro-generation units.

QA5: Do you think it is reasonable to put in safeguards to limit the potential cost of feed-in tariffs for small-scale electricity generation, and if so how could those safeguards be set, and what would the access criteria be? Possible factors and criteria we would like you to consider include:

- **a limit on overall number of new installations in a given period;**
- **a limit on new installed capacity in a given period;**
- **whether priority should be given to particular groups; for example, people in fuel poverty.**

1.98. The level of uptake will depend on the tariffs and will also depend on the ability of the industry to meet demand for technologies and installations. Tying the qualification process for a FIT to some form of certification requirement that demonstrates a certain level of quality assurance about the type of kit and the installation process would limit the uptake of the FIT, at least in the early years, given that it will take some time for the industry to build up the capacity and skill base to deliver to these standards. In addition this would assist in realising the maximum benefits of micro-generation technologies and would also provide a safeguard to foster the sustainable development of the industry. The idea of prioritising certain groups does have some merit. In the case of low-income

households, it is likely that the renewable generation would only be installed if financial support was provided to cover the initial costs.

QA6: How would we set the feed-in tariffs for small-scale electricity generation? Factors that we would like you to consider in your response include:

- **the basis for setting the number of tariffs and their level;**
- **initial costs, electricity production rates and differing carbon saving potential of generation equipment;**
- **how long installations should receive the relevant tariff;**
- **how, when and on what basis we would vary the tariffs for new installations;**
- **how different tariffs would impact on multiple installations at one location, e.g. a building with wind turbines and solar panels.**

1.99. If a FIT is to work, it will need to provide enough incentive for up-front costs as well as suitable pay-back over a period of time. It seems to make sense to have either a one off payment, or a hybrid approach with a high up-front payment and then a lower annual payment following this. This will be more complex to administer but may provide a better fit with the needs of customers.

1.100. It will be important to review the FIT levels periodically to take into account the development of each technology, and consistency with other support schemes. We would also support digression over time.

1.101. It is essential that the number of tariffs and the operation of a FIT are as simple and easy to understand as possible so that customers can clearly establish the level of support they will receive if they install a particular piece of equipment at their site, and how to easily access that support.

1.102. With regards to more than one technology being installed at a single location, the level of FIT will be determined by the mechanism adopted. If FIT payments were made on total generation then separate FIT payments could be made for each technology. However, if payments were made based on export, this would not be possible and perhaps an "averaged" FIT payment could be made. Accreditations under the RO have shown that such installations are rare.

QA7: What arrangements should apply to:

- **currently existing small-scale renewable electricity installations;**
- **installations which enter into operation before feed-in tariffs come into effect?**

1.103. Should a FIT scheme be introduced, we would prefer that all existing generators accredited under the RO were made to move across to reimbursement via the FIT. The tariff level for existing generators moving across to the FIT should be set at a level which is similar to the amount they would have earned under the RO (with the 2 ROC/MWh banding).

QA8: Do you think that financial markets will move to assist potential small-scale electricity generators with financing of the initial capital cost of renewable installations, or should we seek to introduce policies that will guarantee frontloaded support?

1.104. This is a key issue if a FIT is to be successful. If the FIT guarantees a payment we expect a market will come forward to capitalise the expected revenue stream, enabling consumers to frontload future payments and help meet the initial up-front costs. A FIT provides greater certainty to market participants who are interested in providing some form of capitalisation that they will recover their initial outlay. However, some support may be needed to get the process underway. We are aware that in countries where FITs have been successful the Governments have negotiated soft loans with financial institutions.

QA9: How should the costs of feed-in tariffs for small-scale electricity generation be met? Factors we would like you to consider in your response include:

- **who the payment should be administered by;**
- **how payments should be monitored and regulated;**
- **how the overall costs of feed-in tariffs should be disbursed and among which organisations;**
- **how administrative costs should be funded;**
- **how frequently payments should be made to generators and how frequently costs should be disbursed;**
- **who should meet charges by the DNO for use of their system for exported electricity.**

1.105. **Who the payment should be administered by:** we think that suppliers are best placed to administer the payments to micro-generators - building on the example of agents under the RO. Administrative costs for a FIT should be taken from the central "pot", and therefore be considered in the calculations made to set the levy. We note the argument for Ofgem to administer this service, given our role in administering RO schemes at present. As noted in our comments on the heat chapter, the administrator of the scheme would require funding and other practical issues to be resolved in order to carry out the role.

