LCN Fund Full Submission

Supplementary Answer Form

Tick if this answer is Confidential: ☐

Tick if this answer has been provided verbally: ☐

Project code:	WPDT205	Question Number	16
Question date	30/09/2013	Answer date	30/09/2013
Submission section question relates to	Bi-Lateral Panel Session		
Topic	Technical		
Question	Please resubmit the analysis in page 3 of your presentation including the counterfactual case of the wind farm being connected on a plug and play basis, with no other equipment (e.g electrolyser, etc).		
Notes on question			
Answer	The table from page 3 of the presentation has been updated below, as requested. This table illustrates the costs of each Method over and above wind farm development and the resultant returns from the full scheme. In this table, Method 1 respresents the operation of a constraint scheme only (i.e. the Flexible Plug and Play option requested). Costs included in this are limited to the Wind Farm connection and constraint control system. It should be noted that WPD does not pay constraint charges. Hence any loss of output that results from the constraint scheme is at the generator's expense. As is evidenced by the table, Method 1 compares favourably in terms of IRR although, in most instances, Method 7 and Methods 2+5 perform better in terms of NPV, Total generation enabled (a significant proportion of which is at peak electricity demand) and CO_2 saved. It is also worth noting that, as per answer to question 15, returns from the wider solution set are potentially understated due to the characteristics of the generation data used in the base model. Returns from Method 7 are also understated as they do not reflect the benefits of exploiting extremes in		

electricity spot price.

Methods	Wind (MW)	PV (MW)	ELY (MW)	Firm (MW)	ELY Util	Connection + Non-Wind Costs (£m)	GWh/ Anum	Tonnes C02 PA saved	20 Year IRR	20 Year NPV (£m)	Pay Back Year	
1MW/1MW	1	0	0	1	1%	0.60	2.76	1,261	6.4%	0.93	14	Firm 1MW Firm 6MW
Method 0	6	0	0	6	1%	7.40	17.05	7,791	3.9%	3.07	17	
Method 1	6	6	1	3	1%	1.00	16.96	7,751	9.9%	8.21	11	
Method 7	6	6	1	3	1%	6.59	31.41	7,768	9.9%	12.28	11	Large Constraint
Method 1+5	6	6	1	3	1%	4.15	19.24	7,751	11.6%	12.85	10	Scheme
Method 2+5	6	6	1	3	1%	5.99	31.41	7,768	10.4%	12.64	11	
Method 1	6	1	3	3	11%	1.00	14.16	6,469	7.0%	4.76	14	
Method 7	6	1	3	3	11%	8.19	27.93	7,239	7.6%	9.09	13	Small Constraint Scheme
Method 1+5	6	1	3	3	11%	4.15	16.44	6,469	9.4%	9.40	12	Large Electrolyser
Method 2+5	6	1	3	3	11%	7.59	27.93	7,239	8.7%	10.73	12	
Method 1	6	3	1	1	18%	1.00	13.66	6,243	6.5%	4.15	14	
Method 7	6	3	1	1	18%	6.59	25.77	6,670	8.1%	8.97	13	
Method 1+5	6	3	1	1	18%	4.15	15.94	6,243	9.0%	8.79	12	Low Firm
Method 2+5	6	3	1	1	18%	5.99	25.77	6,670	8.5%	9.34	13	
Method 1	6	2	1	2	17%	1.00	13.93	6,367	6.8%	4.49	14	
Method 7	6	2	1	2	17%	6.19	26.19	6,768	8.6%	9.58	12	Thrash
Method 1+5	6	2	1	2	17%	4.15	16.22	6,367	9.2%	9.12	12	Electrolyser
Method 2+5	6	2	1	2	17%	5.59	26.19	6,768	9.0%	9.96	12	
Method 1	6	2	1	3	11%	1.00	15.44	7,056	8.3%	6.34	12	
Method 7	6	2	1	3	11%	6.19	28.50	7,311	9.4%	11.16	12	Socialise Control
Method 1+5	6	2	1	3	11%	4.15	17.72	7,056	10.4%	10.98	10	System
Method 2+5	6	2	1	3	11%	5.59	28.50	7,311	9.9%	11.53	11	

Attachments

Verbal Clarifications

(Consultants)