

*LCN Fund Full Submission*  
**Supplementary Answer Form**

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Project code:	NPGT202/1	Question Number	NPG017
Question date	06/09/12	Answer date	10/09/12
Submission section question relates to	Section 3		
Topic	Project Business Case		
Question	Can NPG explain how the total savings for TSO, Suppliers/traders and DNOs (in £million) have been calculated from the £/kW savings (page 13)?		
Notes on question			
Answer	<p>As described in the bid, we estimate the financial benefits of each Method to be trialled in the GBFM in three steps.</p> <ul style="list-style-type: none"> <li>• We first identify a cost per kW of capacity in the Base Case – for DNOs, the Base Case is the most efficient way to release network capacity currently in use on the GB distribution network. For the TSO and suppliers/traders, this is the cost of flexibility purchased outside the GBFM or DNO-TSO sharing arrangements.</li> <li>• We then compare the Base Case costs with the costs of each Method per kW of capacity released.</li> <li>• Finally, we scale these estimates up to project and GB level.</li> </ul> <p>We now set out the steps taken to reach the total savings from the £/kW savings for DNOs, the TSO and suppliers/traders in turn.</p> <p><b>DNOs</b></p> <ul style="list-style-type: none"> <li>• An annual per kW cost of flexibility (or network reinforcement) was estimated for the Base Case, Method 1 and Method 2 for DNOs, as set out in the Business Case and Appendix 5.</li> </ul>		

- We then subtracted the Base Case cost per kW from the Method 1 and Method 2 costs per kW to obtain the saving per kW under each Method. This resulted in an estimated cost saving to the DNO from Method 1 of £12/kW in the near term rising to £21/kW in 2040. For Method 2, this led to an estimated cost saving to the DNO over the costs of Base Case of £27/kW now, increasing to £36/kW in 2040.
- We calculated the project scale costs to the DNO by multiplying the per MW cost by the required MW of capacity release. The project and GB quantities of capacity release required and the actual quantity of flexibility purchased to meet this capacity requirement are set out for 2020, 2030 and 2040 in the table below. This led to estimated DNO costs of £50m in the Base Case, £30m in Method 1, and £34m in Method 2 between 2017 and 2040.

Year	Capacity release required by DNO		Flexibility purchased by DNO in the GBFM		
	Project scale (MW)	GB scale (MW)	Project scale (MW)	GB scale (MW)	
				Method 1	Method 2
2020	50	48	75	62	72
2030	50	944	75	1381	1410
2040	50	788	75	1164	1175

#### Notes

- i) The capacity release required by the DNO differs from the quantity of flexibility actually bought by the DNO. This is because the DNO assumes that flexibility is reliable 67% of the time, so they must scale up the flexibility they buy to be certain of capacity release.
- ii) The quantity of flexibility bought by the TSO is assumed to equal the quantity bought by the DNO, given the assumptions on sharing.
- iii) The quantity of flexibility bought by suppliers/traders is half the Method 2 quantity bought by the DNO.
- iv) At the GB scale, the quantity of capacity release required by the DNO is higher in Method 2 than Method 1. We therefore used the higher (Method 2) capacity release requirement to form the Base Case, and for the Method 1 estimates we assumed that the DNO purchased the difference between the Method 2 and Method 1 capacity release requirements *outside* the GBFM. We similarly made this adjustment in the Method 1 GB calculations for the TSO and suppliers/traders. This ensured that both the Method 1 and Method 2 cost estimates correspond to a single Base Case estimate, so the cost savings can be compared between the two Methods.

- The Method 1 cost saving at project scale was estimated by subtracting the Base Case costs from the Method 1 costs, resulting in an estimated DNO saving of £20m between 2017 and 2040. The

Method 2 cost saving was estimated by subtracting the Base Case cost from the sum of the Method 2 flexibility costs and platform set up costs, resulting in an estimated cost saving of £34m between 2017 and 2040.

- We followed the same process to estimate the GB-level DNO costs and savings, using the MW of capacity release estimated from the WS3 model. This resulted in estimated Base Case costs of £528m, £306m for Method 1 and £124m for Method 2. The corresponding cost savings were £222m in Method 1 and £397m in Method 2.

These figures are set out in the "Summary" sheet of the financial benefits spreadsheet submitted with NPG002.

### **TSO**

- We estimated an annual per kW cost of flexibility to the TSO for the Base Case, Method 1 and Method 2, as set out in the business case.
- As with the DNO estimates, we then subtracted the Base Case cost per kW from the Method 1 and 2 costs per kW to obtain the saving per kW under each Method. The resulting estimated savings were £2/kW under Method 1 and £8/kW under Method 2.
- We estimated the project scale costs for the TSO by multiplying their cost per MW of flexibility by the MW of flexibility bought in each case. These quantities of flexibility correspond to the DNO quantities of flexibility bought in the GBFM, which are summarised for three years in the table above. This resulted in estimated costs of £63m in the Base Case, £59m in Method 1, and £49m in Method 2, between 2017 and 2040.<sup>1</sup>
- Project scale savings were estimated by subtracting Base Case costs from Method costs. The estimated saving to the TSO at project scale between 2017 and 2040 was £3m for Method 1 and £14m from Method 2.
- GB scale costs were estimated in the same way as the project scale costs. The resulting cost estimates were £639m in the Base Case, £606m in Method 1, and £501m in Method 2.
- The TSO savings corresponding to these GB cost estimates were £34m for Method 1 and £139m for Method 2.

These figures are set out in the "Summary" and "CBA annual" sheets in the financial benefits spreadsheet.

### **Suppliers/traders**

Suppliers/traders experienced cost savings only under Method 2, where:

- As above, we estimated an annual per kW cost of flexibility to suppliers/traders for the Base Case and Method 2.
- The cost saving per kW for suppliers/traders in Method 2 was estimated by subtracting the per kW Base Case cost from the per kW Method 2 cost. The resulting estimate was of a cost saving of £36/kW.

<sup>1</sup> It should be noted that the reliability adjustment for DNOs implies that in practice they buy more flexibility than the MW of capacity that is required to be released. Therefore the quantity of flexibility bought by the TSO (and shared with DNOs) in Method 1 and 2 corresponds to the actual quantity purchased by DNOs, rather than the DNOs' required capacity release.

	<ul style="list-style-type: none"> <li>• Project-scale costs were estimated by multiplying the per MW costs with the MW of flexibility that suppliers will share with the DNO in Method 2. These quantities correspond to half the quantity of flexibility that the DNO purchases, set out in the table above. This led to estimated project scale costs to suppliers of £39m for the Base Case between 2017 and 2040, and £6m for Method 2 over the same period.</li> <li>• The corresponding savings for Method 2 were estimated at £32m between 2017 and 2040 at project scale.</li> <li>• GB scale costs were estimated to be £395m between 2017 and 2040 for suppliers in the Base Case, and £64m in Method 2.</li> <li>• The corresponding saving to suppliers under Method 2 was estimated to be £331m between 2017 and 2040 at GB scale.</li> </ul> <p>These figures are set out in the "Summary" and "CBA annual" sheets in the financial benefits spreadsheet.</p>
Attachments	
Verbal Clarifications (Consultants )	