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24 August 2016

Frances Warburton  
Ofgem  
9 Millbank  
London  
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Dear Ms Warburton,

### **Response to open letter on charging arrangements for embedded generation**

#### **Introduction to GBSL**

Grid Battery Storage Limited (GBSL) was formed by two highly respected senior executives to realise the potential of battery electricity storage. We are working to deliver electricity storage projects meeting commercial needs as they emerge, providing multiple services where possible to maximise project benefits and thereby reduce costs to provide each service. Our initial projects were targeted at National Grid Enhanced Frequency Response tenders but we anticipate later projects to support the cost-effective integration of renewable generation into distribution networks, on-site commercial applications of storage and time-shifting generated electricity into periods of high price and demand.

#### **Our views in principle on embedded benefits**

GBSL's senior management has worked across the spectrum of generation technologies and has seen embedded benefits and transmission charges from many different perspectives, including large transmission connected CCGTs, embedded reciprocating engines, solar, hydro and now storage.

We want to see open and transparent markets and where regulated charges have to be applied, these should reflect costs.

With the significant developments in reciprocating engines, new gas engines now have open cycle efficiencies as high as 45% HHV<sup>1</sup>, 5% better than the 40% HHV of large scale open cycle gas turbines much greater than the only 10% lower than the 55% HHV efficiency of the latest generation of CCGT plants. They are also very cost effective, with fully constructed capital costs of £400-£600/kW, a similar cost range to large scale CCGT plants.

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<sup>1</sup> Higher Heating Value basis – taking into account the heat from condensing the steam in the exhaust gas

Placing smaller, localised generation near to the location of the loads that it serves avoids transmission losses and a high proportion of distribution losses – respectively 2%<sup>2</sup> and 5%<sup>3</sup>. Hence the delivered electricity from a given value of gas is only 3% lower for a locally connected open cycle gas engine than for a latest generation transmission connected large CCGT.

Clearly placing generation close to the loads it serves also avoids the very substantial costs of constructing and maintaining additional long distance transmission capacity.

***Given the close similarity of costs and performance of local and large central generators plus the very high costs of transmission capacity, GBSL believes it is correct that a strong incentive is maintained to embed generators close to load – and so maintain a significant level of embedded benefits which should reflect the avoided cost of additional transmission grid.***

We note that projecting this forward suggests a greater reliance on embedded generation and a lower dependence on large generation and transmission grid. Many larger stakeholders have a strong vested interest in supporting large scale generation. Ofgem has always taken a customer-focussed view of electricity and GBSL notes that the barriers to entry are much lower in embedded generation, so that continuing cost-reflective embedded benefits will promote much greater competition than removing or diluting those benefits. A much larger number of small generators will also ensure that the national electricity system is not heavily dependent upon a small number of very large generators, therefore reducing the risk profile of generation for the UK and improving security of supply.

Of course the cost recovery of National Grid Electricity Transmission in a declining role needs to be taken into account. National Grid remains in the view of GBSL a very competent and essential organisation (the glue of the diversified electricity industry), but we believe that pushing forward the division of its System Operator and Transmission Operator parts will result in clearer incentives in which the SO will be able to take an impartial view of the benefits of embedded generation, particularly if it has overall responsibility for managing both transmission connected and embedded generation and loads.

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<sup>2</sup> National Grid Electricity Ten Year Statement 2015, Appendix H

<sup>3</sup> Ofgem-Sohn report 2009

### Specific points on Triad charges

Far the largest embedded benefit is of course triad avoidance.

We support the principle that electricity transmission charges should continue to be regional and reflect grid costs (the ultimate result of project TransmiT). This of course gives rise to the level of the Triad charges which have been effective in their aim of truncating peak demand (and hence infrastructure requirements), demonstrated by the substantial increase in the number of half hour settlement periods within close to peak demand:

	2010/11	2015/16
SPs within $\pm 1\%$ of peak demand	6	68
SPs within $\pm 5\%$ of peak demand	62	300

***We understand that the present calculation of Triad charges is intended to be cost reflective. Therefore GBSL believes the review of Triad avoidance benefits should be focussed on ensuring that those charges continue to be a reasonable reflection of incremental transmission costs.***

Yours sincerely,



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