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Dear Sheona and Min,

Renewable UK consultation response

RenewableUK (formerly the British Wind Energy Association (BWEA)) is the trade and professional body for the UK wind and marine renewables industries. Formed in 1978, and with over 650 corporate members, RenewableUK is the leading renewable energy trade association in the UK, representing the large majority of the UK's wind, wave, and tidal energy companies.

Overview:

(1) We note SQSS does not differentiate between (a) network circuit risk and (b) generation risk, with respect to largest infeed loss. We note each category promotes differing risks to system operation, for example – frequency of occurrence, magnitude of risk, duration of risk, cost implications. We recommend there is benefit in SQSS reconsidering current treatment of infeed loss risk to better reflect the causes of risk to system operation;

(2) We note infeed loss limit increases will render the related charging methodology to be discriminatory and insufficiently cost reflective. We recommend revision of charging methodology be considered by Project TransmiT as part of Ofgem's review of BSUoS charging.

We recognise the value of embedding cost reflectivity within regulatory structures so to promote efficiency, economic best practice, enhanced competition, and the delivery of value for money for UK consumers. However we also recognise the application of cost reflectivity may not always be appropriate, or possible. For example, where (a) the cause of the cost cannot be identified, or (b) the cause of the cost is distributed evenly amongst all contributors, or (c) where the cause of the cost is due to a regulatory failure to deliver anticipatory investment in market components necessary to support the competition of its customers.

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(3) We recognise increasing largest loss infeed limits will facilitate the connection of new larger scales of generation plant, and thus would prevent such limits becoming a barrier to market entry.

(4) We recognise increasing largest loss infeed limits under current SQSS requirements would enable the additional connection of smaller generators to saturated network circuitry, e.g. spurs. However we also note SQSS requirements could be improved such that additional connection of smaller generators to saturated network circuitry becomes possible, without the need to increase related network circuit infeed loss limits.

(5) We recommend Ofgem can improve the cost benefit analysis of opportunities provided through connecting larger scales of generation than currently permitted within the regulatory regime. For example, taking account of the carbon impacts of holding additional spinning reserve to cater for larger single generator units.

Questions:

<u>Questions 1: Are there other relevant criteria which respondents feel should form part of our assessment?</u>

We recommend Ofgem consider whether the treatment of infeed loss risk by SQSS is appropriate in sufficiently reflecting current generation market developments. SQSS infeed loss requirements currently do not distinguish between (1) Network circuit failures, and (2) Generation failures, and in doing so does not acknowledge the significant reduction in system risk posed by large groups of smaller generators, in comparison to single large generator plants.

We recommend that SQSS categorisation and treatment of infeed loss risk can be improved to differentiate between (a) network circuit failure, and (b) generation failure (See Annex 1).

<u>Question 2: 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?</u>

We note that in Section 3.58, Ofgem “welcome views on the charging impacts that we have identified, and any other charging impacts respondents may have identified”, and elsewhere suggest a need to “be satisfied this (proposal) does not result in unfair treatment within the generation market”. In response, we would recommend current proposals will render the related charging methodology to be discriminatory, insufficiently cost reflective, and will result in the unfair treatment of smaller generating plants.

We recommend that the impact of maintaining current charging methodologies could introduce artificial barriers to market entry for smaller generation plants owing to increased charges. For example, all wind farms are current sized at less than 350MW. For example, in future it is anticipated the vast majority of onshore wind farms will maintain this trend and as such will incur a doubling of charges relating to infeed loss system management, despite being recognised by National Grid to pose “no additional risk to system operation” (see Annex 2 and 3). Whilst it may be the case that future offshore wind farms will exceed 350MW in total size, these larger wind farms will represent groups of small single generation units. Through appropriate design of wind farm circuit collection, it is likely that the infeed loss risk posed by the wind farm, due to collection circuit failure, will be greatly reduced below that of the wind farm’s aggregated instantaneous output.

Whilst we acknowledge increasing the infeed loss limits will prevent such limits becoming a barrier to market entry for larger single generator plants, we would suggest related cost benefit assessments should be improved through the additional consideration of carbon use within maintaining a related reserve response.

<u>Question 3: 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?</u>

We recommend Ofgem do not progress scenario 1 or 2 within the final assessment/decision, but only apply scenarios 3 and 4.

