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Proposal to modify the Security and Quality of Supply Standard by increasing the infeed loss risk limits (GSR007)

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Target audience: Transmission licensees, potential offshore transmission licensees, generators, suppliers, consumer groups and any other party who has an interest in the transmission arrangements.

Overview:

This document assesses the impacts of GSR007 - a proposal to modify the National Electricity Transmission System Security and Quality of Supply Standard (NETS SQSS) by increasing the 'infeed loss risk' limits. These limits are applied in the planning of the electricity transmission system as the maximum amounts of generation that can be disconnected from the transmission system in certain circumstances. They also have implications on the operation of the transmission system by affecting the amount of instantaneous loss of generation against which the system frequency must be maintained.

This document considers the potential impacts of the proposal to increase the infeed loss risk limits and seeks views on the impacts we have identified, and any other issues respondents consider relevant to this proposal.

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Context

The Authority's principal objective is to protect the interests of existing and future consumers. In furthering this objective we have important statutory duties to, amongst other things: protect the security of Britain's energy supplies; ensure that all reasonable demands for gas and electricity are met; and contribute to the delivery of a sustainable energy network.

The National Electricity Transmission System Security Quality of Supply Standard (NETS SQSS) sets out the criteria and methodologies that transmission licensees shall use in the planning and operation of the transmission system to ensure the security and service quality of the network. To ensure that system frequency can be maintained in operation at acceptable levels, the NETS SQSS sets a planning limit on the maximum amount of generation ('infeed') that could be lost ('infeed loss risk limits') by relevant defined outage conditions on the transmission system.

There are currently a number of new large single unit generator designs being considered by developers, including nuclear plants, whose capacities are likely to pose a infeed loss risk of up to 1800MW, significantly in excess of the infrequent infeed loss limit currently set at 1320MW. In light of this, a request to amend the limits to loss of power infeed risks in the NETS SQSS has been made by the Transmission Owners (TOs).

This paper considers whether these proposed changes to the NETS SQSS would be appropriate to ensure the continued development and operation of an economic and efficient transmission system.

Associated documents

- Ofgem Open letter on GSR007 Process, 21 December 2009 http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=33&refer=Networks/Techn/TechStandds
- NETS SQSS Version 2.0, 24 June 2009 http://www.nationalgrid.com/NR/rdonlyres/149DEAE1-46B0-4B20-BF9C-66BDCB805955/35218/NETSSQSS_GoActive_240609.pdf
- SQSS Review Group report (GSR007), 10 September 2009 http://www.nationalgrid.com/NR/rdonlyres/EF5C0829-1C5E-4258-8F73-70DC62C43F49/36936/SQSS1320Reportv10_final.pdf
- NETS SQSS Review Group - Governance Frame work, http://www.nationalgrid.com/NR/rdonlyres/00679067-2077-42A0-B975-FA214D179FF4/17781/governance.pdf

Table of contents

Summary

The National Electricity Transmission System Security and Quality of Supply Standard (NETS SQSS) sets out the criteria that transmission licensees must apply when planning and operating the electricity transmission system. An important element of this is the need to contain the impact of certain events on the quality of electricity supply. For example, the NETS SQSS operational criteria require that system frequency is maintained within acceptable ranges when transmission equipment or generator units are suddenly disconnected from the system.

In line with this requirement, the planning criteria set limits to the maximum amount of generation that can be disconnected by relevant outage conditions. These limits are known as 'infeed loss risk limits'. They limit the size of an individual generating unit or a cluster of generating units that can typically connect to the transmission system. They also in effect set the number of discreet pieces of transmission equipment (such as busbar section or transmission circuit) required to connect a certain amount of generation.

The current infeed loss risk limits are: a 'normal' limit of 1000MW for the outage of single connection equipment (e.g. a generation circuit or single busbar section) and an 'infrequent' limit of 1320MW for a less frequent event (e.g. the outage of two transmission circuits.) That is, the system is designed such that a loss of power infeed up to 1000MW is considered a 'normal' event and a loss of up to 1320MW is considered an 'infrequent' event.

Developers are now considering a number of new large single unit generator designs, including nuclear plants, with single generating units up to 1800MW. The current NETS SQSS infeed loss risk limits were not designed to accommodate the connection of such large units.

The SQSS Review Group has brought forward proposals (referred to as GSR007) to increase the infeed loss risk limits in the NETS SQSS. These proposals would:

- allow generation of up to the infrequent infeed loss risk limit (currently 1320MW) rather than the normal limit (currently 1000MW) to connect via a single piece of connection equipment (eg generation circuit or bus section), and

- once a single generator unit (or an equivalent single unit) greater than 1320MW connects to the system, raise the normal infeed loss risk loss limit to 1320MW and the infrequent infeed loss limit to 1800MW.

This impact assessment seeks views on the range of possible costs and benefits that could be associated with the proposals. The main benefit that has been identified is the reduction of carbon emission due the connection of larger volume of nuclear generation whose output would replace the output from higher carbon generation. For example, if GSR007 enables the connection of one large generator unit of 1650MW, the carbon saving could be in the range of £17m to £332m per annum, depending on the proportion of high carbon generation whose output has been

replaced, the alternative amount of new nuclear connected without GSR007 and the carbon price. This benefit would increase as more new large nuclear generators connect due to GSR007.

On the other hand, connecting larger units means the system operator must incur more cost as additional response will need to be held (ie generation which can be held in readiness) to ensure frequency remains within the acceptable range . The transmission licensees estimate this additional cost to be around £160million per annum. This cost is much less affected by the number of larger new nuclear units connected. The larger volume of new nuclear generation could also give rise to benefits for consumers by additional downward pressure on the electricity wholesale price.

In addition, the proposals could benefit competition in generation by allowing more generators to connect, but the change would only be triggered by the connection of a large single unit. We must be satisfied this does not result in unfair treatment within the generation market.

We would welcome views from interested parties on the potential impacts that we have identified, the measurement of these impacts and any other factors relevant to our consideration of this proposal. The deadline for responses to this document is 26 November 2010.

1. Background and legal framework

Chapter Summary

We set out the background behind the proposed changes and the legal framework against which we intend to assess the proposed changes in order to enable the Authority to make a decision.

Question box

Question 1: Are there other relevant criteria which respondents feel should form part of our assessment?

Purpose of the document

1.2. The National Electricity Transmission System Security and Quality of Supply Standard (the 'NETS SQSS' or 'SQSS') sets out the minimum criteria that transmission licensees must comply with when planning and operating the National Electricity Transmission System (NETS[1]).

1.3. The SQSS operational criteria require system frequency to remain at acceptable levels under certain outage conditions. In line with this requirement, the SQSS planning criteria set the maximum amount of generation (known as 'infeed') that could be lost (known as 'infeed loss risk limits') by specified events.

1.4. The SQSS Review Group (the 'Review Group') is responsible for recommending changes to the SQSS. The Review Group has proposed GSR007, which seeks to change the SQSS to increase the infeed loss risk limits. This would have the effect of allowing larger generating units, and larger clusters of smaller units, to connect to individual transmission equipment.

1.5. The purpose of this document is to set out an assessment of the key impacts of modification proposal GSR007.

Background

1.6. In SQSS, the infeed loss risk is the maximum permitted net amount of generation which can be disconnected from the transmission system by a relevant outage condition and can be measured as:

[1] The NETS is currently split into three transmission licence areas which are defined as England and Wales, South of Scotland and North of Scotland. The NETS will also include areas in offshore waters in respect of which offshore transmission licences will be granted by the Authority.

- the output of a generating unit or a group of generating units or the import from external systems disconnected from the system by a secured event, less
- the demand disconnected from the system by the same secured event.

1.7. There are two defined infeed loss risks.

- **Normal**: corresponds to the level of loss of power infeed risk which is covered over long periods operationally by frequency response to avoid a deviation of system frequency by more than 0.5Hz. In planning, this is applied to the maximum amount of generation that can be disconnected by the outage of single connection equipment most local to the generator unit (e.g. a generation circuit, busbar section or mesh corner[2]). This effectively limits the size of single generating unit to connect to the NETS transmission system. This limit is currently set at 1000MW.
- **Infrequent**: corresponds to the level of loss of power infeed risk which is covered over long periods operationally by frequency response to avoid a deviation of system frequency outside the range 49.5Hz to 50.5Hz for more than 60 seconds. In planning, this is applied to the maximum amount of generation that can be disconnected by less frequently occurring outages, such as that of two circuits. This effectively sets the minimum number of transmission equipment required to connect certain amount of generation. This limit is currently set at 1320MW.

1.8. On 4 Feb 2008, EDF Energy plc (EDF) brought forward a proposal to the Review Group to amend the existing SQSS (then the GB SQSS[3]). The purpose of the request was to increase the infeed loss risk limits allowed on the transmission system. EDF requested that the Review Group undertake a review of the infeed loss risk limits. They proposed that the current infeed loss risk limits were no longer consistent with the range of generation technologies now available. Specifically, they suggested that the current limits could act as a barrier to the timely access of large generating units being considered (including nuclear units which could pose an infeed loss risk of up to 1800MW), as such units would exceed the existing limits.

1.9. The Review Group[4], supported by a Working Group, took forward a review of the EDF proposal and in February 2009 consulted on their initial findings[5]. The final Amendment Report, which reflected responses to the consultation, was issued on

[2] Bus bars and mesh corners are points where circuits connect into a substation. These could be transmission circuits, circuits from generating units or transformers to lower supply voltages. Mesh corners are such connection points in a substation where the busbar is formed as a closed ring with circuit breakers in series within the ring ('mesh').
3 In June 2009 the GB SQSS v1.0 was replaced with the NETS SQSS v2.0. The changes related to the incorporation of the offshore transmission system into the standard.
4 The SQSS Review Group is made up of the transmission licensees. Its role is to propose to the Authority any changes to the SQSS it considers to be necessary.
5 http://www.nationalgrid.com/NR/rdonlyres/EEEB8EDB-6AA5-4D44-BFDC-763ECE251E73/31739/SQSS1320Reportfinalv10_040209_.pdf

10 September 2009[6]. The report was endorsed by the three existing onshore electricity transmission licensees – National Grid Electricity Transmission plc (NGET), SP Transmission Limited (SPT) and Scottish Hydro-Electric Transmission Limited (SHETL). The report triggered licence change requests from these transmission licensees[7] which were also submitted on 10 September 2009. An overview of the proposed changes is set out in Chapter 2.

