Renewable Energy Systems Limited
Beaufort Court, Egg Farm Lane, Kings Langley
Hertfordshire WD4 8LR, United Kingdom
T +44 (0)1923 299 200 F +44 (0)1923 299 299
E info@res-group.com www.res-group.com

Dave Corby
National Grid
National Grid House
Warwick Technology Park
Warwick
CV34 6DA

Our Ref: EN01-004366

14 February 2014

Dear Dave,

Re: RES Response to Review of Embedded (Distributed) Generation Benefit Paper

RES is one of the world's leading independent renewable energy project developers with operations across Europe, North America and Asia-Pacific. RES has been at the forefront of wind energy development since the 1970s and has developed and/or built more than 7.7GW of wind energy capacity worldwide, including projects in the UK, Ireland, France, Scandinavia and the United States.

RES was a member of the informal industry focus group whose deliberations informed the content of the National Grid "Review of the Embedded (Distributed) Generation Benefit arising from transmission charges" ("the report"). RES is grateful for the opportunity to provide input via the focus group and also via this response. Responses to the questions posed in the review paper are set out below.

Q1 Do you have any additional evidence regarding distribution connection charges for generation connections and in particular 132kV connections?

As a focus group member, RES is aware of the evidence that was presented to the focus group in relation to the cost of distribution connections and also of the discussions at the focus group of how that evidence could be used to establish a useful metric for distribution connection charges. In light of these discussions, RES is concerned at the information presented on the average cost of distribution connection. In particular, RES would highlight the information set out on page 22 of the report, which refers to an average distribution connection cost of £147/kW. This cost related to an average derived from a number of projects across Great Britain all of which were connected at 33kV.

National Grid then seems to ignore this information and reverts to data published by Ofgem relating to the year 2010/2011 and applies its own approach to depreciation rather than that relevant to a distributed generation connection asset (i.e. depreciation over 40 years rather than 20 years) and presents data dominated (in volume) by small-scale generation in arriving at an average annuitized cost of connection of c£2/kVA, an estimate which our experience suggests is in no way representative of embedded generators that are relevant to licence condition 13 or are able to actively and independently take part in the markets which NGET describe as delivering 'benefits' in the report.

RES is very strongly of the view that the value of £147/kW cited in the report is more reflective of the true cost of connection of relevant Distributed Generation projects and, under current market conditions, even this value understates the true likely cost. RES would estimate that a range of £150-200/kW now represents an accurate range for likely cost of connection for Distributed Generation. Applying annuitisation[1] over a twenty year period and adding the average GDUoS capacity charge of £1/kVA would give rise to an annuitised grid cost for Distributed Generation of c£20/kVA[1] (not c£2/kVA!). Furthermore, such generators are typically required to make payments significantly before energisation and even before planning consent, a potentially quantifiable premium which should be added to this estimate; we would look forward to assisting NGET with these calculations as this issue is developed further.

Q2 Do you have any additional evidence that would aid the comparison of network charges faced by 132kV distribution and transmission connected generation of capacity less than 100MW?

Please here refer to our answer (and footnote) to Q1: RES would note that a more accurate expression of annuitized grid costs for DG, as detailed in the response to Q1, would give a more cost reflective comparison of transmission versus distribution connections than that which has been set out in the report.

Q3 Do you agree with the view that exporting GSPs is an area that could potentially be improved within the TNUoS charging metholodogy?

RES is of the view that exporting GSPs are an indication of the extent to which contracted generation has moved from being a centralised transmission connected service to a geographically dispersed service connected throughout the total system. Whilst RES agrees that exporting GSPs is a phenomenon that is relevant to the review of embedded benefits and should be further investigated, RES considers that it is more important that further review considers embedded benefits in the context of the entirety of grid charges payable by distributed generation.

Q4 Do you have any comments on the options raised above for the treatment of exporting GSPs within the TNUoS charging methodology, and do you believe there are any options that need further exploration?

