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Ofgem's Response to DECC's Consultation on "Improving Grid Access"

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Target audience: Transmission licensees, generators, suppliers, CUSC parties, consumer bodies, Government officials, and any other party who has an interest in the Transmission Access Review.

Overview:

This document sets out Ofgem's response to DECC's "Improving Grid Access" consultation. We have concerns with the approach proposed by DECC for reforming grid access. We consider that the models proposed by DECC have the potential to create large and unpredictable constraint costs and to undermine efficient transmission investment. We also consider that the proposed approach may not create an environment that best supports investment in renewable and low carbon generation. We believe that there are alternative models of access reform that could be developed and that are likely to yield the same benefits in relation to achieving the 2020 targets without imposing significant costs on users of the system, and ultimately consumers.

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Summary

On 25 August 2009, DECC published a suite of consultation documents, entitled "Improving Grid Access", which set out DECC's anticipated approach to using powers under the Energy Act 2008 (EA2008), to facilitate access to the transmission network. We welcome the opportunity to comment on these documents.

We would urge the Government to consider how the models it has put forward could be enhanced to provide better protection to consumers, provide efficient investment signals and recognise the specific characteristics of different generation. We would also urge the Government to consider how the proposed approach could be modified to create an environment that better supports investment in renewable and low carbon generation.

We think there are credible alternative access models which the Government has not assessed that could meet these aims. We think the Government still has time to develop these models. Earlier this year, we introduced interim arrangements that have swept aside the need for renewable generators to wait for reinforcement before connecting to the grid. This has created a window of opportunity to develop an enduring set of arrangements that solves the problem low carbon generators face, whilst protecting customers.

We assume that DECC will ensure that any approach to access reform is consistent with the relevant provisions of the European third energy package, and other aspects of the legal and statutory framework.

Background

Enabling renewable and other low carbon generators to secure timely access to the electricity transmission network (the "grid") is critical if we are to meet our climate change and renewable energy targets. To achieve this, we need grid access rules which encourage the best use of the existing transmission capacity, and which support the timely delivery of new capacity and the reshaping of the grid to meet the UK's future needs.

Without extensive reform, the existing access arrangements are likely to act as a significant barrier to the connection of new renewable and other low carbon generation. Fundamental changes are required to allow the connection of significant volumes of new renewable and low carbon generators. But, the current grid access arrangements create problems for all generators including renewable generators, other low carbon generators (such as new CCS plants), and new nuclear plants.

The industry failed to come up with a workable set of reforms to the current arrangements that would facilitate the connection of new low carbon generators without resulting in large and unnecessary bills for customers. As a consequence, Lord Mogg wrote in June 2009 recommending that the Secretary of State took on powers under the Energy Act 2008, to facilitate enduring access reform. The Secretary of State has since signalled his intention to take on these powers.

Although the industry considered and explored a number of different grid access models, DECC is proposing to introduce a variation of only one of these models - the Connect & Manage approach. The DECC consultation sets out three alternative versions of this model, namely:

- **Socialised:** where constraint costs (payments to generators when they cannot generate because of a lack of grid capacity) are spread over all generators and suppliers; who are likely to pass some of these costs directly on to customers by including them in wholesale and retail prices; under this variant of the model there would be no requirement for generators to make financial commitments beyond one year to underpin their demand for grid access ("user commitment");
- **Hybrid**, where new generators who opt for the Connect & Manage regime pay a proportion of the additional constraint costs that arise; new generators would only be able to pass these costs onto customers if the relevant plant is responsible for setting the wholesale price; again, there is no requirement for "user commitment" beyond one year; or
- **Shared cost & commitment**, where generators could make a five-year rolling commitment to pay for grid access and fix their grid access charges (including a proportion of forecast constraint costs). The remaining constraint costs would be recovered from generators and suppliers who would then pass them through to customers over a 10 year period.

We note that the consultation holds out the prospect that elements of these three models could be combined to form other models. We would encourage DECC to consider ways in which beneficial elements of the models could be combined. However, in the absence of a clear understanding of how alternative models might be defined, we have limited our comments to the models which were set out in the consultation document. Whilst the models have positive features, we have serious concerns with all three models proposed by DECC.

We welcome the fact that all three models may help to solve the onshore grid access problem and allow the significant volumes of low carbon and renewable generation to connect quickly and use the grid. We also welcome the explicit inclusion of "user commitment"[1] in one of the models proposed by DECC, because we consider that "user commitment" is more likely to result in the information needed to support efficient and timely investment in the grid. However, the first and third model will only solve the onshore grid access problem by creating a significant risk that business and domestic customers will face higher costs in the future. The second model will involve less risk of escalating customer costs but will disadvantage new generators at the expense of existing generators and will strengthen the position of incumbent generators. We also consider that the overall approach proposed by DECC may not create an environment that supports investment in renewable and low carbon generation.

Risk of significantly higher costs

We are concerned that, without further development, the Connect & Manage options proposed by DECC may give rise to significantly higher costs that will be borne by

[1] Noting that it is a potential add-on to other models.

hard-pressed business and domestic customers. We would urge Government to consider how best to address this risk.