Charging implications

1.10. In order to maintain system frequency in operation, NGET as the System Operator must hold adequate frequency response which will increase generation output in the event of reduction of system frequency. The level of response that needs to be held is dependent on the size of the maximum amount of generation (or 'infeed') that could be lost ('infeed loss risk'). The costs for holding frequency response form part of the balancing costs that NGET incurs in its role as system operator, which may ultimately be borne by consumers.

1.11. The proposed increase to the infeed loss risk limits would result in the need for NGET to increase the level of response it holds, which would increase costs. We consider that as part of our assessment of the proposed changes, it is important to understand how such costs would be treated and any implications for NGET's use of system charging methodology.

1.12. After undertaking a consultation on possible changes to its use of system charging methodology (ECM19[8]) NGET decided that no changes would be brought forward as a result of the proposed new infeed loss risk limits. Consequently, this impact assessment assumes that the current charging approach applies (this means that response costs incurred due to the infeed loss risk, are socialised across all users).

Further developments

1.13. A key element of the GSR007 proposal is that the change in infeed loss limits would happen when a large generating unit (greater than 1320MW) connects to the transmission system. The Review Group issued an open letter on 20th September 2010 which set out a possible amendment to the GSR007 proposal. This alternative approach would alter the change date. Rather than the change being triggered by the connection of a single large generator to the transmission system, the change date would be fixed at 1 January 2014. This is designed to coincide

6 http://www.nationalgrid.com/NR/rdonlyres/EF5C0829-1C5E-4258-8F73-70DC62C43F49/36936/SQSS1320Reportv10_final.pdf

7 If the Authority takes forward the proposed licence changes requested by the three onshore transmission licensees (to SLC C17 and SLC D3), then corresponding changes to the equivalent transmission licence condition which will apply to offshore transmission licensees (SLC E16), would also be progressed.

8 http://www.nationalgrid.com/NR/rdonlyres/767F1A16-78EB-452E-8CC3-73317F060A99/42700/DecisionLettertoOfgemAugust2010v3_2_18810.pdf

with a number of applications for connections to existing spurs which would otherwise result in total capacity at the site exceeding the infeed loss risk limits.

1.14. As the industry process has not yet reached its conclusion, this possible alternative is not considered as part of this impact assessment. We will continue to monitor developments in this area and consider how best to assess any potential alternatives to the changes currently proposed, if and when such alternative proposals are fully developed. However, given the interactions with GSR007, we would also welcome any views from parties at this stage on this potential alternative approach.

1.15. The Review Group noted that the GSR007 proposals were raised and the analysis carried out prior to the Go-Active Date for the offshore transmission regime. However, the Review Group were of the view that the offshore regime does not impact on their recommendations and that the findings of the report are still valid. We would welcome any views from parties (particularly preferred bidders for offshore transmission licences) on the implications for the offshore transmission system.

1.16. We also note that the NGET, in its role as System Operator, has raised concerns about whether the current frequency response service requirements are sufficient for the efficient and economic operation of the NETS should the infeed loss risk limits increase. We understand that the issue has been referred to the joint Balancing Services Standing Group (BSSG)/Grid Code Review Panel (GCRP) Frequency Response working group for urgent consideration. We also understand that, notwithstanding its desire to address this issue with urgency, the Review Group did not believe it to be a barrier to the proposed change. We welcome views on the implications of this issue for our assessment of GSR007.

Legal and assessment framework

1.17. Ofgem's principal objective is to protect the interests of existing and future consumers, wherever appropriate by promoting effective competition. In protecting the interests of consumers we must have regard to protecting the security of energy supplies, including the need to secure that all reasonable demands for gas and electricity are met and also the need to contribute to the achievement of sustainable development. Further information on our duties and powers is set out in Appendix 3.

1.18. In accordance with Standard Licence Conditions C17, D3 and E16 of the electricity transmission licence, onshore and offshore transmission licensees are required to plan and operate the transmission system in accordance with a specific version of the NETS SQSS approved by the Authority. The current version of the NETS SQSS (Version 2.0) is published on NGET's website[9].

9 https://www.nationalgrid.com/NR/rdonlyres/149DEAE1-46B0-4B20-BF9C-66BDCB805955/35218/NETSSQSS_GoActive_240609.pdf

1.19. In recognition of the fact that the NETS SQSS may need, from time to time, to be developed and amended to reflect changes in the industry and technology, the transmission licensees have established a Review Group (SQSS Review Group) to co-ordinate these activities. Governance arrangements for the group, including the procedures for proposing amendments and recommending changes to the Authority where appropriate, are set out in a governance document[10] produced by NGET, SPT and SHETL.

1.20. Having received an Amendment Report and associated licence change requests, the Authority decides whether or not it should approve a version of the NETS SQSS which incorporates the changes proposed. We are undertaking this impact assessment to inform our decision[11].

1.21. In making its decision we think it is appropriate that the Authority takes into account, amongst other things, the principles applied by the Review Group in its review of the NETS SQSS. The Authority will also have regard to the licence obligations that transmission licensees must comply with and must make a decision that is consistent with its own statutory duties. We have set out in Appendix 4 further detail on the assessment framework that we intend to follow in making our decision.

Structure of the document

1.22. The remainder of this document is structured as follows:

- Chapter 2 gives an overview of the GSR007 proposals
- Chapter 3 contains an assessment of the key impacts of the GSR007 proposals
- Chapter 4 sets out the next steps in the process.

10 http://www.nationalgrid.com/NR/rdonlyres/00679067-2077-42A0-B975-FA214D179FF4/17781/governance.pdf

11 The Authority is required to undertake an impact assessment where it considers that a decision is important for the purposes of Section 5A of the Utilities Act 2000.

2. Overview of the Proposals

Chapter Summary
We set out an overview of the changes to the NETS SQSS as proposed by the transmission licensees under GSR007.

Question box
There are no consultation questions in this chapter.

2.2. The GSR007 Amendment Report recommends that the following changes are made to the NETS SQSS:

- Paragraph 2.6.3 of the SQSS would be modified to increase the amount of generation allowed to connect to a single generation circuit, a busbar section or a mesh corner;
- The SQSS will define an 'infeed change date';
- From the 'infeed change date' the:
  - 'Normal Infeed Loss Risk' shall be increased from its current level of 1000MW to 1320MW; and
  - 'Infrequent Infeed Loss Risk' shall be increased from its current level of 1320MW to 1800MW.

2.3. The proposed changes are described in more detail below.

Volume connecting behind single connection equipment

2.4. The element of the proposals which would have the most immediate effect is the change to Paragraph 2.6.3 of the NETS SQSS, which currently states that:

> "following a fault outage of any single generation circuit or single section of busbar or mesh corner, the loss of power infeed shall not exceed the normal infeed loss risk;"

2.5. The proposals would modify paragraph 2.6.3 such that it refers to the ***infrequent*** infeed loss risk, instead of the ***normal*** infeed loss risk. This would have the effect of permitting the connection of up to 1320MW of generation (instead of 1000MW) through a single generation circuit onto a single bus section or mesh corner from the date the change is made[12]. Such connections could take the form of a single generating unit, or a cluster of multiple smaller units.

12 That is, from the date that the Authority, if appropriate, directs a change to the transmission license to require the licensees to comply with the amended version of the NETS SQSS.

Infeed change date

2.6. The remaining changes would be reflected in the SQSS by including values for the normal and infrequent infeed loss risk limits both before and after a defined 'infeed change date'. The change date would be the date on which a single generating unit, CCGT module, boiler or nuclear reactor of Registered Capacity greater than 1320MW connects to the national electricity transmission system and is commissioned. The 2010 Seven Year Statement (SYS) indicates that the first estimated connection date for a unit of this size is 2016. It was explained in the Amendment Report that this element of the proposal was designed to ensure that the costs associated with the change (eg holding additional frequency reserve) are not incurred without the associated benefits.

Infeed loss risk limits

2.7. From the 'infeed change date' the normal infeed loss risk would be increased from its current level of 1000MW to 1320MW, and the infrequent infeed loss risk from its current level of 1320MW to 1800MW. As paragraph 2.6.3 would already have been modified to refer to an infrequent loss risk, following the 'infeed change date' this paragraph would allow the connection of up to 1800MW of generation through a single generation circuit onto a single bus section or mesh corner. Such connections could either be large generating units with a capacity of up to 1800MW or clusters of smaller units with a combined capacity of up to 1800MW connected to the same circuit. Also, with this change, a total amount of generation over 1320MW and up to 1800MW would be allowed to be connected by two transmission circuits rather than three as required currently.

3. Assessment of Key Impacts

Chapter Summary
We identify the key impacts of the GSR007 proposals, focusing on the impacts on sustainable development, consumers and competition. Where possible we quantify these impacts .

Question box

Question 1: Do respondents consider that we have appropriately identified the impacts of the GSR007 proposals? Do respondents consider that there are any additional impacts that we have not fully considered?
Question 2: We have presented a range of approaches in measuring these impacts. Do respondents believe that this range is appropriate? Which measures presented (or other approaches) do respondents consider should be used in our final assessment/decision?
Question 3: Do respondents wish to present any additional analysis that they consider would be relevant to our assessment of the GSR007 proposals?

3.1. In assessing the key impacts of the GSR007 proposals we first set out the analysis undertaken by the Review Group, and then the further analysis we have considered. Our analysis focuses on the potential impacts on sustainable development, consumers, and competition.

SQSS Review Group Analysis

3.2. The Review Group's Amendment Report included a cost benefit analysis which concluded that the proposals would have a significant carbon benefit. The carbon savings the Review Group identified assume that the proposals would enable a greater volume of low carbon generation to connect, which would replace an equivalent volume of higher carbon conventional generation. The Review Group analysis indicated that the carbon savings more than offset the additional frequency response costs required.

3.3. The Review Group’s results, in respect of a generic year between 2020 and 2030, and based on their assumption of the connection of six nuclear generating units (each with a capacity of 1650MW) indicated annual benefits of £808million and annual costs of £160million. We would welcome views on the analysis undertaken by the Review Group as set out below.

