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25th November 2010

Dear Sheona

Impact Assessment and Consultation on GSR007 'Proposal to modify the SQSS by increasing the Infeed Loss Risk limits'

Thank you for the opportunity to respond to this impact assessment. This response is provided on behalf of National Grid Electricity Transmission plc (NGET). NGET owns the electricity transmission system in England and Wales and is the National Electricity Transmission System Operator. In the main body of this response we present a summary of the main points of our response, whilst detailed answers to the questions posed in the consultation has been included in Appendix 1.

In the main, we support your assessment of the Carbon benefits of GSR007. We note that at present you present a very wide range of benefit. In our response we have made some suggestions toward some refinement of this range amongst our detailed answers, and we look forward to seeing how you treat this range in your final decision on GSR007.

If you would like to discuss any of these points further, please do not hesitate to contact me, or David Wright (phone 01926 656319 – chair of the SQSS Review Group), or Paul Plumptre (phone 01926 653424).

Yours sincerely

[By e-mail]

Paul Whittaker
Director of UK Regulation

Appendix 1 Detailed Responses

Question 1.1: "Are there other relevant criteria which respondents feel should be part of our assessment?"

The SQSS Review Group identified three criteria, which are covered separately in sections 6.1 6.2 and 6.3 of the GSR007 report:

6.1 Cost – Benefit Analysis: Your impact assessment naturally majors on this criterion, and we identify no aspects of a Cost – Benefit Analysis which you do not cover.

6.2 Market Analysis: Under this aspect, the SQSS Review Group included Competition in Generation and Supply, Discrimination, and Evolution of the Power System. We note that your Impact Assessment covers these issues. Moreover, we note that your discussion of Discrimination (see your pages 24 and 25) mainly covers the issue of whether the proposed GSR007 'trigger date' of connection of a new large unit discriminates against smaller units wishing to connect being a transmission spur; arguably, our subsequent proposal of 20/Sept/2010 to advance the trigger date for GSR007 already addresses this concern (although this subsequent proposal is properly out-of-scope of this Impact Assessment).

6.3 Technical Analysis: The SQSS Review Group included material to demonstrate that the system could be operated securely under an 1800MW Infeed Loss risk in section 6.3 of the GSR007 report. We note your consideration of Security of Supply (your page 18), and we conclude that this technical analysis is sufficient.

Question 3.1: "Do respondents consider that we have appropriately identified the impacts of the GSR007 proposals? Do respondents consider that there are additional impacts that we have not fully considered?"

We are satisfied that Ofgem have adequately identified appropriate impacts of GSR007.

Question 3.2: "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 for in our final assessment/decision"

In your estimates of the Carbon Benefit, scenarios 3 and 4 adopt the argument that not the whole 1650MW of new large generation can take the credit for GSR007, but only the last 450MW of generation, above a level of 1200MW that might otherwise go ahead. We believe this is a valid approach for appraisal (we presented a very similar argument in our 'alternative assessment' within GSR007). The SQSS Review group prefer a central assessment of the full 1650MW under your scenarios 1 and 2, for the risk that new large units will not proceed at all if GSR007 is not accepted.

Scenarios 2 and 4 adopt an argument that new large units will displace a mixture of conventional and low-carbon generation. (If one adopts this argument, we are comfortable with your levels of 0.55 conventional and 0.45 low-carbon.) We do have reservations with this approach, for two reasons. Firstly, it is not clear to us, that this argument derives from a realistic view of the future. Most commentators cite CCGT as the marginal generation capacity and energy source of electricity, for many years into the future. To argue that a new large unit displaces 45% of low-carbon generation

(presumably wind or tidal) is to take the premise that low-carbon targets will be exactly met, and subsidies will evolve exactly. We think that the actual level of low-carbon target met will have a more approximate outcome.

Secondly, DECC publish guidelines on Carbon appraisal (source: http://www.decc.gov.uk/assets/decc/statistics/analysis_group/122-valuationenergyuseggemissions.pdf). Our reading of Table 1 of the attached tables, is that DECC are saying that the marginal Carbon intensity of electricity is 0.3939 TCO2/MWh for all years 2010 thru 2025. This is certainly not an assumption of 55% conventional : 45% low-carbon. If DECC advise such a single value for public carbon appraisals, should this not be the value the industry adopt in it's evaluations? [1]

For these two reasons, we are less supportive of your scenarios 2 and 4. In particular, we think scenario 4 has a flavour of double-discounting carbon benefits, and therefore do not believe it should be adopted as a central case.