Until additional grid capacity can be built, all three options will increase congestion on the network and will create opportunities for generators to exploit market power and to drive these costs even higher.

DECC's consultation paper was published before the Department had an opportunity to assess the impact of each model on the level of constraint costs. We consider it vitally important to analyse the way potential access models will impact on constraint costs. We commissioned work from Frontier Economics to assess the possible scale of these additional costs. Whilst this analysis rests on a number of assumptions, it highlights the significant risk that a Connect & Manage approach might give rise to very substantial increase in customer bills. The work carried out by Frontier Economics suggests that the increase in constraint costs might range from an additional £2.9 billion to an additional £3.5 billion (on an NPV basis from 2020), depending on whether the transmission companies are able to deliver on their grid reinforcement plans to their current timetable.

These constraint costs would be higher if generators exercise market power. In our view, this risk cannot be ignored. Whilst we welcome the Government's plans to give us greater powers to tackle market abuse, the powers: (a) would not prevent an increase in costs which do not arise as a result of market abuse, (b) are likely to be time-limited, and (c) may not allow us to tackle all forms of market abuse.

We consider that any enduring access regime needs to minimise the risk of increased constraint costs. There are alternative models of access reform that would help to reduce the cost of constraints. For example, constraint costs should be lower under models which require generators: to pay more upfront to secure access rights in constrained areas; to agree in advance how much they should be paid in compensation if NGET had to limit their access rights; or under models where the constraint costs were targeted towards those generators whose actions gave rise to those costs.

We would also urge the Government to develop an access model which mandates the provision of "user commitment" and which will therefore require generators to provide better information about the level and location of future grid demand. We consider this is a vital component of any regime capable of meeting the 2020 targets. The Grid companies need accurate and timely information about future grid demand so they can build infrastructure to avoid physical bottlenecks on the system, thereby facilitating delivery of the Government's renewables targets. They also need information to minimise the risk of unnecessary investments, and to ensure that efficient investments can be delivered as quickly as possible. Given the scale of future investment in the grid – the companies have indicated they need to invest around £5bn in new capacity up to 2020 to meet our renewable targets - it is critical that the access arrangements provide accurate signals about future needs. If they do not, there is a risk that either:

- we overinvest in transmission capacity, and business and domestic customers have to foot the bill for capacity that the generators do not need or use; or

- there is underinvestment in new capacity that slows development of the network and prevents delivery of the UK's renewables and emission reduction targets.

Impact on Renewable Generation

Recent experience indicates a significant risk that critical transmission investments will be delayed by the process of obtaining the necessary planning consent, although the Infrastructure Planning Commission may alleviate this in the future. We are concerned that, in the absence of "user commitment", it will be more difficult to get public acceptance and planning consent for new lines which are needed to support renewable generation. This will potentially undermine the timely completion of critical investments and jeopardise creation of sufficient transmission capacity to accommodate the renewable generation required to meet the Government's 2020 targets.

Furthermore, we consider that a holistic model of reform is most likely to help achieve the 2020 targets. However, we understand that DECC is considering a targeted intervention which focuses only on aspects of the arrangements which need to be modified to facilitate the connection of new generators. In our view this may have the effect of raising, rather than reducing, regulatory uncertainty, and has the potential to harm consumers and undermine investments in new generation. A targeted approach will leave a number of complex and controversial issues to the industry process - a process which has shown itself incapable of delivering the necessary reform quickly or coherently. There are wider defects in the arrangements than those that relate solely to the circumstances of new generators. Investors in new generation are unlikely to see arrangements that do not resolve these wider issues as being stable and enduring. This will be particularly true if the arrangements give rise to escalating congestion charges.

We also think there would be benefit in Government considering in more detail how the proposed arrangements might impact on the economics of renewable and low carbon generation as they connect to the system. We are concerned that the models which DECC has presented may give rise to volatile and unpredictable charges and that these charges will not take account of the characteristics of different generation technologies. This may also create uncertainty and undermine investments in renewable generation.

Again, we consider there are other models of grid access which would address these concerns. For example, models which provide the option for generators to fix their access charges for a period of time would help minimise the exposure of those generators to volatile and uncertain costs. Likewise, renewable generators are likely to benefit from models which provide low load factor plant with a discount, reflecting their use of the grid.

Ofgem's response

Introduction

1.1. On 25 August 2009, the Department of Energy & Climate Change (DECC) published a suite of consultation documents, entitled "Improving Grid Access", which set out DECC's anticipated approach to using powers under the Energy Act 2008 (EA2008), to facilitate access to the transmission network. We welcome the opportunity to comment on these documents.

Background

1.2. Enabling renewable and other low carbon generators to secure timely access to the electricity transmission network (the "grid") is critical if we are to meet our climate change and renewable energy targets. To achieve this, we need access rules which encourage the best use of the existing transmission capacity and which support the timely delivery of new capacity.

1.3. The Energy White Paper published in May 2007 announced a joint review by Ofgem and DECC (then the Department of Trade & Industry) of the access regime for electricity transmission networks in Great Britain – the Transmission Access Review (TAR). The objective of the review was to deal with the large (and growing) queue of electricity generators that have been unable to gain access to the transmission system for a number of years.