Carbon Savings

3.4. One of the key arguments made in the Amendment Report in support of changing the infeed loss risk limits was that the current limits could act as a barrier to the timely connection of large generating units (i.e. in excess of 1320MW). It was argued that these include large nuclear units that could replace existing fossil fuel plant and thus contribute towards meeting the Government's 2020 targets.

The Amendment Report did acknowledge that the increase in infeed loss risk limits could also facilitate the connection of some large conventional generation units in excess of 1320MW. They concluded that in light of the magnitude of the benefits identified and the lower likelihood of such connections, this would not alter the overall conclusion of their assessment. The Review Group's analysis indicated that the proposal would result in approximately 32million tonnes of carbon saved, which the group valued at £790m per annum. The savings arise once the infeed loss risk limits are increased, following the infeed change date (ie once a single large unit greater than 1320MW connects).

Other Benefits

3.5. In addition to these carbon benefits, the Review Group's Amendment Report identified the following costs and benefits in a generic year between 2020 and 2030 which would result from the GSR007 proposals[13], specifically:

- Increasing the infeed loss risk limits would allow additional capacity to connect to a single busbar without the need for additional circuit breakers. The Review Group assumed five circuit breakers could be saved, which could result in a capital saving of c£5million which when annuitised represents a saving of approximately £0.5million per annum.
- Higher infeed loss risk limits would allow more capacity on double circuit spurs. In particular savings could result from the ability to connect a cluster of smaller generators to one double circuit spur. Based on one instance of saving the cost of a 150km second spur[14] which could result in a capital saving of £75million, which when annuitised represents a saving of £7.5million per annum.
- If additional response is held then the amount of generation on system-to-generator intertrips could also be increased. The cost saving resulting from this has been estimated at £10million per annum.
- In total these benefits amount to £18million per annum, in addition to the carbon benefits previously identified.

Response and Reserve costs

3.6. The Review Group identified additional operating costs that would arise from increased infeed loss risk present on the transmission system. The largest increases arise from the need to hold additional response and reserve. Additional generation is held in automatic readiness in order to ensure the transmission system is protected against changes in frequency. This additional generation is known as *frequency response*. Increasing the infeed loss risk limit would increase the amount of frequency response that would need to be held.

[13] More detail on these estimated costs and benefits can be found in Annex 4 of the SQSS Review Groups Amendment Report.
[14] The example used by the Review Group is for a line between Dounreay and Beauly in the north of Scotland. Savings relating to shorter spurs would be significantly less, although may be more frequent.

3.7. The key parameters are the increase in theoretical response (determined by the ratio of risk to response), the cost per unit, and the proportion of response volume actually held.

3.8. The analysis in the Amendment Report was based on an increase the loss risk of 640MW - this is the difference between the new Limit of 1800MW and the average of the existing limits of 1000MW and 1320MW (ie 1160MW). Based on a ratio of primary response to risk of 1.1:1 this necessitated 704MW of additional primary response. The Review Group considered that to include 100% of the possible cost would be excessively prudent. Therefore 75% of the cost was included in the cost benefit analysis. The 75% figure was intended to allow for the fact that in the early years (i.e. when there would only be one or two large generators) the trip rate would not be high and so a milder response policy could be followed. In the later years it was thought that future developments would drive down the cost of demand and therefore a lower figure could be used.

3.9. The Review Group based their estimates on the cost of extra response on historic balancing costs. They estimated the possible increase to these costs by apportioning the costs on the basis of the number of units held.

3.10. Based on these assumptions, the Review Group assessed the impact of the proposal on reserve costs to be £160million, comprising estimated £105million of additional response, an estimated £45million of additional operating reserve.

3.11. We note that a respondent to the Review Group's consultation raised the question of whether response costs might be mitigated by changing the manner of such response. The Review Group considered this issue in annex 4 of their report but concluded that it would not be sensible to speculate on the nature of response holdings likely in the future. We would welcome views from interested parties on this issue.

3.12. During low system demand overnight in order to be able to deal with sudden increases in generation or reductions in demand, it is necessary to have generators capable of reducing instructed generation in order to maintain frequency. The Review Group estimated the increase in such costs would be £10million per annum.

Other Potential Benefits

3.13. There were also potential future benefits identified by the Review Group, but not included in the CBA due to their uncertain nature, specifically:

- Larger cables in offshore connections. Based on the findings of the Offshore Transmission Expert Group in spring 2007, that the maximum offshore connection to a single cable would be 1500MW the Review Group did not include any quantifiable benefit in their analysis. However as technology advances there may be scope for savings in this area as additional capacity could connect to a single line reducing the need for a second line to be built..

- The potential for interconnectors with capacity of up to 1800MW might be increased by these proposals., However the likelihood does not appear particularly high, and the benefits would be hard to quantify.

3.14. We are aware that these estimates are based on a number of assumptions about the future operating environment of the transmission system. We welcome views from interested parties whether these assumptions are appropriate and any likely variation of the cost against valid alternative assumptions.

Overview of our analysis

3.15. We have undertaken further analysis to test the assumptions that underpinned this analysis and made our own assessment of the impacts of the proposals. Our assessment focuses on the impacts on sustainable development, consumers and competition. Where possible these impacts have been quantified such that an overall comparison of likely costs and benefits can be made. The results of our analysis is summarised below, with further details provided in the following sections:

- We expect a positive impact on sustainable development from the GSR007 proposals. In particular significant carbon savings could be realised through the connection of larger amount of new nuclear generation, by accommodating nuclear generators of larger individual unit sizes. For example, we have estimated that a carbon saving in the range of £17-£332million per annum might be expected from the connection of one unit of 1650MW (depending on the proportion of high carbon generation whose output has been replaced, the alternative amount of new nuclear connected without GSR007 and the carbon price). This benefit would increase if more larger nuclear generating units are connected;

- Consumers are likely to benefit from these carbon savings as the effect will be factored into wholesale prices. We have also identified other likely impact on consumers:
    - The proposals could increase the amount of more efficient generation connecting to the network which we expect to have a downward pressure on wholesale prices. We have not quantified this impact;
    - The proposals will increase the costs associated with operating the system. These additional costs have been estimated at £160million per annum. This cost is much less affected by the number of new large generating units connecting; and
    - The proposals will also bring about savings as a result of the ability to connect more generation to existing infrastructure. These savings have been estimated at £18million per annum; and

- There is scope for the proposals to impact on competition. Of particular interest is the linking of the increase in infeed loss limits to the connection of a large generating unit. However, we need to be satisfied that the proposed change to be triggered only by the connection of larger single generating unit does not result in unfair treatment amongst generators.

Impact on Sustainable Development

3.16. We adopt a similar approach to assessing the possible carbon benefits to that used by the Review Group but, we have given further thought to the key assumptions which underpin the analysis. For example, the analysis presented by the Review Group in their amendment report in effect assumed that without these proposed changes to the SQSS the development of the network would be markedly different and in particular that the development of nuclear generation would be significantly curtailed.

3.17. We note however that the existing infeed loss risk limits would not act as a barrier to smaller low-carbon generating units except in circumstances where they were connecting to circuits where capacity was already at or near the infeed loss risk limit. Equally, it would still be possible for large generating units to apply for individual connection arrangements which would allow them to exceed the infeed loss risk limits set out in the NETS SQSS. This is known as 'connection design variation', and such connection arrangements are subject to the conditions set out in clauses 2.15-2.18 of the current NETS SQSS[15].

3.18. We have therefore carried out some additional analysis to consider the following areas in more detail:

- *Volume of carbon benefit:* we have sought to quantify the potential impact on the volume of carbon savings under the proposal using alternative assumptions to those of the Review Group, and
- *Value of carbon benefit:* Government guidance on valuing carbon has changed since the Review Group carried out their analysis. We have estimated a range of potential values using the latest guidance.

3.19. We also set out our qualitative assessment below on other areas relevant to the impact on sustainable development, including security of supply.

Volume of carbon benefits

3.20. We have undertaken some sensitivity testing on the Review Group's analysis, to consider what impact other assumptions than those the group used might be expected to have on the volume of carbon savings under GSR007.

3.21. The Review Group assumed in their Amendment Report that six large new nuclear generators (each with a capacity of 1650MW) would connect to the

[15] Amongst other things, to satisfy these conditions the design variation should not result in additional investment for or operational costs to other users. As such, a design variation connection for large generators would likely be conditional upon the individual generator paying for the additional response required.

transmission system by 2030. This assumption was based on the 2008 NGET Seven Year Statement (SYS). The latest SYS (2010) lists connection agreements for a number of new nuclear plants from 2016 onwards. In the period from 2016 to 2025 connection agreements are in place for twelve of the new larger design nuclear plants (ie those with a generating capacity greater than 1320MW) and nine other nuclear plants (ie those with capacity of less than 1320MW).

3.22. However, we note that the changes GSR007 introduces to facilitate the connection of larger units would be triggered by the connection of the first large generating unit. In light of this we consider that the lower bound on carbon benefits will be determined by the impact of one large generating unit (giving a total capacity of 1.6GW). We also assess the impact of six large generating units (giving a total capacity of 9.9GW) in order to give a range of possible impacts[16]. We have also undertaken additional analysis to test other assumptions used by the Review Group, ie on the type of generation that potential new nuclear would displace, on the reference case against which to assess the impacts of the proposal.

3.23. We consider four scenarios which are designed to be indicative of the possible range of impacts that the GSR007 proposals would have. We have set out our approach and assumptions in more detail in Appendix 2, but in summary:

- **Scenario 1** is based on the Review Group's central assumptions of full volume of carbon savings resulting are attributable to GSR007 and the saving arise as a result of the new nuclear displacing only higher carbon, conventional generation;
- **Scenario 2** is based on an alternative displacement assumption under which the volume of new nuclear generation connected to the transmission system which can be attributed to GSR007 displaces a mix of both conventional and low carbon generation. We have looked at the range of the mix of generation considered by the Review Group and chosen a 55%/45% split between conventional and low carbon generation representative of the average year between 2020 and 2030 (further details are provided in Appendix 2);
- **Scenario 3** uses an alternative reference case to that which the Review Group's analysis assumes in its central case. This alternative reference case is not intended to be a detailed estimate of generation mix without GSR007 but rather aid understanding of the potential impacts by exploring the effect of a different generation background. We assume that in the reference case without GSR007, the same number of low carbon units of smaller sizes will connect. As a result, the incremental nuclear generation connected which can be attributed to GSR007 would be lower than in the previous two scenarios. For example, six units of 1650MW compared to a reference case with six units of 1200MW[17] would result in the incremental new nuclear generation of 2.7 GW instead of 9.9MW. . This is

[16] The carbon benefits associated with these units would increase largely in a linear fashion with the number of units therefore we have not presented the results for each number of units between one and six. We do however discuss the break-even point for each scenario as shown in Figure 3.3.

