

Network Innovation Competition Full Submission

Supplementary Answer Form

Tick if this answer is Confidential: ☒

Tick if this answer has been provided verbally: ☐

Project code:	SPT EN 01	Question Number	35												
Question date	12-09-2013	Answer date	16-09-2013												
Submission section question relates to	Answer 28 and Answer 11														
Topic	Cost saving calculation														
Question	Please explain the basis for the assumption that the B6 boundary is constrained for 50% of the time, and explain the difference between the 2300MW capacity limit stated in Answer 28 and the 3500MW figure given in Answer 11.														
Notes on question															
Answer	<p><u>Q35-1: Regarding the question relating the 50% of the constraint time:</u></p> <p>The 50% figure is based on the actual historical records in the past two years from the system operator (<i>the details and the original daily data can be further found in the attachments</i>):</p> <p style="color: #4F81BD;">The actual figures recorded against B6 are (against 8760 hours per year)</p> <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <thead> <tr> <th style="text-align: center;">BSIS Year</th> <th style="text-align: center;">Number of settlement periods</th> <th style="text-align: center;">Total Constraint Hours</th> <th style="text-align: center;">Percentage of 8760 H</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2010/11</td> <td style="text-align: center;">7,249</td> <td style="text-align: center;">3,625</td> <td style="text-align: center;">41%</td> </tr> <tr> <td style="text-align: center;">2011/12</td> <td style="text-align: center;">9,267</td> <td style="text-align: center;">4,634</td> <td style="text-align: center;">53%</td> </tr> </tbody> </table> <p>In that case, 50% was taken as an appropriate forward approximation.</p> <p><u>Q35-2: Regarding the difference between the 2300MW quoted in Answer 28, and the 3500MW quoted in Answer 11:</u></p> <p><i>The original answer to Q11 (under Measurement uncertainty) stated that:</i></p>			BSIS Year	Number of settlement periods	Total Constraint Hours	Percentage of 8760 H	2010/11	7,249	3,625	41%	2011/12	9,267	4,634	53%
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	<p>'given that transient stability limit is around 3500MW, this reduction in uncertainty equates to 35MW.'</p> <p><u>The calculate of constraints saving in the answer to Q28</u> used: 2300MW capacity.</p> <p>Both figures (2300MW and 3500MW) are derived from the ENSG report (2009, and updates 2012). The difference is:</p> <ul style="list-style-type: none"> • The <u>existing boundary</u> capacity (due to the transient stability limit) is 2300MW, (quoted from Section 74 of the ENSG report) • This capacity will be increased to about 3500MW when the series compensation reinforcement complete (which is due <u>2014/15</u>) <p>The project team is very mindful to manage the expectation of potential <u>financial benefits</u> measured by constraints cost. In that case, the minimum number (which is 2300MW) is used in the calculation.</p> <p>It may be useful if we can further highlight that 50MW is a conservative minimum success target and relates to a 1% improvement in the planned B6 stability limit. This is believed as being easily achievable given the existing operational safety margin ranges between 100-500MW depending on network operating conditions.</p> <p>50MW is also the level of capacity required to achieve a similar value for money of VISOR compared to Series Compensation against the cost of the project.</p> <p>The stability investigations planned to be undertaken in WP2 and WP3 have the objective to quantify this value in a robust fashion.</p> <p>These conservative targets are however supported by literature review and initial simulations - There are two areas of activity that are targeted at improving the utilisation of the B6 transmission:</p> <ol style="list-style-type: none"> 1. By reducing measurement uncertainty 2. By investigating the application of network power angle (derived from PMU's) as a more appropriate and effective control parameter for the stability limited B6 transmission boundary.
Attachments	<p>SPTEN01- VISOR-Q35-Detailed Records regarding 50% B6 Constraint.doc</p> <p>SPTEN01-VISOR-Q35-Raw data for the B6 constraints.xls</p>
Verbal Clarifications Consultants	