1.4. The Government considers that to meet our 2020 renewable energy targets, around 35GW of renewable generation will need to be connected to the system along with a considerable volume of nuclear and thermal generation as a number of power stations close. The most recent information from National Grid shows that there is a queue of generation amounting to 76GW, in various states of development. Of this 76GW, around 19GW is renewable generation, of which 3.6GW has already gained planning consents. Without extensive reform, the existing grid access arrangements may act as a significant barrier to the connection of new renewable, other low carbon and conventional generation.

1.5. The TAR Final Report identified a number of the guiding principles that DECC and Ofgem considered should underpin an enduring access framework. These principles were as follows:

- New generation projects should be offered firm connection dates, reasonably consistent with the development time of their project.
- Generators wanting long term, financially firm access to the system need to make long term financial commitments.
- Transmission companies need to have appropriate incentives to respond to the long term demand for access signalled by generators. They need the

freedom and incentives to invest ahead of full user commitment. They also require appropriate incentives to deliver new connections on time and to innovate so that they can deliver as much capacity as possible from existing assets.

- Access rights need to be more clearly defined and all generators need to be offered choice about how they access the system. This choice will need to include long term fixed price access rights that guarantee long term access in return for a commitment to pay for capacity, and shorter term, variable priced access rights.

- In order to make more efficient use of existing and new capacity there needs to be better arrangements for sharing of transmission capacity. One way to achieve this is by making access rights tradable between generators.

Legal and Statutory Framework

1.6. The Electricity Act 1989 as amended by the Utilities Act 2000, the Energy Act 2004 and the Energy Act 2008, sets out the Authority's (and the Secretary of State's) duties. The principle objective is to protect the interests of existing and future consumers, wherever appropriate by promoting effective competition. The Secretary of State and the Authority are under a duty to carry out their functions in the manner which they consider is best calculated to further the principal objective, having regard to a range of factors, including the need to secure that all reasonable demands for electricity are met, the need to secure that licensees are able to fund their activities, and the need to contribute to the achievement of sustainable development.

1.7. The Internal Markets in Electricity Directive (IMED) prohibits any undue discrimination in the terms offered for transmission access and tasks Transmission System Operators with, amongst other matters, "ensuring non-discrimination as between system users or classes of system users…". Standard Condition C7 of the transmission licence of National Grid Electricity Transmission Ltd (NGET) reflects this requirement and explicitly prohibits discrimination between any persons or class or classes of persons. Any enduring access model must not therefore result in undue discrimination.

1.8. The Directive on the Promotion of Electricity from Renewables Energy Sources provides that Member States may provide for priority access to the grid of electricity produced from renewable energy sources. This provision of the Directive has not been implemented in Great Britain. The recent Green Package of European legislation, including Directive 2009/28/EC on the promotion of the use of energy from renewable sources, provides that Member States shall also provide for either priority access or guaranteed access to the grid-system of electricity produced from renewable energy sources.

1.9. NGET has an obligation under the Electricity Act 1989 "to develop and maintain an efficient, co-ordinated and economical system of electricity transmission" and "to facilitate competition in the supply and generation of electricity". As System Operator, NGET also has an obligation "to co-ordinate and direct the flow of

electricity onto and over the GB transmission system in an efficient, economic and co-ordinated manner".

1.10. The commercial rights and obligations for connection to and use of the transmission system are set out in a multi-party code, the Connection and Use of System Code (CUSC). This code is required to be in place under NGET's transmission licence and is a modifiable document. Any CUSC party, and certain other interested stakeholders such as Consumer Focus, are able to propose amendments. For any CUSC amendment to be implemented, the amendment must better facilitate achievement of the applicable CUSC objectives (also set out in NGET's transmission licence), and be consistent with the wider statutory and legal framework. The Applicable CUSC Objectives are as follows:

- Applicable CUSC Objective a - the efficient discharge by National Grid of the obligations imposed on it by the Act and by the Transmission Licence.

- Applicable CUSC Objective b - facilitating effective competition in the generation and supply of electricity and (so far as consistent therewith) facilitating such competition in the sale, distribution and purchase of electricity.

1.11. In the near future, there are significant changes within the sphere of regulation that may have a material impact on the way in which we discharge our duties. We note that Member States are required to implement the Third Package from 3rd March 2011, and that it is commonly accepted that any policy changes to be implemented prior to that date should be consistent with its aims, to avoid future incompatibility and the associated difficulties this may cause.

1.12. Furthermore, on the domestic front, amendments to the Authority's (and the Secretary of State's) duties have been proposed in the fifth session Energy Bill. These proposed amendments provide that, when carrying out its functions, the Authority should consider the interests of consumers as a whole, including their interests in the reduction of greenhouse gas emissions and their interests in secure energy supplies. These changes may have implications for the way in which we and the Secretary of State should view proposals to reform the access arrangements.

1.13. Given the current legal and statutory framework, we consider the following are relevant considerations when assessing any model for access reform against the relevant legislative framework; the considerations are also consistent with the principles embodied in the TAR principles:

1. **Consumer impact** – Whether any additional costs borne by customers are necessary and justified by other benefits, such as lower carbon emissions and/or lower wholesale and retail prices. This is not a requirement to avoid (constraint) costs or to rule out options where such costs could rise. Given the degree of concentration of ownership of generation in a number of locations, any model needs to manage effectively the risk of undue exploitation of market power which might otherwise give rise to excessive or unnecessary constraint costs. In addition, any model should be equitable in terms of cost recovery between generators and customers.