1.106. **How administrative costs should be funded:** either directly from the Government or through the scheme.

1.107. **How frequently payments should be made to generators and how frequently costs should be disbursed:** if the system is to be linked to billing then this suggests that the payments to generators could be quarterly. At present, the RO schemes collect data and disburse annually.

1.108. **Who should meet charges by the DNO for the use of their system for exported electricity:** currently, network charges are separate from the generation reward payments made under the RO, but this is in any event not a material issue as the DNOs charges are zero for household-scale micro-generation exports.

1.109. Looking forward, DNOs are reviewing their approach to generator charging. We are encouraging DNOs to move away from average cost models towards locational, cost reflective charging methodologies, which charge the customer on the basis of the cost that it imposes on the system. It is possible this may lead to changes, although one of the key drivers is to recognise the benefits of distributed generation.

Appendix 1 – The Authority's Powers and Duties

1.1. Ofgem is the Office of Gas and Electricity Markets which supports the Gas and Electricity Markets Authority ("the Authority"), the regulator of the gas and electricity industries in Great Britain. This Appendix summarises the primary powers and duties of the Authority. It is not comprehensive and is not a substitute to reference to the relevant legal instruments (including, but not limited to, those referred to below).

1.2. The Authority's powers and duties are largely provided for in statute, principally the Gas Act 1986, the Electricity Act 1989, the Utilities Act 2000, the Competition Act 1998, the Enterprise Act 2002 and the Energy Act 2004, as well as arising from directly effective European Community legislation. References to the Gas Act and the Electricity Act in this Appendix are to Part 1 of each of those Acts.[6]

1.3. Duties and functions relating to gas are set out in the Gas Act and those relating to electricity are set out in the Electricity Act. This Appendix must be read accordingly[7].

1.4. The Authority's principal objective when carrying out certain of its functions under each of the Gas Act and the Electricity Act is to protect the interests of consumers, present and future, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the shipping, transportation or supply of gas conveyed through pipes, and the generation, transmission, distribution or supply of electricity or the provision or use of electricity interconnectors.

1.5. The Authority must when carrying out those functions have regard to:

- The need to secure that, so far as it is economical to meet them, all reasonable demands in Great Britain for gas conveyed through pipes are met;
- The need to secure that all reasonable demands for electricity are met;
- The need to secure that licence holders are able to finance the activities which are the subject of obligations on them[8]; and
- The interests of individuals who are disabled or chronically sick, of pensionable age, with low incomes, or residing in rural areas.[9]

[6] Entitled "Gas Supply" and "Electricity Supply" respectively.
[7] However, in exercising a function under the Electricity Act the Authority may have regard to the interests of consumers in relation to gas conveyed through pipes and vice versa in the case of it exercising a function under the Gas Act.
[8] Under the Gas Act and the Utilities Act, in the case of Gas Act functions, or the Electricity Act, the Utilities Act and certain parts of the Energy Act in the case of Electricity Act functions.
[9] The Authority may have regard to other descriptions of consumers.

1.6. Subject to the above, the Authority is required to carry out the functions referred to in the manner which it considers is best calculated to:

- Promote efficiency and economy on the part of those licensed[10] under the relevant Act and the efficient use of gas conveyed through pipes and electricity conveyed by distribution systems or transmission systems;
- Protect the public from dangers arising from the conveyance of gas through pipes or the use of gas conveyed through pipes and from the generation, transmission, distribution or supply of electricity;
- Contribute to the achievement of sustainable development; and
- Secure a diverse and viable long-term energy supply.

1.7. In carrying out the functions referred to, the Authority must also have regard, to:

- The effect on the environment of activities connected with the conveyance of gas through pipes or with the generation, transmission, distribution or supply of electricity;
- The principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed and any other principles that appear to it to represent the best regulatory practice; and
- Certain statutory guidance on social and environmental matters issued by the Secretary of State.

1.8. The Authority has powers under the Competition Act to investigate suspected anti-competitive activity and take action for breaches of the prohibitions in the legislation in respect of the gas and electricity sectors in Great Britain and is a designated National Competition Authority under the EC Modernisation Regulation[11] and therefore part of the European Competition Network. The Authority also has concurrent powers with the Office of Fair Trading in respect of market investigation references to the Competition Commission.

[10] Or persons authorised by exemptions to carry on any activity.
[11] Council Regulation (EC) 1/2003