A further relevant parameter is the price of Carbon adopted. We agree with your usage of DECC's June 2010 "Updated short term Carbon traded values for public policy". By using a reasonable central year of 2025 to appraise GSR007, you correctly use Carbon prices of 21.7 (low) 43.2 (central) or 62.8 (high) £/TCO2. [2]

Another relevant parameter in your appraisal in the number of new large units assumed. We agree that appraising against two to six new large units represents a reasonable range. We caution against a central appraisal at only one large new unit. We do not think it credible that even one company would proceed with only one unit of a new design/[3]

We await with interest your final appraisal of the GSR007 cost-benefit, to see whether you adopt a single central assessment of parameters, or take a view across a number of arguments. We favour the latter approach, since it acknowledges that these sorts of cost-benefit arguments are not definitive, but can provide a range of numbers, amongst which one has to take a judgement in conjunction with other criteria apart from the economics.

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[1] We have consistently to-date in GSR007 appraisals used the previous DECC/DEFRA value of 0.43 TCO2/MWh for carbon intensity. We have not yet updated any of our appraisals to this latest value of 0.3939 TCO2/MWh.

[2] Although not relevant to this Response, we note that, in our presentation of the arguments to advance GSR007 (20/Sept/2010), we adopted a year of 2015 for appraisal. DECC now advise a central Traded price of Carbon of 15.1 £/TCO2 for that year. We thought that value markedly low, and –possibly erroneously– presented an alternative valuation at the non-Traded price of 55.7 £/TCO2 for that year. If one agrees to adopt only Traded prices for these evaluations, then this alternative presentation should be muted to DECC's low and high cases for Traded Carbon price of 7.9 and 19.2 £/TCO2 for 2015.

[3] The instance of the single development of Sizewell B in the 1990s is not a good counter-example here. Had the CEGB remained in existence, it certainly would have proceeded with Hinkley Point C, for which Section 37 Consent was outstanding from 1989 to 1995.

Question 3.3: "Do respondents wish to present any additional analysis that they consider would be relevant for our assessment of the GSR007 proposals?"

We make only one addition, beyond what we have already tabled in our GSR007 submission (September 2009), and our letter proposing to advance the implementation date (September 2010). See Appendix 2, for an additional assessment of how our current understanding of offshore cable sizes strengthens the original cost-benefit case for GSR007.

Question 4.1: "Do respondents have any views on either the process or the timetable that are proposed for the Authority making its decision on the proposed Licence changes?"

We note that Ofgem intend to proceed and publish a decision on GSR007 in January 2011. We are conscious that relevant issues have already been consulted by the SQSS Review Group, and we support Ofgem's timescales. We believe many participants, including NGET, will benefit from the certainty of a decision in this area.

Appendix 2 Additional Arguments on Offshore Cables

In our GSR007 Reports, we said that there was a possibility that a larger Infeed Loss Limit could deliver a benefit in terms of permitting adoption of larger offshore cable sizes, but that at the time it was not possible to quantify the cable cost savings (see benefit (d) on page 44 of the GSR007 Report).

In our 20/Sept/2010 letter, proposing advancement of GSR007, we presented an offshore argument in support of the advancement. This argument broadly also supports the original GSR007 cost-benefit. The argument runs as follows: (the following bullets are unchanged from our letter of 20/Sept)

Benefit for offshore generation

- Consider an offshore windfarm of 1.8GW. At present, it will require 2x900MW DC cables and converters. If GSR007 is endorsed in time, it will require 1x1800MW DC cables. (Note: these numbers may appear to bias the argument, by moving from 900MW to 1800MW. However, it is the case that currently discussed DC cable and converter sizes are of order 1000MW at 300kV and of order 2000MW at 500kV. No-one is discussing or costing an intermediate size of 1320MW, and so it would be unrealistic to construct an argument using numbers closer to the pre- GSR007 limit of 1320MW.)