2. **Carbon abatement** – Whether any model impacts on carbon abatement either from new entry by low(er) carbon generation, or wider changes to the fuel mix.

3. **No Undue Discrimination** – models cannot give rise to undue discrimination.

4. **Competition** – the impact of any model on competition, for example, because they create or maintain barriers to entry, favour incumbents over new entrants, or impact on the risk of undue exploitation of market power.

5. **Efficiency and Security of Supply** – any impacts on the ability of NGET and the Transmission Asset Owners (TOs) to discharge their obligations in an efficient manner. A number of the agreed principles for the reform of enduring access arrangements are particularly relevant in this context, namely whether the arrangements:

    a. Allow generation projects to be offered firm connection dates, reasonably consistent with the development time of their projects.

    b. Require generators that want long term, financially firm access to the system to make long term financial commitments.

    c. Allow generators to choose between long term fixed price access rights and shorter term, variable priced access rights.

    d. Create better arrangements for sharing of transmission capacity.

6. **Simplicity** – All other things being equal, it would be preferable to implement an enduring access model that is relatively simple and where the implementation costs are relatively modest.

The Industry Process and Government Intervention

1.14. In April 2008, shortly before the conclusion of the joint Ofgem-DECC TAR project, National Grid raised six proposals to amend the Connection and Use of System Code (CUSC). These amendments were designed to be modular in nature, capable of being combined to deliver one of the following three models:

1. **"Evolutionary change"** – which would not seek to change the current allocation of access rights in a fundamental way, but comprised a suite of enhancements to the way in which system capacity is made available and charged closer to real time. Elements of the model could also strengthen the financial commitment ('user commitment') required from generators, relative to the current arrangements.

2. **"Connect and Manage"** – where generators wanting to use the transmission system would be offered a firm connection date, based on a forecast of when the transmission system would be sufficiently reinforced to accommodate those generators. If the transmission capacity was not provided on time, the generator would still be able to access the system, and the consequential

constraint costs would be paid for by users of the system. Two versions of this model were developed by the industry process. In the original proposal, any additional constraint costs would be borne by all generators and by customers. In the alternative proposal, constraint costs are targeted only on new generators.

3. **"Entry Capacity Auctions"** – transmission system capacity would be auctioned to bidding generators.

1.15. National Grid twice attempted to raise a further model of access reform via CUSC Amendment Proposal (CAP) 171 and 172, which shared features of a connect and manage model whilst allowing greater flexibility in access holding and a mechanism for managing constraint costs. However on each occasion, the CUSC Panel prevented this model from being developed more fully. The features of this "fourth model" are summarised in more detail in our Report on Enduring Transmission Access Reform.

1.16. On 25 June 2009 Lord Mogg wrote to the Secretary of State to provide an update on the progress being made towards reform of the transmission access arrangements. Lord Mogg noted that there appeared to be a lack of readiness to ensure all viable alternatives to resolve grid access be examined and put before the Authority at the same time, and, amongst other matters, that he had a lack of confidence that the work would be completed in a timescale consistent with the Government's aspirations. It was the Authority's advice that the Secretary of State should take powers under the Energy Act 2008, to facilitate reform of the transmission access arrangements. Lord Mogg highlighted the critical importance of ensuring a coherent model of access reform is developed to provide the necessary clarity on the enduring access arrangements which will facilitate investment in renewable technology. That model should be consistent with both the statutory and legal framework and should be consistent with the principles for access reform that were set out in the TAR Final Report.

Models for access reform proposed by DECC

1.17. As set out above, the industry considered and explored a number of different grid access models during the TAR process. However, DECC is now proposing to introduce a variation of only one of these models - the Connect & Manage approach. The versions of Connect and Manage put forward by DECC differ in terms of the details, but would have one common feature – a fixed connection date that would allow the generator the right to export its power (if it has a local network connection) regardless of the ability of the wider transmission network to transport the power produced. On occasions when the transmission network is not capable of exporting the power produced by the generator National Grid, as National Electricity Transmission System Operator (NETSO), would need to take actions in the balancing market to reduce the output of generators on one side of a transmission constraint and to increase the output of generators on the other side of the constraint. The costs of these actions are referred to as constraint costs.

1.18. The consultation sets out three alternative versions of a Connect and Manage model, namely:

- **Socialised:** where constraint costs (payments to generators when they cannot generate because of a lack of grid capacity) are spread over all generators and suppliers who are likely to pass some of these costs directly on to customers by including them in wholesale and retail prices; under this variant of the model, there would be no requirement for generators to make financial commitments beyond one year to underpin their demand for grid access ("user commitment");

- **Hybrid**, where new generators who opt for the Connect & Manage regime pay a proportion of the additional constraint costs that arise; new generators would only be able to pass these costs onto customers if the relevant plant is responsible for setting the wholesale price; again, there is no requirement for "user commitment" beyond one year; or

- **Shared cost & commitment:** where generators could make a five-year rolling commitment to pay for grid access and fix their grid access charges (including a proportion of forecast constraint costs). The remaining constraint costs would be recovered from generators, suppliers who would then pass them through to customers over a 10 year period.

