

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

Tick if this answer is Confidential:

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Project code:	SSET204 – PATHS	Question Number	SSEP002
Question date	30/08/2012	Answer date	03/09/2012
Submission section question relates to	2		
Topic	Project Description		
Question	<p>Reference is made to the use of an Active Network Management (ANM) system in the various phases of the project. Please provide more details of this and describe the state of readiness of this system and its applicability to optimising the loading of an electrolyser.</p>		
Notes on question			
Answer	<p>An ANM system provides real time automated control of devices connected to it, to manage power flows on the network. Inputs to the system include, network measurements, device status and forecast information. Using this information, the ANM system can provide operating instructions to devices, either for immediate or future (scheduled) implementation. The translation of inputs to control instructions is implemented through the use of control algorithms. These are deterministic and prioritised, allowing the system to always remain within required operating limits and to deal with all possible operational scenarios.</p> <p>SHEPD has extensive successful experience with the implementation of ANM systems. The Orkney ANM scheme was implemented in November 2009. It was a first in the UK and is recognised as a leading exemplar of a smart grid solution to power network congestion. The scheme was implemented in a commercial environment and enables low carbon renewable generation to be connected to the existing 33kV distribution network beyond the traditional firm network capacity limit. The scheme is highly reliable and has been without major problems since implementation.</p>		

	<p>The Orkney ANM system operates as business as usual and SHEPD now accept ANM as a standard technology. Within the next six months the system will be updated to include the 'Orkney storage park', which introduces contracted energy storage operation to reduce generation constraint. We will also, in the same timeframe, implement the Shetland ANM system which combines generation and demand operation, with forecasting and estimating functionality.</p> <p>A key learning point for the PATHS project is the extent to which electrolyzers can operate as a flexible and controllable network demand. As described above, our current ANM systems are already managing generators and demand and therefore this project is an iterative step forwards. There is also significant learning around how we can effectively transfer energy into other sectors (heat, transport and agriculture). This will introduce a need for the ANM system to account for contractual and commercial obligations and opportunities in its operation. In this project the energy vector is hydrogen, but the learning will be applicable to any system which manages commercial energy transfer. Performance over the operational life of the project, will be recorded, analysed and optimised. Given our experience so far with ANM schemes, we believe that the technology has reached a mature enough stage that it is appropriate for the phase 2 system to be procured through an open tender process.</p> <p>Further information on the Orkney ANM system can be found at <a href="http://www.ssepd.co.uk/OrkneySmartGrid/ProjectInformation/">http://www.ssepd.co.uk/OrkneySmartGrid/ProjectInformation/</a></p>
Attachments	
Verbal Clarifications (Consultants )	