---

[1] A discounted cash flow with a 20-year life and nominal rate of 7.5% would suggest an annuitized equivalent £/kW/yr of 21% of the lump up-front payment, i.e. £147/kW up-front would equate to £31/kW/yr (plus DUoS, which at approx £1/kVA/yr and a minimum 0.95 power factor means a **total c.£30.30/kVA/yr** on average). Alternatively, using NGET's own methodology (see published statement) for annuitising the charge for connection assets: a 20 year life and 7.5% 'rate of return' equates to an annual equivalent of approx 12% of the lump up-front payment, i.e. £147/kW would equate to £17.60/kW/yr (plus DUoS, as above means a **total c.£17.80/kVA/yr** on average). Critically, both methods make no account of the fact that up-front distribution connection charges may be paid significantly ahead of the energisation date, indeed some capital payments are required ahead of planning consents: such a risk premium may be quantifiably added to the estimates above.

RES considers that the options proposed in the report are worthy of further exploration and would not propose further options at this stage. RES agrees that the definition of what represents an exporting GSP requires careful consideration, taking into account the need to establish a cost reflective but stable set of charges.

RES would re-emphasise the importance of taking into account the effect of grid charges payable throughout the total system in order to ensure a holistic set of grid charging arrangements will have the best chance of delivering an outcome that delivers cost reflectivity and a framework that supports effective competition. The potential for grid charge "pancaking" and resulting market-entry distortion remains a significant concern.

Q5 Do you have any comments on the options raised above for the charging of the HH demand residual for revenue purposes on gross demand?

In light of the function of the residual charge (effectively an adjustment to ensure revenues are recovered in line with the required 73 / 27 split between demand and generation), RES understands that this component of TNUoS is not in itself an effective signal for embedded generation offsetting use of the transmission system by supplier users. For this reason, RES is open to further exploration of the option to charge demand residual on gross demand. However, RES is also of the view that effective signals must be retained to ensure embedded generation is encouraged to provide a transmission investment offset service.

Q6 Do you have any evidence to support any of the sub-options considering the application of the TNUoS wider locational element to embedded generation?

At this stage, RES is sceptical as to the cost reflectivity of any proposal to charge the wider locational component of TNUoS upon embedded generation. RES considers that the analysis presented in section 4.7 on the extent of the development of exporting GSPs rather undermines the argument that exporting GSPs are having a significant influence on transmission investment. Based on these figures, only 6% of GSPs across GB actually export during the Triad period, the signal that TOs use to initiate locational investment. To then charge wider locational TNUoS on embedded generation when the vast majority of these generators are not contributing to the need case for locational investment would fail the improving cost reflectivity test and be discriminatory against embedded generators. RES would also point out that it could also significantly increase the complexity of charges applicable to embedded generators, taking into account the potential changes to locational TNUoS charging arising from CMP213 and the ongoing application of GDUoS charges.

Q7 Do you have any evidence to support any of the sub-options considering the application of the TNUoS wider residual element to embedded generation?

As noted under its response to Q6, RES does not agree with the assertion that embedded generators use the transmission system in the same way that transmission connected generators use the transmission system. RES considers that the analysis presented by National Grid in section 4.7 supports this view. For this reason, RES would not support proposals to charge embedded generation either some or all of the generator residual element of TNUoS.

Q8 Do you have any other comments on the option to charge demand on gross and explicitly charge embedded generation?

As noted under its response to Q6, RES does not agree with the assertion that embedded generators use the transmission system in the same way that transmission connected generators use the transmission system. RES considers that the analysis presented by National Grid in section 4.7 supports this view. For this reason, RES considers that any proposal to charge embedded generation should not be progressed until the case can be established that there is material use of the GB transmission system by embedded generators.

Yours sincerely,

Patrick Smart
UK Grid Connections Manager
E Patrick.Smart@res-ltd.com
T +44 (0) 191 3000 452
M +44 (0)7500 229 648