1.19. We note that DECC considers that elements of these options could be combined to form other models. However, without a clearer understanding of how these models might be developed, we have focused our comments on the main features of the models as described in the consultation document.

1.20. We have two principal concerns with the models proposed by DECC. First, we think there are other ways to deliver the same benefits – allowing all new onshore generators to connect and use the grid without any need to wait - without exposing consumers to the risk of a very substantial increase in costs. Second, we consider that the approach proposed by DECC may not create an environment that supports investment in renewable and low carbon generation. We discuss these concerns further, below. Before doing so, however, we first comment on the extent to which the proposed models deliver a non-discriminatory set of arrangements.

Undue discrimination

1.21. As noted above, the Internal Markets in Electricity Directive prohibits any undue discrimination in the terms offered for transmission access and tasks Transmission System Operators with, amongst other matters, "ensuring non-discrimination as between system users or classes of system users…".

1.22. Under the **hybrid variant** of the "Connect & Manage" approach, a proportion of the additional costs of constraints are targeted solely on new generators. This would create a situation where new and existing generators face substantially different charges for system access. Whilst this may help to contain the level of constraint costs it appears to be inconsistent with the prohibition on undue discrimination.

Risk of substantially higher costs to consumers

1.23. The transmission companies have identified a significant programme of new infrastructure that will need to be built to facilitate the generation and demand expected for 2020. Ofgem is committed to ensuring that that the regulatory framework does not hamper the timely delivery of critical and efficient projects. However, there is no guarantee that the projects planned by the transmission companies will be delivered in a timely manner.

1.24. We are concerned that without careful development of complementary mechanisms, the Connect and Manage models proposed by DECC will give rise to significantly higher costs for business and domestic customers. The proposed forms of Connect & Manage generate the risk of a greater volume of congestion and therefore higher constraint costs. Moreover, as the system becomes increasingly over-subscribed, the location and incidence of constraints will become easier to predict, and easier to manipulate. This will create opportunity for generators to exploit the creation of temporary market power. We consider that any form of Connect & Manage would need to build in mechanisms to deal with these concerns.

1.25. DECC's consultation paper was published before the Department had an opportunity to complete an assessment of the impact of each model on the level of constraint costs, although the consultation did include some preliminary analysis, commissioned from National Grid. The analysis produced by National Grid, indicated that the incremental constraint costs of the socialised cost model of Connect & Manage would be £633 million to 2020 in NPV terms. However, we consider that this analysis is likely to understate the risks of a Connect & Manage approach for five reasons:

- First, the model which was used by NGET was not "tuned" to the level of current constraint costs. The model predicted constraint costs of £70 million and £65 million for 2009/10 and 2010/11 respectively (based on the 40% wind counterfactual), whereas the latest figures for these years are £206 million and £477 million.

- Second, the analysis uses averaged BM prices from 2008 for different fuel types, rather than observed BM prices for specific generation plant drawing on more recent information.

- Third, the model was based on an assumption that investment matched the needs of generators. This view is inconsistent with recent experience and is unlikely to be the case.

- Fourth, we would observe that, NGET's estimates of constraint costs have in the past proved to be relatively volatile. For example, in recent months, NGET's forecast of constraint costs for 2010/11 has risen to around £477 million from around £200 million.

- Finally, in the accompanying text, National Grid states that it has not produced a "fully robust set of assumptions across all years".

1.26. We consider it is vitally important to assess the way in which potential access models will impact on constraint costs. We commissioned work from Frontier Economics to assess the potential scale of the additional congestion costs under a Connect & Manage approach, using information that is consistent with the generation and demand scenarios developed for the ENSG 2020 report, and the proposed reinforcements put forward by the TOs. Frontier Economics used the ENSG "gone green" generation and demand scenarios (including an assumed 11.4GW of onshore wind in Scotland), combined with information on the TOs' intended transmission reinforcements. The analysis was based on a load flow model of the system and compared an optimised "unconstrained" schedule of generation with a "constrained" schedule, to determine the scale of additional constraint costs.

1.27. To illustrate the range of potential outcomes, Frontier Economics developed four scenarios which would all accommodate the necessary volume of renewable generation to meet the Government's renewables targets by 2020, or earlier:

1. Invest then connect – generation as per the ENSG report Gone Green scenario, transmission as per TO incentives submissions (including the Eastern HVDC);

2. Connect and manage: accelerated generation – acceleration of ENSG generation profile by three years where practicable plus continued renewables growth from 2017, resulting in a total of around 39GW of wind by 2020;

3. Connect and manage: delayed transmission – generation as scenario 1, transmission as per TO incentives submissions (including the Eastern HVDC), all delayed by 1 year, and

4. Connect and manage: accelerated generation and delayed transmission – combination of scenario 2 and 3.

1.28. For each of these scenarios, Frontier Economics modelled constrained-on and constrained-off volumes and prices in the Balancing Mechanism by applying mark-ups to the Short Run Marginal Cost (SRMC) for each plant type. The resulting costs were then calibrated with observed costs for 2009/10.