We recognise that should the infeed loss limits not be increased above current levels, no generation type is prevented from connection within stated limits. To this extent, any cost benefit analysis of limit change should be focused on what additional, rather than absolute, benefits are encouraged through the connection of larger generation units.

RenewableUK recommends that Ofgem carbon saving analysis scenarios 1 and 2 do not convey the benefit of increasing the infeed limit, in that they reference a zero build counter factual case – which is indeed not the case in terms of the regulatory structures. What is implied, in the way of traditional scales of nuclear generation not being connected in future within current limits, is not the impact of the regulatory framework but that of market forces and the affects of competition. We recommend only scenarios 3 and 4 should be considered within the cost benefit analysis for infeed loss limit increases. Across a range of carbon prices, this would put additional carbon benefits of facilitating larger than tradition nuclear generation at £17-91 million per annum. RenewableUK would note that this is significantly less than the additional cost of catering for a single larger generation unit, which National Grid has estimated at £160 million per annum.

Ofgem suggest “the carbon savings the Review Group identified assume that the proposals would enable a greater volume of low carbon generation to connect “. In the context of many smaller generators, this may be an inaccurate statement given the increased charging which will occur. Indeed, as already stated, a lack of cost reflectivity with related charging may act as an artificial barrier to the development of smaller generation projects, and may prevent the more marginal generation sites from being developed going forward.

<u>Question 4: Do respondents wish to present any additional analysis that they consider would be relevant to our assessment of the GSR007 proposals?</u>

In the consideration of increasing the infeed loss limits for transmission network only (i.e. not including single generator limits) Ofgem should more closely consider the carbon case for making additional connections beyond current limits. As part of our recent response to SQSS review group’s consideration of the cost benefits associated with connecting additional generation to a saturated spur, we noted the economic to do so or not was informed by the carbon intensity of the generator to be connected – See RenewableUK response attached.

<u>Question 5: 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?</u>

RenewableUK understands section 1.14, and 3.44, does not include current consideration of altering the change date by National Grid to be within the scope of this Ofgem consultation. We would expect that, should National Grid recommend to Ofgem that the infeed loss limits should be altered ahead of the connection of a large (over 1350MW) generation unit, Ofgem will see it appropriate to re consult on the matter.

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Yours sincerely,

Alex Murley, Head of Technical Affairs for RenewableUK

ANNEX 1: **Infeed loss risks – What are they? And where do they come from?**

RenewableUK analysis of National Grid ROCOF[1] reporting shows that since May 1998 there have been 87 system incidents resulting in significant system frequency variance. Of all such incidents 74% were the result of Generators tripping, 25% were the result of Interconnectors tripping, and just 11% were the result of network failure or other system faults (See Figure 2).

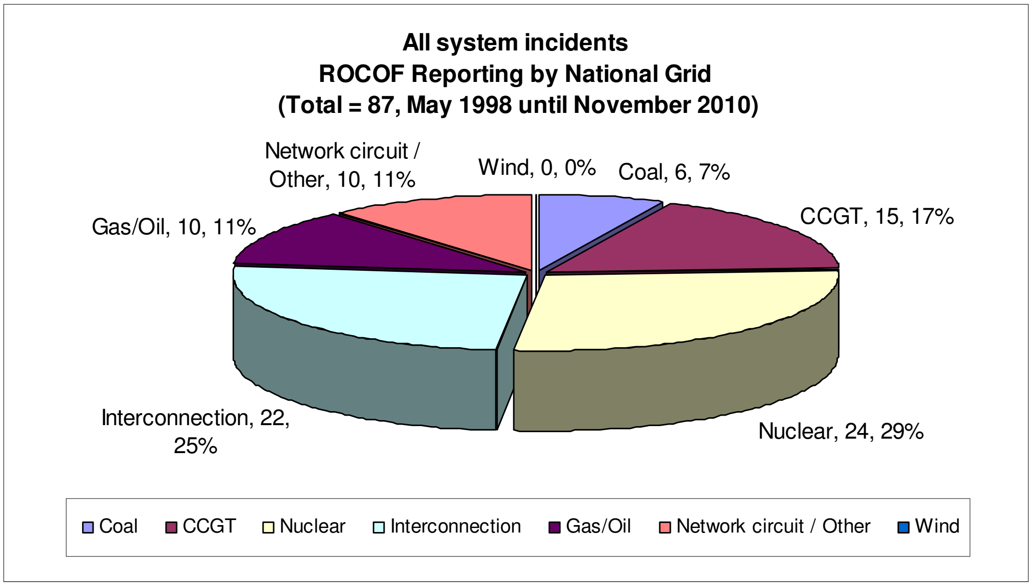

Figure 1: Interconnectors are the second highest contributor to system incidents.