[17] This is consistent with the size of new nuclear identified in Table 3.14 of the 2010 Seven Year Statement.

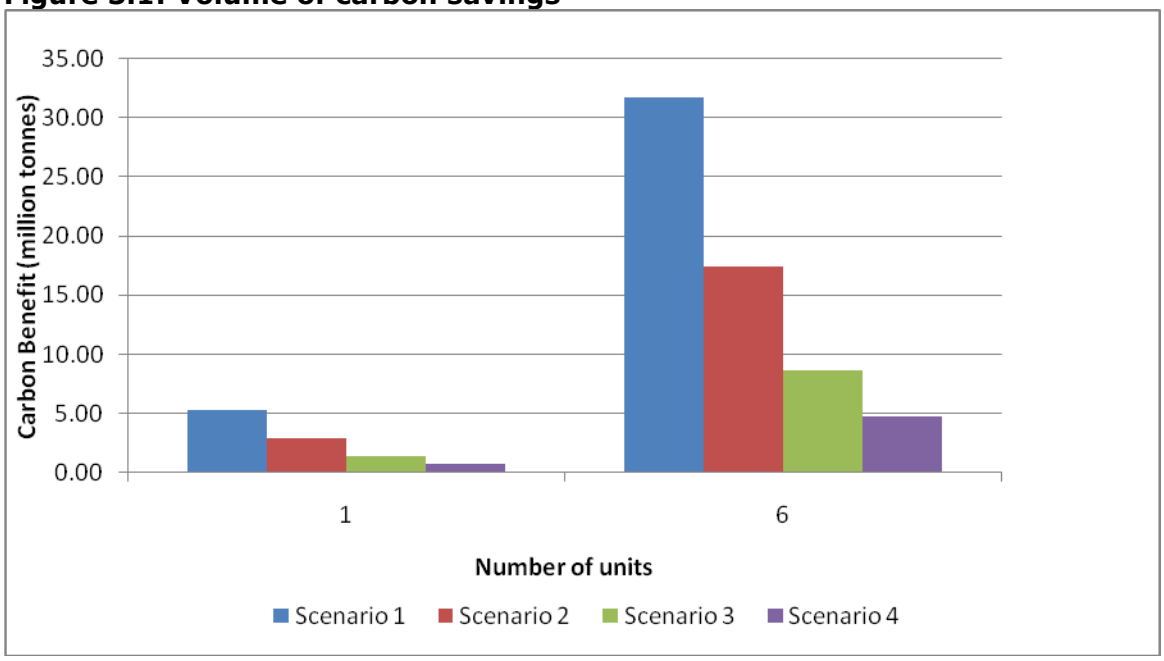
similar to the alternative approach the review group considered in Annex 4 of their report; and

- **Scenario 4** is a combination of the alternative displacement assumption and the alternative reference case (ie. incorporates scenarios 2 and 3).

3.24. These scenarios are intended to test the variability of the results to changes in key assumptions, rather than cover all possible eventualities. For example the two reference cases used in the scenarios make assumptions about how much nuclear generation might connect without GSR007. However there are a number of possibilities ways in which nuclear generation might develop in a world without GSR007. The scenarios given are intended to provide a general range of the likely impacts.

3.25. Figure 3.1 shows (for a generic year between 2020 and 2030) the per annum volume of carbon savings which might be expected from the GSR007 proposals based on the approaches discussed above, for one and six 1650MW nuclear connections[18].

Figure 3.1: Volume of carbon savings



3.26. Scenario 1 gives the most optimistic estimate of the total carbon savings associated with the GSR007 proposals, with Scenario 4 giving a more pessimistic estimate. We would welcome views from interested parties on what the appropriate assumptions should be adopted when assessing these benefits. In particular, we welcome views, and supporting evidence, on the impact of GSR007 on the volume of new nuclear generation development.

[18] Assumptions regarding load factors have been taken from the Review Group's Amendment Report. For nuclear generators a load factor of 85% has been assumed.

Value of carbon benefit

3.27. The Amendment Report seeks to attribute a value to the volume of carbon savings it identifies by applying the shadow price of carbon (in 2007, at 25 £/T_CO2). This is consistent with the approach previously recommended by DEFRA. Using this approach, the Amendment Report attributes a value of £790m to the volume of carbon it estimates is saved. However, in July 2009, DECC announced major changes to the way carbon is to be valued in cost benefit assessments. In its paper, 'The UK Low Carbon Transition Plan'[19], DECC announced that the shadow price of carbon has been replaced. For electricity generation the traded price of carbon should now be used. We have therefore used the latest traded carbon price figures issued by DECC in 2010, to seek to value the volume of carbon savings under the range of approaches outlined above.

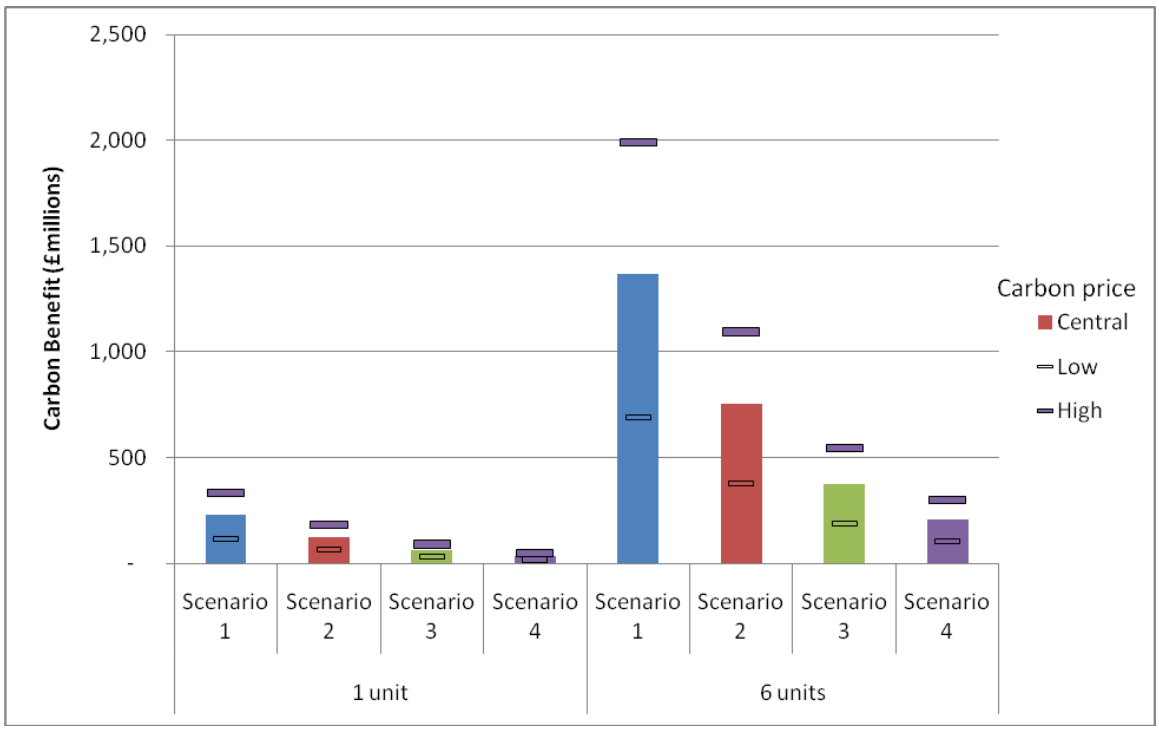
3.28. As we are quantifying the impact in a generic year between 2020 and 2030 we need to take into account that the traded price of carbon varies over time. We have therefore used the 2025 figures from the latest DECC estimates (as this is roughly the average of the prices in this period) to value the carbon savings using the range of prices DECC have identified: (i) at the lower end, £21.70 per tonne (ii) a central price of £43.2 per tonne and (iii) at the higher end, £62.80 per tonne[20]. We would welcome views from interested parties on the approach to carbon valuation included in this IA.

3.29. Figure 3.2 shows the potential range in value of the expected carbon benefits (per annum) associated with GSR007 using the 'aggregate approach' outlined earlier. We have estimated the values based on full displacement and pro rata displacement, using the central traded value. We have also included the impact of using the low and high traded price base on a pro rata displacement. For the purposes of comparison with the value estimated by the Review Group, for between one and six 1650MW nuclear connections.

19http://www.decc.gov.uk/assets/decc/white%20papers/uk%20low%20carbon%20transition%20plan%20wp09/1_20090724153238_e_@@_lowcarbontransitionplan.pdf

[20]http://www.decc.gov.uk/assets/decc/what%20we%20do/a%20low%20carbon%20uk/carbon%20valuation/1_20100610131858_e_@@_carbonvalues.pdf

Figure 3.2: Carbon benefit – sensitivity of carbon price



3.30. This shows the range of possible carbon benefits of one generating unit from £34million per annum (under Scenario 4) to £228million per annum (under Scenario 1) using central carbon prices (by varying carbon prices the range increases from £17million to £332million). For six units the comparable range is £103million to £1,369million per annum. This wide range of benefits shows the sensitivity of the results to changes in assumptions, although it should be noted that the lower end of the scale represents a particularly prudent view. We would welcome views from interested parties on the range of possible benefits identified.

Promoting energy savings

3.31. In considering and assessing the impact of any proposal, Ofgem considers the scope for the proposal to promote energy savings. We do not consider NETS SQSS modification proposal GSR007 would have any impact in this area.

Ensuring a secure and reliable gas and electricity supply

3.32. In assessing the proposal Ofgem pays specific attention to the potential impact on the security of supply. In particular we will consider:

- Network investment (eg whether the proposal will promote more efficient network development and investment and therefore security of supply);

- Network reliability (such as the ability of the gas and electricity networks to deliver energy supplies as well as the management of the systems); and
- Competition and the market's ability to provide security and diversity of supply (such as the adequacy of generation capacity and the availability of the fuels used by power stations).