1.29. The analysis suggests that when compared with scenario 1 (invest then connect) the cost increase might range from an additional £2.9 billion under scenario 2 to an additional £3.5 billion (on an NPV basis from 2020) under scenario 4, depending on whether the transmission companies are able to deliver on their current grid reinforcement plans to their current timetable and that there are no delays due to planning or construction delays. These costs would be higher if generators exercise further market power - Frontier has calibrated its constraint prices based on the current level of GB-wide prices seen in the Balancing Mechanism, rather than using prices which have been observed in constrained areas of the grid.

1.30. Depending on the scenario, the numbers produced by Frontier Economics are broadly consistent with other work commissioned to assess projected levels of constraint costs associated with forms of connect and manage. For example, analysis was conducted by Brattle consulting group and CEPA on the effects of introducing connect and manage as envisaged by CUSC Amendment Proposal (CAP)

148, which would make explicit provision to advance certain types of renewable and low carbon generation.

1.31. Using a simplified load flow model of the transmission system, Brattle conducted a range of analysis of the impact of varying different connection lead times and priority connection for certain types of renewable and low carbon generation, as envisaged by CAP148. Brattle's analysis showed that when taking the generation background in National Grid's TEC register, if renewable generation only were advanced as per the original proposal for CAP148 such that the date by which such generation could use the system was fixed at a maximum of 4 years (4 year lead time) an additional £722 million of constraint costs would arise compared to the counter factual in the absence of CAP148's provisions. Although this number is lower than the figures produced by Frontier Economics, the generation scenario associated with the Brattle analysis is far lower than required to meet the 2020 targets.

1.32. Brattle also conducted a 3 year lead time "high case", which made provision for 38% of total generation output by 2020 coming from renewable sources. This analysis showed that an incremental congestion cost of £8.2 billion[2] may arise, far higher than Frontier's worse case of £3.5 billion arising from accelerating generation and delaying transmission capacity by 1 year. A significant driver of the high constraint costs associated with Brattle's 3 year high case is the transmission background, which will have differed materially from that assumed by Frontier (as Brattle's analysis pre-dates the work undertaken in the ENSG and the subsequent development of the long term transmission investment plan by the TOs, and being considered by Ofgem's TO incentives work). Notwithstanding these limitations, Brattle's analysis lends support to the view that constraint costs can in some plausible circumstances be in the range predicted by Frontier Economics, between £2.9 billion and £3.5 billion.

1.33. Estimates of the constraint costs associated with CAP148 were also undertaken by Cambridge Economic Policy Associates (CEPA) on behalf of the British Wind Energy Association. For a four year fixed lead time for connection, CEPA's results suggest an additional £243 million (£190 in NPV terms from 2020 to 2008/09) will be incurred between 2013/14[3] and 2017/18 as a result of bringing forward renewable generation under its interpretation of CAP148. We consider there are a number of reasons for the low estimate of constraint costs derived by CEPA. CEPA's analysis: assumes constraints occur on a fixed predictable percentage of output basis, taking no account of how the pattern of flow across the system materially impacts upon the incidence, magnitude and cost of constraints; applies an average constraint price which does not recognise the relative differences in mark ups for different types of power stations as the generation mix develops over time; and only considers the impact of advancing 3.5GW of renewable generation which is far lower than the figure assumed by Frontier Economics or Brattle.

1.34. None of the analysis above takes account of the possibility that generators might have more scope to exploit market power when the system becomes more fully utilised. This might be expected to give rise to higher congestion costs. Whilst we welcome the Government's plans to give us greater powers to tackle market abuse, we have concerns that they may not allow us to tackle all forms of market

[2] Brattle's figures are in NPV terms from 2020 to 2008/09.
[3] The analysis assumes the earliest new generation can be advanced is to 2013/14.

abuse linked to transmission constraints, and these powers are likely to be time-limited. Furthermore, the powers would not prevent an increase in costs which do not arise as a result of market abuse.

1.35. We consider that any model of Connect & Manage needs to consider how to manage, in an effective manner, the risk of higher constraint costs. There are alternative models of access reform that would help to reduce the cost of constraints. For example, constraint costs should be lower under models which require generators: to pay more upfront to secure access rights in constrained areas; to agree in advance how much they should be paid in compensation if NGET had to limit their access rights; or under models where the constraint costs were targeted towards those generators whose actions gave rise to those costs.

Effects on Efficient Investment

1.36. In addition to developing ways of managing constraint costs, we would urge the Government to further develop the models set out in the document to mandate the provision of better information about the level and location of future grid demand.

1.37. In line with the conclusions of the TAR Final Report, we consider that a vital component of a regime capable of meeting the 2020 targets is a requirement for generators of all types to underpin their access needs with a financial commitment ("user commitment"). The transmission companies need accurate and timely information about future grid demand so they can build infrastructure to avoid physical bottlenecks on the system, thereby facilitating delivery of the Government's renewables targets. They also need this information to minimise the risk of unnecessary investments, and to ensure that efficient investments can be delivered as quickly as possible. Given the scale of future investment in the grid – the companies have indicated they need to invest around £5bn in new capacity to meet our renewable targets - it is critical that the access arrangements provide accurate signals about future needs. If they do not, there is a risk that either:

- there is an over-investment in transmission capacity, and business and domestic customers have to foot the bill for capacity that the generators do not need or use; or

- there is underinvestment in new capacity that slows development of the network and prevents delivery of the UK's renewables and emission reduction targets.