The current proposal to increase SQSS large loss infeed limits attends to two categories of system incidents: (1) loss of generation due to a transmission network fault(s), (2) loss of connected generation infeed. We note that a category (2) fault could be provoked by either the loss of generation plant, or by loss collection circuitry connecting the generation plant to the transmission network.

Failure mode	Frequency of occurrence	Large single generator (e.g. 2 x 825MW unit)	Large group of small generators (e.g. 33 strings of 10 x 5MW units)
(1) Network circuit failure	Low	Large infeed loss - 1650 MW	Large infeed loss - 1650MW
(2a) Single generation unit	High	Infeed loss - 825 MW	**No additional risk - 5 MW**
(2b) Generation system	Medium	Large infeed loss - 1650 MW	**No additional risk - 50 MW**

Table 1: Current SQSS treatment of infeed loss risk does NOT distinguish between network circuit failure, and generation failure.

[1] National Grid ROCOF reporting: http://www.nationalgrid.com/NR/rdonlyres/EE3D5746-4878-4D57-B1E3-8A68CE0A751F/43961/pp10_35SystemIncidentReportROCOF.pdf

Category (1) system incident: Loss of transmission network + related infeed loss:

We recommend the need for SQSS to distinguish between transmission network and generation failure scenarios is further supported by ROCOF reporting, showing network circuit failures are responsible for no more than ~10% of system incidence, and large single generator being responsible for the vast majority of system incidents since records began in 1998 (See Figure.2).

We would highlight the following considerations of network failure incidents:

(1) Where a spur possesses a diverse selection of multiple users, it may be the case that the likelihood of circuit saturation is lower than in the instance of a single large user. For example where there is a Gas/Wind user mix, market behaviour may encourage Gas only to operate at times of low wind production. Such a scenario would imply current SQSS methodologies introduce sub-optimal system management, where the SQSS stated capacity is rarely approached;

(2) In the case of a spur multiple user mix, where all users seek to produce at the same time, the System Operator has the option to constrain off generators where the cost implication of holding related reserve encourages such actions. Where variable generation forms part of this multiple user mix, the duration for which the spur experiences high levels of use (and therefore provoking high levels of reserve requirements) will be shorter than for scenarios where a single generation units typically operates at higher load factors;

(3) In considering system management trade-offs (e.g. constraint options, reinforcement), cost benefit analysis may highlight scenarios where the difference between a prospective generator being facilitated or not, will depend on the carbon value of its output. I.e. The consideration of different generator fuel types highlights a case for related facilitation to actively discriminate on the basis of related carbon benefits.

Category (2) system incident: Loss of connected generation infeed:

When considering system incidents caused by generation failure only, Figure 3 shows the proportion of the 55 system incidents since May 1998 caused by the various generation types.

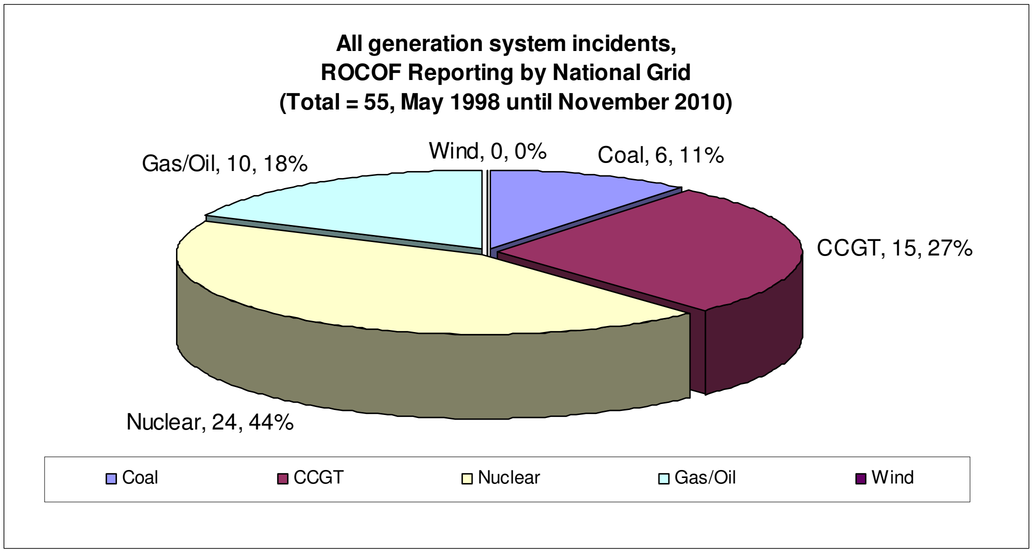

Figure 2: Nuclear caused 44% of all generation system incidents since May 1998.