3.33. In response to the Review Group's consultation on the impacts of the GSR007 proposals, EDF urged the inclusion of the benefits to security of supply that might come from more diverse generation sources. The Review Group felt that this issue was outside the formal scope of their study but did consider the issue in Annex 7 of their amendment report. They concluded that the benefits to security of supply were too diffuse to be incorporated into the formal CBA.

3.34. We agree that security of supply impacts are likely to be influenced by a wide range of variables, and as such do not consider that seeking to quantify these would necessarily provide meaningful data to inform our assessment. However, we do note that new nuclear on baseload (which could be aided by GSR007) could provide very important security of supply benefits . The energy market scenarios presented in Ofgem's Project Discovery assumed nuclear was part of the generation mix delivering security of supply and carbon reduction. However, the Discovery analysis, which covered the period out to 2025 had less new nuclear generation come on than assumed in this impact assessment.

3.35. The estimates of investment requirements in Project Discovery were based on nuclear plant having a 1600MW capacity. A larger nuclear plant has a lower capital cost per MW[21] than a smaller nuclear plant due to economies of scale. The higher unit capital cost of smaller plant could reduce the incentive to invest in nuclear impacting on security of supply and carbon reduction. There would be a marginal impact on security of supply if firms built smaller nuclear units rather than larger units (the counterfactual to scenario 3). However, if the prohibition of larger units tipped the investment decision; so that firms would not choose to invest in any new nuclear at all (the counterfactual to scenarios 1 and 2), then the security of supply implications would be far more material.

Supporting improved environmental performance and eradicating fuel poverty

3.36. In performing its duties, Ofgem is obliged under section 4AB of the Gas Act 1986 and section 3B of the Electricity Act 1989 to have regard to the Social and Environmental guidance issued by the Secretary of State. The current guidelines cover a range of social and environmental considerations that the Government expects Ofgem to take into account, including the achievement of the Government's fuel poverty targets in respect of vulnerable consumers.

[21] http://www.world-nuclear.org/reference/pdf/economics.pdf

3.37. The Authority has duties in relation to the impact of proposals on the sick, disabled, elderly, those on low incomes and rural customers, as well as to contribute to the achievement of sustainable development.

3.38. Our initial view is that, further to the issues considered above in relation to sustainable development, the most important consideration from the perspective of social objectives is the overall impact of GSR007 on consumers, as discussed below. To the extent that we consider the proposal should continue to allow efficient operation of the transmission system we consider that there should be minimal effect on fuel poverty.

Impact on consumers

3.39. In this section we summarise the overall impact on consumers and where possible quantify the likely costs and benefits, estimating the potential net impact. We note that there are a range of factors which determine the extent to which these impacts, which appear at a transmission level, are ultimately passed through to consumers.

3.40. The largest impact on consumer is likely to come from the carbon savings discussed above. In addition there are likely to be other impacts associated with additional generation connection to single connection equipment, the infeed change date, the higher infeed loss limits. We also consider the potential impact on wholesale prices.

Volume connecting behind single connection equipment

3.41. The first element of the GSR007 proposals involves changing the reference in paragraph 2.6.3 of the NETS SQSS so that it refers to the infrequent rather than normal infeed loss risk. This would have the immediate effect of allowing generators up to 1320MW connect through a single generation circuit onto a single busbar section or mesh corner from the date the electricity transmission licence is changed.

3.42. Given that the NETS SQSS planning criteria already allow power infeed loss up to the infrequent infeed loss risk for some outage conditions[22], extending this to the condition set out in paragraph 2.6.3 would not require extra response to be held from the date of the electricity transmission licence change (or at least the first time any such connection happens). We note that this potentially would increase the overall risk to the loss of power infeed, for example, through overlapping outages, but consider that the increase would be small.

3.43. We note that this change is part of the overall change which, after the change date, would ultimately allow single generation units of up to 1800MW to connect to

[22] The existing NETS SQSS sets out in section 2 the applicable criteria for the onshore transmission system and in section 7 the applicable criteria for the offshore transmission system.

the NETS. The impact is the combined change is considered in the later section dealing with the change of the infeed loss limits.

Infeed change date

3.44. The most significant parts of the proposals (i.e. raising the infeed loss risk limits) are designed to be triggered by the connection of a large generating unit to the transmission system (with a capacity of greater than 1320MW) – referred to here as the change date. The transmission licensees explained in the Amendment Report that increasing the limit only when necessary (which they believed to be from the point a large unit actually connects to the NETS) is designed to minimise any negative impact on consumers by ensuring that costs are not incurred unnecessarily. However, based on the assumptions in the CBA from the Amendment Report, these costs could still be incurred without any net consumer benefit. For example, if only one large generator is built then the same additional response costs are still incurred although not fully offset by the identified benefits.

3.45. Based on our further analysis whether the costs, which would be incurred from the time of the first large generating unit connecting to the transmission system, might be incurred without an overall consumer benefit is dependent on how we measure the implications of GSR007. Using the methods outlined in Scenario 1 the costs would be offset even if only one large generator connects. However using the methods outlined in Scenario 4 , there might be a significant disbenefit in the circumstance where only one generator connects. We would welcome views from interested parties on this issue.

The Infeed Loss Risk Limits

3.46. There will be additional operating costs associated with any increase in the infeed loss risk limits. The Review Group considered this issue in some detail estimating additional costs of £160million and we do not repeat this analysis here. We would however welcome views from interested parties on the assumptions underlying this analysis.

Wholesale Price Impact

3.47. Enabling the connection of larger generators, could have an impact on the overall generation mix as these arrangements may favour particular generation types, most notably nuclear. Any change in the generation mix has the potential to impact wholesale prices, as plant types and efficiencies can have a significant impact upon the costs faced by generators.

3.48. We would expect plant to be dispatched broadly in order of short run marginal cost or 'merit order'. Whilst GSR007 alone is unlikely to determine the investment decisions of those parties interested in building new generation, it is thought that this proposal would increase the likelihood of additional nuclear generation coming online. This would potentially result in a downward impact on wholesale prices due to marginal costs. We would expect the plants built to have lower marginal costs

than conventional plant. Therefore when these plant are operational they would displace higher marginal cost plant putting downward pressure on the wholesale price.

3.49. The magnitude of this downward pressure on wholesale prices would vary between the scenarios outlined earlier. However, an outage at a large nuclear unit would have a significant impact on the wholesale price; as high cost generation may have to come onto the system to replace the lost unit. This could feed through into sharp wholesale price rises. In order to quantify the impact on wholesale prices we would need to make detailed assumptions regarding and modelling of the generation background both with and without the GSR007 proposals. Whilst we haven't quantified the impacts, we note that any effect is expected to be positive and material, thus strengthening the case for GSR007. We would welcome views on the possible impact on wholesale prices from interested parties.

Impact on competition

3.50. In raising the original review request EDF expressed a concern that the existing limits could act as a barrier to entry. In response to the Review Group's consultation some parties expressed concern that the proposed changes may give rise to discrimination. Each of these potential impacts is considered here.

Barrier to entry

3.51. It could be argued that having any limit on the infeed loss risk limit is in some way a barrier to entry. However, the value of standard design and operating parameters (such as limits to loss risks) in facilitating the efficient and economic operation of the electricity transmission system is also recognised. We also note that it is possible for connections to be made (in excess of the infeed loss limits) via variations in connection design. Historically there is some evidence that the NETS SQSS (and its predecessors) have been changed as a consequence of reviews arising from technology changes. The proposals set out in GSR007 are consistent with this approach.

Volume connecting behind single connection equipment

3.52. The change in paragraph 2.6.3, which would allow certain secured events be considered infrequent rather than normal, would have the effect of immediately raising the infeed loss risk limit to 1320MW for a single circuit. As such, it could be argued that this lessens the potential for the infeed loss risk limits to act as a barrier to entry.

Infeed change date

3.53. The infeed change date, proposed to be the date that any network user with a Registered Capacity greater than 1320MW connects to the NETS and is

commissioned, could be argued to perpetuate any barrier to entry caused by the current limits.

3.54. Although for single units larger than 1320MW this is not an issue - as their commissioning would mark the change date and trigger the increase in limits - this would not be the case for smaller generating units wishing to connect to circuits which are already at or close to the 1320MW limit. Therefore it could be argued that the change date might act as a barrier to entry for small generators, although this barrier would automatically be lifted at such time as a large unit connects to the system.

3.55. However, the proposals set out in GSR007 would not introduce any new such barrier as these smaller generators would not be in a worse position than under the existing limits. Indeed, the proposals may allow for more efficient planning of connections to the network as the future limits are known. The opportunity for individual connection agreements for small generators wishing to connect to circuits already at or close to the 1320MW limit would still be available. We would welcome views from interested parties on whether accepting or rejecting the change date in the GSR007 proposals would have a positive or negative effect.

Charging implications

3.56. As mentioned above the use of system charging methodology in place will have a bearing on whether the proposed changes to the NETS SQSS have any detrimental impact on competition by way of acting as a barrier to entry. Any use of system charging methodology which is cost reflective should help minimise any artificial barriers to entry.

3.57. The current use of system charging methodology (where the costs of operating the NETS are socialised across all users through Buses charges) would impact as follows.

- Large users would trigger the change in limits and therefore regardless of the timing of their connection the costs associated with the infeed loss risk they place on the transmission system would be socialised; and
- The impact on small users wanting to connect to a circuit which is already near the existing limit would be less clear cut. If the connection is commissioned after the existing limits were replaced with the new limits then they would simply pay a socialised cost. However if the connection is commissioned before the existing limits were raised then they would need to reach an individual variation in connection design agreement and would likely be liable for the full increase in response costs. This could act as a barrier to entry for such users, albeit for a temporary period before the arrival of the first large unit. We understand that the Review Group is currently considering an alternative change date proposals which might address these issues (outlined briefly in paragraph 1.12) and will consider any such alternative in due course.

3.58. We would welcome views on the charging impacts that we have identified, and any other charging impacts respondents may have identified.

Discrimination

3.2. In considering if the proposed changes would give rise to discrimination we need to consider whether the proposal treats similar parties differently or different parties in the same way. It is legitimate to treat similar users differently where there are differences between them that are material and these differences justify the extent of the difference in treatment.