1.38. We are concerned that if a model were introduced that lacked user commitment it would potentially undermine the timely completion of critical investments and jeopardise creation of sufficient transmission capacity to accommodate the renewable generation required to meet the Government's 2020 targets. This would be likely to increase constraint costs.

1.39. Recent experience indicates a significant risk that critical transmission investments will be delayed by the process of obtaining the necessary planning consent. We are concerned that, in the absence of user commitment, it will be more

difficult to get public acceptance and planning consent for new lines needed to support renewable generation. A considerable proportion of the new investment put forward by the TOs to meet the 2020 targets does not yet have planning consent, and whilst we can adapt the regulatory regime to provide funding for efficient and appropriate investments, the planning process can significantly delay the completion of infrastructure, or not award consents at all. We note that only the "shared cost and commitment" variant of the Connect and Manage model put forward by DECC includes user commitment. We would encourage DECC to give active consideration to the way in which user commitment can be incorporated into an enduring model of transmission access.

1.40. Delivering grid arrangements that are capable of facilitating the 2020 targets requires more than just breaking the link between available capacity and connection dates. It is important that the arrangements also address the environment in which the transmission companies invest to ensure that this provides the right information to deliver capacity on time and at an efficient cost. Poor information on generators' intended operations will inevitably result in sub-optimal investment, which will both add costs to consumers' bills and potentially divert resources away from building the correct investments, thereby delaying new connections or the realisation of environmental benefits from low carbon generation.

1.41. There are alternative models of access reform that would ensure the provision of more accurate information on future grid demands, resulting in a more efficient and swifter connection process. For example, models which require "user commitment" would be likely to encourage the provision of better information about future grid demand, reducing the risk of transmission capacity being built that is not fully utilised, thereby speeding up connections.

Impact on renewable generation

Impact on the achievement of renewable and carbon targets

1.42. Whilst a Connect & Manage approach may provide certainty of connection to the onshore grid, which may encourage renewable generation, we are concerned that these positive benefits will be undermined by other aspects of the approach proposed by DECC.

1.43. We are concerned that a Connect & Manage model will not of itself resolve the grid access problem or necessarily facilitate the delivery of the Government's climate change targets, because:

- a Connect & Manage approach will not allow generation to be exported earlier unless the relevant generator has a local connection to the transmission system. Around two thirds of the increase in renewable generation which is required to meet the 2020 targets is expected to come from *offshore* wind farms. Under the current arrangements, the physical connection from offshore wind farms to the onshore grid are local connection assets - a Connect & Manage approach is unlikely to facilitate the earlier connection of offshore generators in the event that the landing points are not proximate to the existing transmission network onshore. In addition, there are also

definitional issues that are yet to be resolved for local works for round 3 wind projects which may exacerbate this issue.

- once connected, if the grid is unable to cope with output from a renewable generator, low carbon generation will not displace electricity generated from other sources of power.

We would encourage the Government to assess fully the extent to which any proposed approach will help to facilitate achievement of the Government's renewable targets.

The need for a holistic approach

1.44. DECC's proposed approach is to adopt a narrow, targeted intervention, designed only to target connecting new generation. Whilst we recognise the importance of proportionate regulatory change, we do not think that such a piecemeal approach will provide the answer to the grid access issue, and we do not think that the proposed approach will provide the investor certainty required for new users to enter the market and help facilitate the 2020 targets.

1.45. The access regime developed by DECC needs to consider not just how generators enter the market, but also the regulatory and market framework within which they will operate once they are connected to the system. A generator will develop its business model based on expectations of cashflows over the entire course of a project's life, and will seek funding approval based on that model. If the future regulatory or market framework is unclear, or subject to the risk of significant change, there is a risk that investors will be unwilling to fund investments.

1.46. There are long-standing and controversial issues associated with the grid access regime that could be addressed within the scope of DECC's intervention. These include the nature of access rights, the way in which generators commit to use the system and the costs of doing so, and the compensation that generators receive who are constrained on and off the system. Under DECC's proposed approach, these issues would largely be unresolved.