In differentiating between (1) network circuit failure and (2) generation failures, it is important to recognise a number of operational characteristics that distinguish these two scenarios:

(1)For large groups of smaller variable generators, the variability of fuel availability means maximum rated output is not as translatable to expected operational performance, as compared with, for example, a large single generation unit operating with an 80% load factor. We suggest that current infeed limits do not fully account for this operational characteristic when considering saturated network circuitry within current limits. This means that variable generators will for a large proportion of its operation pose a lower level of system risk than indicated by its rated maximum output, and secondly the duration at which higher risks are posed will be lower. SQSS can improve the dynamic consideration of network circuit capacity so to provide benefits to the consumers in reducing costs for connecting more generation capacity.

(2)With a large wind farm, a single turbine (e.g. 3MW of rate output) can shut down (through either high wind, or failure scenarios) without affecting the performance and output from the rest of the wind farm;

(3)The internal circuits of the wind farm (and therefore external to the network system) can render the system risk to be less than the cumulative size of the wind farm. For example, an 1800MW wind farm of a nine hundred 2MW turbines will possess two internal, and separate, circuits and related connections to the network, each possessing 900MW of capacity. Where one circuit fails, 900MW of connection capacity will still be available. Additionally, for periods of time where the cumulative output of the wind farm is less than 900MW, the volume of infeed loss resulting from a single external circuit would be zero. Furthermore, and in line with National Grid's acknowledgement that outputs of less than 350MW pose no additional system risk, it can be said that this exampled 1800MW wind farm only begins to provide additional risk at the system when output is in excess of 1250MW.

(4)Section 3.13 suggests the maximum offshore connection = 1500MW. We note the maximum practicable AC cable for offshore connection currently available is likely to be no higher than 500MW. We therefore presume Ofgem/Offshore Transmission Expert Group is referring to DC cables. We note there is much interest in HVDC cabling promoted via planned offshore wind development (e.g. Round 3). However we are not aware singular cable design are yet to exceed 1000MW. Indeed should cable designs reach the sizes referenced by Ofgem, we would recommend it to be very unlikely that a double cable would not be used for purpose of managing redundancy, and single mode failures. Furthermore, we are not aware of any offshore wind project, including those currently under design that will pose infeed loss risks in excess of current infeed loss limits. In referencing the treatment of large groups of smaller generators in the context of infeed loss risk, such design solutions should be considered and acknowledged within a revised SQSS methodology.

In summary, by failing to distinguish between (1) Network circuit failures, and (2) Generation failures, the SQSS does not acknowledge the significant reduction in system risk posed by large groups of smaller generators, in comparison to single large generator plants.

<u>ANNEX 2</u>: Cost reflectivity, differentiating between regulatory and market structures

Through the current charging methodology, increasing SQSS infeed limits will likely deliver negative impacts on competition in the generation market and introduce additional discrimination in the treatment of particular generation types owing to a charging methodology lacking in cost reflectivity.

RenewableUK recommends technology cost differentials, and related competitiveness should be addressed through market policy mechanism outside the regulatory structure, and should therefore not undermine the effective provision of competition through cost reflective regulatory structures.

The recent Ofgem Project TransmiT call for evidence clarified that "the principle of cost-reflectivity is based on the economic rationale that, in general, competition is more likely to be effective if costs which parties impose on the system are reflected in the charges they pay and thus are appropriately factored into their commercial decisions"[2]. We support this clarity, and fully expect such logic to support the judgement by Ofgem as to whether current SQSS change proposal "does not result in unfair treatment within the generation market"[3].

We agree with Ofgem that as part of the assessment of the GSR007 change proposal "it is important to understand how such costs would be treated and any implications for NGET's use of system charging methodology"[4]. And we support the Ofgem stated view that "any use of system charging methodology which is cost reflective should help minimize any artificial barrier to entry"[5], and hence support the promotion of competition, on the basis of technology neutrality. We recommend that the minimisation of artificial barriers to market entry is a positive thing, and should be sought wherever possible.