3.3. We note that the Review Group consultation asked for views on whether the existing arrangements could give rise to discrimination. The consultation asked if discrimination arises given the possible advent of a number of new large generating units (greater than 1320MW), which in the absence of the proposed change would be asked to meet the additional response costs as a result of them connecting.

3.4. For the purposes of our assessment on discrimination, we think it is necessary to consider the impact of the 'the infeed change date' on discrimination, ie the proposal that the increase to the infeed loss limits would be triggered by a single unit connecting. This element of the proposals could give rise to concerns of impact on competition, since it links specifically with the connection of larger single units. The Review Group set out in its report that the proposed infeed change date is based on consideration of cost efficiency, by ensuring that higher response is only held when it is countered by expected benefit. However a number of concerns need to be addressed.

3.5. As the change is triggered by a large generator, it can be argued that the proposed change treats them differently from a small generator wishing to connect to a circuit that is already at or near capacity. The question would be whether this different treatment is justified.

3.6. We note that the change date may be justified by the results of the cost benefit analysis - i.e. that the benefits brought about by the large unit justifies any difference in treatment, and that the costs associated with the proposal should not be incurred until the corresponding benefits can begin to be realised. This would appear to be an objective ground for proposing a change. However, a key element of the benefit of the proposal is driven by the additional volume of new nuclear units connecting whereas the costs are predominantly driven by the appearance of larger units, regardless of the number of such units. Our analysis earlier showed that one large generator alone may not bring sufficient benefits to offset the additional response costs required. Therefore we need to consider whether the connection of the first larger unit would be an integral part of the generation development plan comprised of a sufficient number of larger units. Based on the evidence cited in the Review Group, including the contracted generation and potential developments in the next 10 years, we consider that this would appear to be the case. Our initial view is that the proposed change date appears to have a sufficient objective base and would

constitute an objective basis for a difference in treatment between small and large generators. However, we welcome views from interested parties on this issue.

3.7. The SQSS Review Group are currently considering an alternative approach to the infeed change date set out in the GSR007 proposals. This alternative is not being assessed in this impact assessment. If that further work identifies relevant evidence to support additional grounds for making the changes, potentially at a different date, then our assessment and decision on GSR007 should not preclude such further changes being made. Whilst the focus of this IA is on GSR007 and the Authority will make a decision based on the merits of the proposal before it, we would welcome any views that parties have on this alternative, and in particular whether this would help address any of the concerns set out above.

Other impacts

Impact on health & Safety

3.8. We are not aware of any health and safety implications related to the GSR007 proposals.

Risks and unintended consequences

3.9. We consider that any risks or unintended consequences resulting from the GSR007 proposals have been identified elsewhere in this impact assessment. In particular the impact assessment considers a range of sensitivities and scenarios in an attempt to ensure the assumptions and analysis is robust. However we would welcome any parties views on other potential risks and unintended consequences associated with the GSR007 proposals.

Summary

3.10. Our analysis suggests that there are a wide range of potential costs and benefits that might arise as a result of GSR007.

3.11. Benefits associated with the proposals include:

- carbon savings (estimated to be between £17million and £332million per annum based on the connection of one large nuclear generator),
- a downward pressure on wholesale prices,
- increased competition resulting from the connection of additional generating units, and
- other savings of £18million per annum associated with making more efficient use of transmission infrastructure.

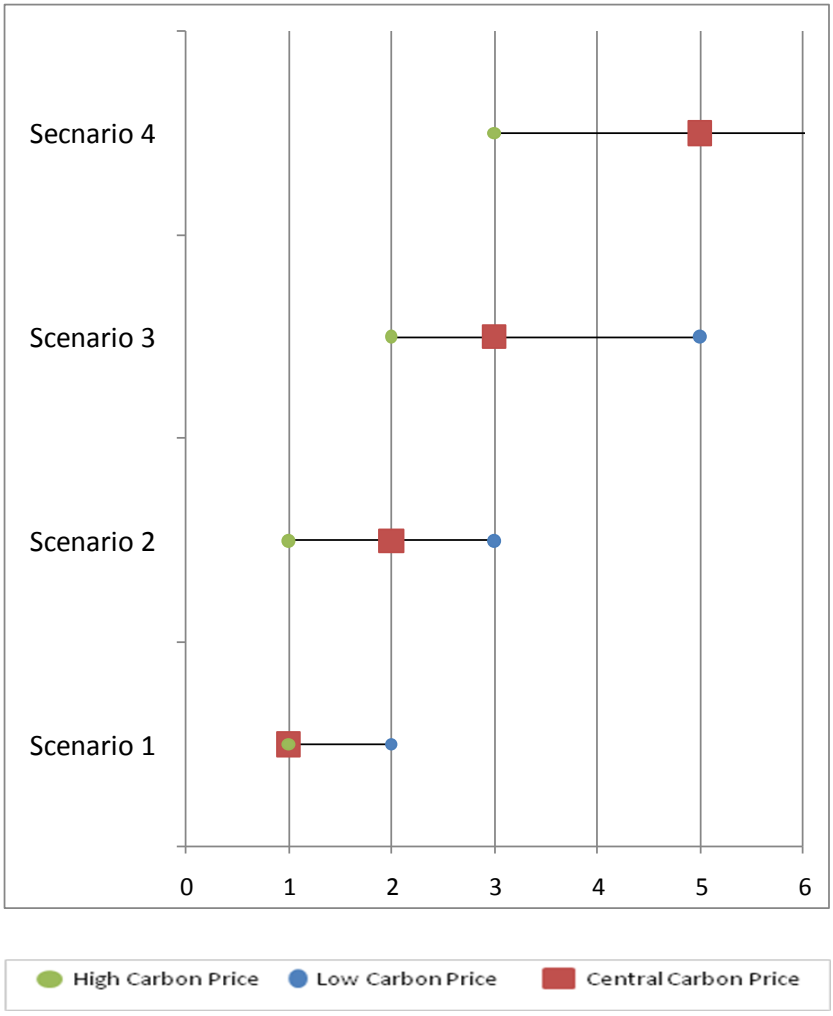
3.12. Costs associated with the proposals include:

- Additional costs associated with operating the transmission system (estimated to be approximately £160million per annum)

- The linking of the change date to the connection of a large generating unit (greater than 1320MW) might lessen the potential competition gains from the proposals as the scope for smaller generators to connect to transmission system is not initially increased.

3.13. In order to assess the overall quantifiable benefits and costs of the GSR007 proposals we have summarised the overall balance of costs and benefits. Figure 3.3 below shows the number of new large generating units that would be needed for the benefits arising under GSR007 to be equal to or greater than the costs, given the assumptions made. The results presented in Figure 3.3 do not include the potential impacts for which we have provided a qualitative assessment but rather only those which it has been possible to quantify at this time. In particular the analysis below excludes the potential impact on wholesale prices and competition.

Figure 3.3: Summary of breakeven number of larger nuclear units



3.14. These results would suggest that under Scenario 1, (ie based on an assumption of full volume of carbon savings being attributable to GSR007) the GSR007 proposals would result in a net annual benefit. The cost increases triggered by the changes would be offset by one large nuclear unit connecting to the transmission system, using the high or central carbon prices.

3.15. However under the approach outlined in Scenario 4 (where more limited benefits are assumed to be attributed to the GSR007 proposals) five large new generating units would be needed to offset the costs (based on central carbon prices).

3.16. We welcome views on the range of costs and benefits identified (both qualitatively and quantitatively). In particular whether based on these results (or other analysis) parties believe the proposed changes set out in GSR007 should be made.

4. Next Steps

Chapter Summary

We set out the process that we intend to adopt in order to reach a decision on the proposed licence changes to reflect modification proposal GSR007. We identify a timetable for the publication of that decision.

Question box

Question 1: Do respondents have any views on either the process or timetable that are proposed for the Authority making its decision on the proposed licence changes?

Intended process

4.1. It is Ofgem's usual practice, whenever possible and appropriate, to consult with parties for a period of six weeks. In this instance there is an urgent need to provide clarity to the industry on the nature of the connection conditions which will apply to future investment. A four week consultation will enable a decision on the GSR007 proposals to be made this year, providing this clarity in a timely manner.

4.2. A detailed consultation has already been carried out by the Review Group on these proposals. Based on the responses to that consultation the issues appear to be well understood by industry. Therefore we think that that a four week period should be sufficient for this consultation.

4.3. The Authority will consider any responses to this consultation before reaching its decision on the licence modification requests related to GSR007.

Timetable

4.4. The following table sets out the timetable we intend to follow in taking a decision on the licence modification proposals to reflect GSR007.

Date	Action
26 November 2010	Consultation responses
December 2010	Issue decision notice and, if appropriate, issue licence modification change proposal
January 2011	Direction to modify licences (if appropriate)

Responding to this impact assessment

4.5. Appendix 1 set out details of how to respond to this consultation, including contact details for any queries. It also gives a complete list of the questions which we are seeking respondents' views on in this document. Respondents' views are also welcomed on any other aspect of this document.

Appendices

Index

Appendix 1 - Consultation Response and Questions

1.1. Ofgem would like to hear the views of interested parties in relation to any of the issues set out in this document.

1.2. We would especially welcome responses to the specific questions which we have set out at the beginning of each chapter heading and which are replicated below.

1.3. Responses should be received by 26 November 2010 and should be sent to:

Sheona Mackenzie
Transmission and Governance
Cornerstone
107 West Regent Street
Glasgow
G2 2QZ
0141 331 6019
sheona.mackenzie@ofgem.gov.uk

1.4. Unless marked confidential, all responses will be published by placing them in Ofgem's library and on its website www.ofgem.gov.uk. Respondents may request that their response is kept confidential. Ofgem shall respect this request, subject to any obligations to disclose information, for example, under the Freedom of Information Act 2000 or the Environmental Information Regulations 2004.

1.5. Respondents who wish to have their responses remain confidential should clearly mark the document/s to that effect and include the reasons for confidentiality. It would be helpful if responses could be submitted both electronically and in writing. Respondents are asked to put any confidential material in the appendices to their responses.

1.6. Next steps: Having considered the responses to this consultation, Ofgem intends to reach a decision on the proposals and associated licence change requests in December 2010. Any questions on this document should, in the first instance, be directed to Sheona Mackenzie (contact details as above).