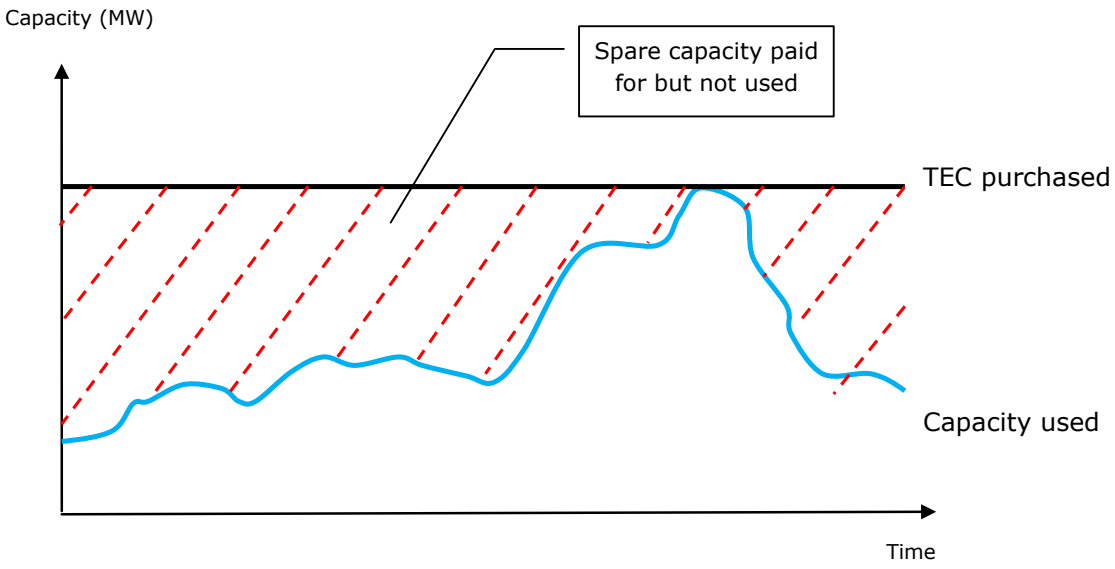
1.47. There are wider defects in the arrangements than those that relate to potentially delayed connection dates. Investors in new generation are unlikely to see arrangements that do not resolve these wider issues as being stable and enduring, particularly as they see escalating congestion charges. As constraints increase, pressure for further reform of the arrangements will mount. This will increase, rather than decrease, regulatory uncertainty and has the potential to harm consumers and undermine investments in new generation.

The need to tailor the access regime to the needs of renewable generators

1.48. We are concerned that the models presented in the document may give rise to volatile and unpredictable constraint costs and hence charges for access and use of the transmission system.

1.49. We also have concerns that none of the proposed models deal with the issue that the current access product, Transmission Entry Capacity (TEC) is a peak product – i.e. generators buy to cover their peak output in a year. This type of product is not well suited to the needs of renewable generators whose plant often has a low load factor. It is arguable that low load factor generators are disadvantaged by the current regime. Figure 1 illustrates the inherent financial disadvantage that low load factor generators are faced with in using the system with the current access product.

Figure 1 – illustrative low load factor generator's unused TEC



1.50. We consider there would be significant benefit in following through with the aims set out in the TAR Final Report and introducing a regime that can accommodate the way generators actually use the system. We consider it would be beneficial if the access regime reflected better the needs and usage of different types of generators.

1.51. Again, we consider there are other models of grid access which would address these concerns. For example, models which provide the option for generators to fix their access charges for a period of time would help minimise the exposure of those generators to volatile and uncertain costs. Likewise, renewable generators are likely to benefit from models which provided low load factor plant with a discount, reflecting their use of the grid.

Interaction between the DECC-led and industry processes

1.52. Whilst the Government's approach to access reform is under development we will keep under review a number the timing of decisions on the access-related CUSC amendments that are currently before the Authority, including the six amendments raised by National Grid in April 2008, plus CAP168 and CAP148. At the same time, we are continuing to progress our work on potential changes to the access regime

which will be of an interim nature, lasting up until the development of a coherent enduring access regime. These interim measures potentially include CAP170, the possible introduction of a locational BSUoS regime, and our work in support of the interim form of Connect and Manage regime.

Conclusion

1.53. We think there are credible alternative access models which could be developed by the Government that meet the Government's aims and which have the potential to solve the grid access problem at an acceptable cost. We consider the options put forward by DECC create the risk of unnecessary and unacceptable increases in constraint costs that would ultimately be borne by consumers. We also consider the proposed approach may not create an environment that better supports investment in renewable and low carbon generation.

1.54. We would also urge the Government to consider how the models it has put forward could be enhanced to provide efficient investment signals, recognise the specific characteristics of different generation and not impose significant unnecessary bills on consumers.

1.55. We think the Government still has time to develop these models. We have recently introduced an interim set of arrangements that have swept aside the need for renewable generators to wait for reinforcement before connecting to the grid. We are also proposing a pragmatic yet robust approach to funding additional transmission investment outside of the current price control that underpins our commitment to removing the barriers to meeting the 2020 targets. These measures have bought a window of opportunity to develop an enduring set of access arrangements that solve the problem low carbon generators face whilst fulfilling our shared primary duty to protect consumers.

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.[4]

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[5].

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 existing and future consumers, 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[6];
- the need to contribute to the achievement of sustainable development; and
- the interests of individuals who are disabled or chronically sick, of pensionable age, with low incomes, or residing in rural areas.[7]

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:

[4] entitled "Gas Supply" and "Electricity Supply" respectively.
[5] 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.
[6] 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.
[7] The Authority may have regard to other descriptions of consumers.

- promote efficiency and economy on the part of those licensed[8] 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; 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[9] 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.

[8] or persons authorised by exemptions to carry on any activity.
[9] Council Regulation (EC) 1/2003