We recognise the value of embedding cost reflectivity within regulatory structures so to promote efficiency, economic best practice, enhanced competition, and the delivery of value for money for UK consumers. However we also recognise the application of cost reflectivity may not always be appropriate, or possible. For example, where (a) the cause of the cost cannot be identified, or (b) the cause of the cost is distributed evenly amongst all contributors, or (c) where the cause of the cost is due to a regulatory failure to deliver anticipatory investment in market components necessary to support the competition of its customers.

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[2] TransmiT: Call for Evidence:
http://www.ofgem.gov.uk/networks/trans/pt/Documents1/TransmiT_Call_for_Evidence_Letter.pdf
[3] GSR007 Impact Assessment, Summary
[4] GSR007 Impact Assessment, Section 1.11
[5] GSR007 Impact Assessment, Section: 3.56

We note the proposal to increase the SQSS large loss infeed limits (normal and infrequent) are likely to provoke significant cost implications for system management. In the context of anticipated connection of up-scaled Nuclear plants, National Grid identified in their GB ECM-19 Charging Consultation Document that "if a number of these large new generation units connect to the system, the estimated operational cost to the System Operator could rise from £160M per year to a level of £319M per year reflecting an increase in frequency response held[6]". National Grid analysis demonstrates the cause of associated cost increases can be identified, and that they are unevenly distributed amongst customers (indeed they can be caused by a single generator). The cause of the cost is not the result of a lack of anticipatory investment due to regulatory failure. To this extent we recommend the current "commodity" charging arrangement is not appropriate to support any increase in the infeed loss limits, and should be revisited as part of Project TransmiT.

[6] National Grid Consultation GB ECM-19: http://www.nationalgrid.com/NR/rdonlyres/A4B42E9E-A315-47FC-B819-5BE812CE3E6F/41716/GBECM19Consultationv1_0.pdf

ANNEX 3: Current "commodity" charging regime – "insufficiently cost reflective"

We note the proposal to increase the SQSS large loss infeed limits (normal and infrequent), is made on the basis that the current "commodity" charging methodology is maintained. This approach will socialise all associate cost across all customers, irrespective of their contribution to the creation of the cost in question.

In light of projected cost increases provoked by the system management of a single large generation units (e.g. of 1650MW of capacity), the GB ECM-19 consultation highlighted the current "commodity" charging regime to be inconsistent with the delivery of a competitive regulatory charging system: "it is National Grid's initial view that the current methodology of recovering response costs based on a flat commodity charge is insufficiently cost-reflective".

The initial position of National Grid reflected their analysis showing the additional cost provoked by a single 1650MW generation unit would result in increased charges for many customers whom contributed little to nothing to this cost increase requirement. We also note that National Grid clarified that generating units of below 350MW in size "pose no additional loss risk to the system, and this should be considered when assessing any methodology changes". In the context that currently no single wind turbine generating unit is sized at over 6-10MW, and that no grouping of wind turbine generating units are sized in excess of 350MW, maintaining the existing charging methodology would deliver all existing wind farm generators a doubling of charges (relating to infeed loss management costs) despite not one of them contributing to an expanded system risk. We note this approach is inconsistent with Ofgem's commitment to the negation of artificial market barriers and to the extension of cost reflectivity where appropriate and possible.