CHAPTER: One

Question 1: Are there other relevant criteria which respondents feel should form part of our assessment?

CHAPTER: Two

There are no consultation questions in this chapter.

CHAPTER: Three

Question 1: Do respondents consider that we have appropriately identified the impacts of the GSR007 proposals? Do respondents consider that there are any additional impacts that we have not fully considered?
Question 2: We have presented a range of approaches in measuring these impacts. Do respondents believe that this range is appropriate? Which measures presented (or other approaches) to respondents consider should be used in our final assessment/decision?
Question 3: Do respondents wish to present any additional analysis that they consider would be relevant to our assessment of the GSR007 proposals?

CHAPTER: Four

Question 1: Do respondents have any views on either the process or timetable that are proposed for the Authority making its decision on the proposed licence changes?

Appendix 2 – Our analysis

1.1. The appendix sets out further detail underpinning the quantitative analysis we have presented in Chapter 3 of our Impact Assessment (IA) on the proposals to modify the Security and Quality of Supply Standard (SQSS) by increasing the infeed loss risk limits (GSR007). This appendix should be read in conjunction with the main document.

1.2. We have taken the analysis carried out by the Review Group and updated it to consider the following areas in more detail:

- The Reference Case against which the proposals might be assessed;
- The benefits which might be attributable to the change case;
- Value of carbon benefit; and
- Impact of trigger date on benefits (in particular benefits associated with allowing smaller units to connect to circuits which are already at or near the infeed loss risk limit).

Reference Case

1.3. In assessing the carbon benefits of GSR007 the Review Group implicitly assumed significant curtailment of nuclear generation would occur without the proposed changes. By assuming the full 1650MW of generation from large nuclear plants could be attributable to the GSR007 proposals there is a risk that the benefits might be overstated. Two of the scenarios (Scenarios 1 and 2) we set out to help us assess the potential range of benefits associated with the proposals. These scenarios could be seen to represent the top end of the range of impacts which might arise as a result of GSR007.

1.4. It could be argued that it is more reasonable to assume that in a scenario without GSR007 nuclear generators would connect to the transmission system but their size would be reduced. We note that the Review Group did consider an alternative[23] method of estimating the costs and benefits – which focused on the incremental benefits. However they considered that this approach was based on an arbitrary splitting of generation output and therefore did not adopt the approach for their main CBA.

1.5. We have included this approach here in order to present a range of possible impacts. This incremental approach would only attribute a portion of the 1650MW generation from a new nuclear generator to the GSR007 proposals, and as such could be seen to represent a lower end of the range of impacts which might arise as a result of GSR007.

1.6. In effect the approach, which is used in Scenarios 3 and 4 of our analysis, assumes that without GSR007, a smaller nuclear generator would be built. In our analysis we have assumed such smaller units would have a capacity of 1200MW as

this size is consistent with the connection agreements in the 2010 Seven Year Statement.

Change Case

1.7. There are likely to be a range of carbon benefits which could be attributed to GSR007, depending on the assumptions that are made about the connection of nuclear generators. We have varied some of the assumptions that the Review Group used in their analysis in order to ensure that we understand the full range of potential benefits associated with the proposals.

The Number of Generators

1.8. The analysis of carbon benefits in the Amendment Report is based on a fleet of six 1650MW nuclear units. This assumption was derived from Table 3.16[24] of NGET's 2008 Seven Year Statement (SYS) and is broadly consistent with the latest SYS for 2010 in which the first such plant is forecast come online in 2016. The 2010 SYS also indicates that in subsequent years (i.e. post 2020) additional plant of a similar size are also planned.

1.9. However, as the costs associated with GSR007 would be triggered by the connection of the first large generating unit the most prudent approach might be to examine also the case of only one large generator. Whilst this approach would give a more prudent assessment of the impacts it is likely to significantly underestimate the long term benefits of the proposals.

1.10. In light of this we set out our analysis (for each scenario) on the basis of both one large generating unit (giving a total capacity of 1.6GW) and six large generating units (giving a total capacity of 9.9GW) in order to give a range of possible impacts. The carbon benefits associated with these units would increase linearly with the number of units therefore we have not presented the results for each number of units between one and six.

Carbon Displacement

1.11. The Review Group assumed that the six large new generating units would displace an equivalent capacity of conventional generation. In assuming that these new large generators displace only conventional generation, it is possible that the Review Group assessment risk overstating the amount of carbon displacement that could be attributed to the GSR007 proposals. We are not assessing a straightforward replacement of one generator with another as that is not what GSR007 enables. But rather larger units connecting to the network which may replace a range of smaller units. These smaller units may include existing nuclear generators and/or other low carbon generation.

1.12. Therefore an alternative approach might be to assume that a large new generating unit would displace some low carbon generation in addition to displacing conventional generation. The Review Group included a range of assumptions about the generation mix for the period used in the Amendment Report. These assumptions suggested a range of low carbon generation of 25-70%. Taking a mid-point of this range suggests approximately 45% of generation might come from low carbon plant. We have used these assumptions to calculate a 'pro rata displacement' where 55% of the generation from new large plants is assumed to displace conventional generation and therefore a 55% carbon saving is attributed to each plant.

1.13. In light of these two possible approaches to assessing the displacement of carbon attributable to the GSR007 proposals we present both alternatives throughout our analysis. Scenarios 1 and 3 assume the units displace only conventional generation, whilst Scenarios 2 and 4 assume wider displacement.

Quantifying the Results

1.14. As we are quantifying the impact in a generic year between 2020 and 2030 we need to take into account that the traded price of carbon varies over time. We have therefore used the 2025 figures from the latest DECC estimates (as this is roughly the average of the prices in this period) to value the carbon savings using the range of prices DECC have identified: (i) at the lower end, £21.70 per tonne (ii) a central price of £43.2 per tonne and (iii) at the higher end, £62.80 per tonne[25].

[25] http://www.decc.gov.uk/assets/decc/what%20we%20do/a%20low%20carbon%20uk/carbon%20valuation/1_20100610131858_e_@@_carbonvalues.pdf

Table A2.1: Estimating the Annual Carbon Benefits of large generators

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Incremental Low Carbon Capacity Attributable to GSR007 (1)	1650		450	
Load Factor	85%			
Generation (2)	12,285,900		3,350,700	
Carbon Benefit (Conversion Factor CO/MWh)	0.43			
Carbon Displacement Attributable to GSR007 (3)	100%	55%	100%	55%
Total Carbon Benefit (million tonnes)	5.3	2.9	1.4	0.8
Shadow Carbon Price (£ per tonne) - low	21.70			
Total Carbon Benefit - Low (£million)	£ 114.6	£ 63.1	£ 31.3	£ 17.2
Shadow Carbon Price (£ per tonne) - central	43.20			
Total Carbon Benefit - Central (£million)	£ 228.2	£ 125.5	£ 62.2	£ 34.2
Shadow Carbon Price (£ per tonne) - high	62.80			
Total Carbon Benefit -High (£million)	£ 331.8	£ 182.5	£ 90.5	£ 49.8

(1) change case less base case (in scenarios 3 and 4 this is 1650MW - 1200MW)
(2) Capacity x Hours (24x365) x Load Factor
(3) As outlined in paragraph 1.11

The Change Date and Impact of Smaller Units

1.15. The proposed change to increase the NETS SQSS normal and infrequent infeed loss risk limits to 1320MW and 1800MW respectively, is to be triggered by the first large unit to connect to the network. We note that there may also be benefits associated with allowing smaller units to connect to circuits which are already at or near the infeed loss risk limit.

1.16. The cost benefit analysis undertaken for the Amendment Report concluded that the benefit of increasing the infeed loss risk limits to facilitate connecting one

additional 300MW[26] low carbon generator onto to existing circuits already connected with maximum allowed generation would be approximately £14m per annum. On this basis, the Amendment Report concluded that it would not be appropriate to change to the infeed loss limits in advance of the first large unit, unless there were a significant number of such generators all potentially creating transmission risks of greater than 1320MW and that there were currently an insufficient number of such potential connections to make the costs benefit positive. Updating this analysis to reflect the 2025 central traded price of carbon would result in an estimated saving of £41million per annum based on scenario 1 or £23million per annum based on scenario 2.

1.17. We note there could also be similar disbenefits associated with the connection of clusters of small conventional generating units. Therefore, in order to ensure a prudent assessment of benefits we have not included any benefits associated with small generators in our summary figures. We note that the Review Group is considering a possible alternative change date (outlined in paragraph 1.12) and in this

Table A2.2: Estimating the Annual Carbon Benefits of small generators

	Scenario 1	Scenario 2
Incremental Low Carbon Capacity Attributable to GSR007 (MW)	300	
Load Factor	50%	
Generation (2)	1,314,000	
Carbon Benefit (Conversion Factor CO/MWh)	0.43	
Carbon Displacement Attributable to GSR007 (3)	100%	55%
Total Carbon Benefit (million tonnes)	0.57	0.31
Shadow Carbon Price (£ per tonne) - low	21.70	
Total Carbon Benefit - Low (£million)	£ 12.26	£ 6.74
Shadow Carbon Price (£ per tonne) - central	43.20	
Total Carbon Benefit - Central (£million)	£ 24.41	£ 13.42
Shadow Carbon Price (£ per tonne) - high	62.80	
Total Carbon Benefit -High (£million)	£ 35.48	£ 19.52

(2) Capacity x Hours (365x24) x Load Factor

(3) As outlined in paragraph 1.11

[26] A 50% load factor was assumed for this type of generator, compared to an 85% load factor for the large nuclear units.

Appendix 3 – 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 (such as the Gas Act 1986, the Electricity Act 1989, the Utilities Act 2000, the Competition Act 1998, the Enterprise Act 2002 and the Energy Acts of 2004, 2008 and 2010) as well as arising from directly effective European Community legislation.

1.3. References to the Gas Act and the Electricity Act in this appendix are to Part 1 of those Acts.[27] 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.[28]

1.4. The Authority's principal objective is to protect the interests of existing and future consumers in relation to gas conveyed through pipes and electricity conveyed by distribution or transmission systems. The interests of such consumers are their interests taken as a whole, including their interests in the reduction of greenhouse gases and in the security of the supply of gas and electricity to them.