- Typical cable cost for 900MW, (approx 1600mm² at 300kV DC) = £1100k /km cable. x100 km length = £110m per cable. Plus £100m for 900MW converters + £65m for offshore platform = £275m total.

- Typical cable cost for 1800MW (approx 2200mm² at 500kV DC) = £1300k /km cable. x100 km length = £130m per cable. Plus £130m for 1800MW converters + £130m for offshore platform = £390m total.

- Thus the saving in using 1x1800MW rather than 2x900MW cables = 2x275 - 1x390 = £160m. Annuitising at 6.25% tdr over 20 years (a transmission rate-of-return, over an OFTO lifetime), = 160 ÷ 10.9 = £14.5m pa.

- We believe it reasonable to assume that two instances of this design saving could be present on the GB system by 2016, eg one in the Irish Sea and one in either the Hornsea or the Norfolk offshore zones. Hence the contribution to the cost-benefit for advancing GSR007 is £29m.

Adaptation for GSR007 main cost-benefit

- The above argument can be applied into the main cost-benefit for GSR007.

- We acknowledge that the appropriate timescale for GSR007 main would be out to 2025. In the absence of GSR007, it might be more reasonable to assume that an offshore cable technology close to 1320MW rating would be developed, and so the numerical arguments above would become muted. However, by 2025, there would be a greater number of instances where the above benefit would apply, particularly if the current 'Radial' offshore designs perpetuate. We reckon these effects balance, and so we think it reasonable to include an extra benefit of £29m in the main cost-benefit for GSR007.

- Thus the update of our main GSR007 cost-benefit would run as follows:

Table 1: Summary of GSR007 Cost Benefit Analyses

Item	Annual Benefits (£m)	Annual Costs (£m)
Carbon benefit of larger nuclear units	790.0	
Greater than 1320MW of generation on a double-circuit spur	7.5	
Fewer circuit breakers in substations	0.5	
Larger and fewer offshore cables	29.0	
Increase in primary response held		105.0
Increase in operating reserve		45.0
Increase in downward regulation costs overnight		10.0
Increased volume on inter-trips	10.0	
TOTAL	**840.0**	**160.0**

- Of course, it would be invidious to update just one aspect of the whole GSR007 cost-benefit in isolation. Were we to carry out a full update, we would revise many parameters, including Carbon intensity and Carbon price in line with recent DECC advice. However it is clear that this new information on offshore cable sizes increases the cost-benefit case for GSR007.

Appendix 3

We make a couple of general drafting observations, which effectively amount to little more than matters of factual accuracy:

1. Generation Capacity or Infeed Loss Risk

In a number of places throughout the Consultation, you equate the loss risk being covered by the System Operator with the size of the largest generator on the system. This is not strictly the case, since the infeed loss risk posed by a particular station may not equal the generation capacity. For example, Sizewell B regularly generates at its TEC level of 1200MW; yet the infeed loss risk is 1260MW. (This is because 60MW of on-site load is fed within the Gross-Net generation level of 1200MW; following a reactor trip, that 60MW of on-site load persists, and becomes visible to the system.)

It is troublesome to be clear on this distinction throughout the drafting of a long document (although we do attempt to do so in our GSR007 report). If one is going to adopt the looser language of generation level, it would be useful to have an early footnote pointing out the distinction.

2. Not all Large Units are Nuclear

Another drafting infelicity, which often occurs in your document, is the implicit assumption that all possible new generating units posing infeed loss risks of >1320MW will be nuclear. While GB currently has no other transmission-contracted plant of such size, there are examples world-wide – for example advanced coal units of 1400MW. Again, in the drafting of GSR007, we strove to keep our language technology-neutral (at some points, we failed). If you wish to draft rather more loosely, again we think it is appropriate to flag this in an early drafting footnote.

3. Implementation Date

On point of accuracy, our amendment proposal is to fix the implementation date to be 1/April/2014, not 1/January/2014 as you state in your para 1.13. The difference is unimportant, and almost immaterial, since it is unlikely that any projects causing a >1320MW risk will commission between exactly 1/Jan/2014 to 31/March/2014.