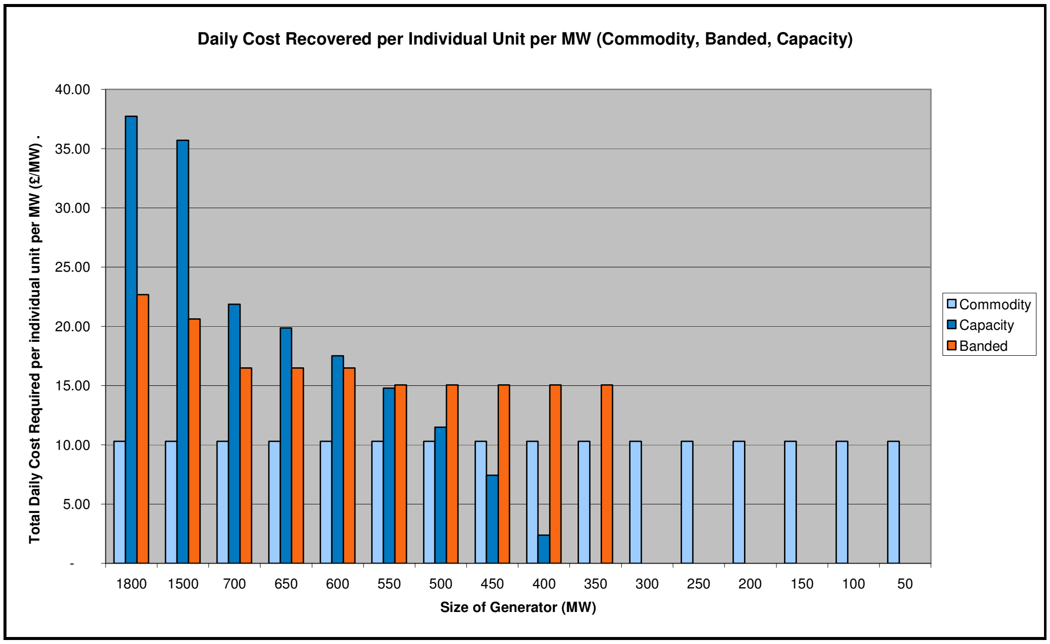

Figure 3: Daily Cost Recovery per Individual Unit per MW of TEC

Figure 1 shows the previously National Grid proposed charging methodologies. The "capacity" and "banded" methodologies offered improved cost reflectivity in that sub 300-350MW generators were allocated a banding term of zero, in line with the affirmation that such generators pose no additional risk to system operation. The larger generators would experience a higher banded tariff due their superior contribution to system large loss infeed risk. National Grid's consultation went on to state: "of the two proposed developments, it is National Grid's initial view that, on balance, the capacity approach better facilitates the relevant objectives", and furthermore "the capacity approach therefore improves the cost-reflectivity for both larger and smaller risks".

However, National Grid reversed their position within a subsequent open letter recommendation to Ofgem stating "It is National Grid's view that any potential improvement in cost-reflectivity is outweighed by the negative impact on competition between generators". However , on the basis that the expansion of cost reflectivity is understood by Ofgem to aid the facilitation of competition (See Project TransmiT text), we find National Grid's stated view inconsistent with that of the Authority.

The reversal of their original call for an improvement in infeed loss charging cost reflectivity was made partly on the basis that "National Grid considers itself beholden to the wider industry and the country as a whole to highlight the impact of potential developments in the charging regime on future consumers". Increasing cost reflectivity and therefore the "costs on larger users could delay the commissioning of large nuclear plant by a number of years". We would question whether it is appropriate that National Grid as the System Operator directly imply one type and indeed one scale of one type of generation is any more necessary a component of the UK's future energy mix than any other.

As stated, we do not agree that cost reflectivity and efficiency of the UK regulatory structure should be sacrificed in order to support the competitiveness of any one technology. If a particular technology is deemed a strategic component of national energy policy then its competitiveness, if necessary, should be supported via market arrangements outside the regulatory regime. It should not be the role of the system operator to presume policy decisions, or discriminate against any one technology type and especially where there are significant financial implications at stake. RenewableUK notes there is clear guidance provided to Ofgem from central Government to handle such matters as those provoked by the large loss infeed issue: "Where the Government wishes to implement specific social or environmental measures which would have significant financial implications for consumers or for the regulated companies, these will be implemented by Ministers, rather than the Authority"[7].

We note that current charging methodologies are under review as part of Project TransmiT, and it is right and appropriate that this workstream consider the implications of increasing infeed loss limits on the basis of the current regime.

[7] Ofgem guidance: http://www.ofgem.gov.uk/About%20us/Documents1/file37517.pdf

ANNEX 4: Other comments

Targets

Section 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".

RenewableUK would clarify that primary Government target for 2020 is centred on the sourcing of renewable energy, and will therefore not include or cover contributions from nuclear generation.

Interconnection

We would highlight that interconnection is responsible for a significant proportion of recorded system incidents, see Figure.2. We note current European ruling on charging for interconnection would prevent interconnection being charged for contribution to system management costs.

We would question why interconnection not been addressed in this Impact Assessment, especially given frequency with which interconnection failure has provoked an infeed response over the last decade. However we do note charging matters are being examined by Ofgem through Project TransmiT, and expect this issue to be addressed in the context of this workstream.