1.5. The Authority is generally required to carry out its functions in the manner it considers is best calculated to further the principal objective, wherever appropriate by promoting effective competition between persons engaged in, or commercial activities connected with,

- the shipping, transportation or supply of gas conveyed through pipes;
- the generation, transmission, distribution or supply of electricity;
- the provision or use of electricity interconnectors.

1.6. Before deciding to carry out its functions in a particular manner with a view to promoting competition, the Authority will have to consider the extent to which the interests of consumers would be protected by that manner of carrying out those functions and whether there is any other manner (whether or not it would promote competition) in which the Authority could carry out those functions which would better protect those interests.

1.7. In performing these duties, the Authority must have regard to:

[27] Entitled "Gas Supply" and "Electricity Supply" respectively.
[28] 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.

- 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[29]; and
- the need to contribute to the achievement of sustainable development.

1.8. In performing these duties, the Authority must have regard to the interests of individuals who are disabled or chronically sick, of pensionable age, with low incomes, or residing in rural areas.[30]

1.9. 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[31] 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, and shall, in carrying out those functions, have regard to the effect on the environment.

1.10. In carrying out these functions the Authority must also have regard to:

- 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.

1.11. The Authority may, in carrying out a function under the Gas Act and the Electricity Act, have regard to any interests of consumers in relation to communications services and electronic communications apparatus or to water or sewerage services (within the meaning of the Water Industry Act 1991), which are affected by the carrying out of that function.

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[32] and

[29] 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 Acts in the case of Electricity Act functions.
[30] The Authority may have regard to other descriptions of consumers.
[31] Or persons authorised by exemptions to carry on any activity.
[32] Council Regulation (EC) 1/2003.

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.

Appendix 4 - Assessment Framework

Introduction

1.1. This Appendix summarises the legal and assessment framework for amendments to the National Electricity Transmission System Security and Quality of Supply Standard (NETS SQSS[33]).

Procedure for proposing amendments to the NETS SQSS

1.2. The NETS SQSS sets out a coordinated set of criteria and methodologies that Transmission Licensees (both onshore and offshore) shall use in the planning and operation of the National Electricity Transmission System. These will determine the need for services provided to the Transmission Licensees. The criterion presented in the NETS SQSS represents the minimum requirements for the planning and operation of the National Electricity Transmission System.

1.3. The 'GB SQSS Governance[34]' (the Governance Arrangements) set out the arrangements for the establishment and composition of the GB SQSS Review Group (the Review Group). The Review Group performs its functions to ensure efficient discharge by each of the Transmission Licensees (the Parties) of the obligations imposed upon it under the Electricity Act and its associated licences, specifically focusing on the "Review Group Principles". The Review Group Principles are as follows:

1. development, maintenance and operation of an efficient, economical and coordinated system of electricity transmission;
2. ensure an appropriate level of security and quality of supply and safe operation of the GB Transmission System; and
3. facilitating effective competition in the generation and supply of electricity.

1.4. The procedure for proposing amendments to the NETS SQSS is also contained in the Governance Arrangements. Under section 4 of the Governance Arrangements, amendments to the NETS SQSS may be proposed by a transmission licensee, the Authority or a relevant interested person.

33 The NETS SQSS is also known as the GB SQSS. References to the NETS SQSS and the GB SQSS are used interchangeably in this appendix.
34 The NETS SQSS and the governance arrangements can be viewed on the codes section of National Grid's website. The governance arrangements can be viewed at the following link: http://www.nationalgrid.com/NR/rdonlyres/00679067-2077-42A0-B975-FA214D179FF4/17781/governance.pdf

1.5. Proposed amendments to the NETS SQSS are made by a Review Request. A Review Request should address an issue/defect and must better facilitate the achievement of the applicable Review Group Principles than the existing NETS SQSS baseline.

1.6. Once a NETS SQSS Review Request has been raised, it is considered by the Review Group. A Review Request may be referred by the Review Group for evaluation and assessment by a Working Group. Following completion of its evaluation, the Working Group commissions an assessment from each of the transmission licensees of the likely effect of the Review Request on, amongst other matters, that party's transmission system.

1.7. Following completion of this assessment, the Working Group prepares a report (the Working Group Report) as to whether the Review Request better facilitate achievement of the Review Group Principles. The Working Group Report is then considered by the Review Group and a Consultation Document is prepared and consulted upon, which contains, among other matters, the recommendations of the Review Group as to whether the proposed amendment(s) should be made. Following closure of the consultation, the Review Group prepare an Amendment Report.

1.8. If the Parties agree that an amendment to the NETS SQSS is required, the Review Group prepares an Amendment Report which it sends to the Authority. Each Party then individually sends a licence change request to the Authority based on the Amendment Report. If not all Parties agree that an amendment to the NETS SQSS is needed, each Parties recommendation is incorporated into the Amendment Report. Only those Parties that recommend an amendment to the GB SQSS may send licence change requests to the Authority.

Legal Framework for Decision

1.9. After receipt of the Amendment Report, the Authority makes a decision as to whether or not to direct implementation of the Review Request or any of the alternatives. It makes its decision in the context of a prescribed legal and assessment framework as set out below.

Impact assessment

1.10. Section 5A of the Utilities Act 2000 (Duty of the Authority to carry out an impact assessment) imposes a duty on the Authority to undertake an impact assessment in certain cases.

1.11. Section 5A of the Utilities Act 200 applies where:

> (a) the Authority is proposing to do anything for the purposes of, or in connection with, the carrying out of any function exercisable under or by virtue of Part 1 of the Electricity Act or the Gas Act; and

(b) it appears to the Authority that the proposal is important within the meaning set out in section 5A, but does not apply where the urgency of the matter makes it impracticable or inappropriate for the Authority to comply with the requirements of section 5A.

1.12. Where section 5A applies, the Authority must either carry out and publish an impact assessment or publish a statement setting out its reasons for believing that it is unnecessary for it to undertake an impact assessment. An impact assessment must include an assessment of the likely effects on the environment of a proposal.

1.13. Section 5A(2) sets out the matters which would determine whether or not a proposal is "important" for the purposes of section 5A. These are where a proposal:

a) involves a major change in the activities carried out by the Authority;
b) has a significant impact on market participants in the gas or electricity sectors;
c) a significant impact upon persons engaged in commercial activities connected to the gas or electricity sectors;
d) a significant impact upon persons engaged in commercial activities connected to the gas or electricity sectors;
e) has a significant impact on the general public in GB or in a part of GB; and
f) has significant effects on the environment.

Decision-making process

1.14. With regard to a proposed amendment, the Authority will assess the Review Request against the applicable NETS SQSS Relevant Principles set out above. The Authority must determine which of the options available to the Authority is best calculated to further the principal objective to protect the interests of consumers (including existing and future consumers) in relation to electricity conveyed, wherever appropriate by promoting effective competition. The Authority must also consider whether the proposal is consistent with its wider statutory duties, including those arising under European law.

1.15. A summary of the Authority's powers and duties is set out at Appendix 3 of this document. Neither the above summary nor the summary at Appendix 3 is intended to be a substitute for referring to the relevant legal instrument or the NETS SQSS Governance Arrangements.

Appendix 5 - Glossary

A

The Authority (Ofgem)

Ofgem is the Office of Gas and Electricity Markets, which supports the Gas and Electricity Markets Authority (GEMA), the body established by Section 1 of the Utilities Act 2000 to regulate the gas and electricity markets in Great Britain.

B

Busbar

The common connection point of two or more transmission circuits.

D

Double Circuit Overhead Line

In the case of the onshore transmission system, this is a transmission line which consists of two circuits sharing the same towers for at least one span in the SHETL or England and Wales areas or for at least 2 miles in the SPT area.
In the Case of an offshore transmission system, this is a transmission line which consists of two circuits sharing the same towers for at least one span.

F

Fault Outage

An outage of one or more items of primary transmission apparatus and/or generation plant initiated by automatic action unplanned at that time, which may or may not involve the passage of fault current.

Frequency Response

An automatic reduction in active power output in response to an increase in the system frequency above the target frequency (or such other level of frequency as may have been agreed in the Ancillary Services Agreement).

G

Generator

A person who generates electricity under licence or exemption under the Electricity Act 1989.

Generation Circuit

The sole electrical connection between one or more onshore generating units and the Main Interconnected Transmission System ie a radial circuit which if removed would disconnect the onshore generating units.

I

Infrequent Infeed Loss Risk

The level of loss of power infeed risk which is covered over long periods operationally by frequency response to avoid a deviation of system frequency outside the range 49.5Hz to 50.5Hz for more than 60 seconds. Until reviewed this is 1320MW.

L

Loss of Power Infeed

The output of a generating unit or a group of generating units or the import from external systems disconnected from the system by a secured event, less the demand disconnected from the system by the same secured event.

N

NETS Transmission System

The national electricity transmission system comprises the onshore transmission system and the offshore transmission systems.

National Electricity Transmission System Security and Quality of Supply Standard (NETS SQSS)

The document prepared pursuant to conditions C17, D3 and E16 of the Transmission Licences, setting out the criteria and methodologies which transmission licensees shall use in the planning and operation of the national electricity transmission system.

Normal Infeed Loss Risk

That level of loss of power infeed risk which is covered over long periods operationally by frequency response to avoid a deviation of system frequency by more than 0.5Hz. Until reviewed this is 1000MW.

O

Ofgem

See definition of the Authority.

Offshore electricity transmission networks

Offshore electricity transmission networks will be required to transmit electricity from offshore renewable generators to customers via the onshore transmission and distribution networks.

R

Review Group

In the context of this paper the Review Group refers to the SQSS Review Group

S

Secured event

A contingency which would be considered for the purposes of assessing system security and which must not result in the remaining national electricity transmission system being in breach of the security criteria.

Appendix 6 - Feedback Questionnaire

1.1. Ofgem considers that consultation is at the heart of good policy development. We are keen to consider any comments or complaints about the manner in which this consultation has been conducted. In any case we would be keen to get your answers to the following questions:

1. Do you have any comments about the overall process, which was adopted for this consultation?
2. Do you have any comments about the overall tone and content of the report?
3. Was the report easy to read and understand, could it have been better written?
4. To what extent did the report's conclusions provide a balanced view?
5. To what extent did the report make reasoned recommendations for improvement?
6. Please add any further comments?

1.2. Please send your comments to:

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