

# LCNF Full Submission

## Supplementary Answer Form

<b>DNO Name:</b>	Electricity North West Limited	<b>Question Number:</b>	ENWL009
<b>Question Date:</b>	15 Sept 2010	<b>Answer Date:</b>	12pm 20 Sept 2010
<b>Question Topic:</b>		Box 17	

<b>Original Question No:</b>		<b>Original Answer Date:</b>	
<b>Original Question:</b>			
<b>Original Answer:</b>			

<b>Question:</b>	For each of the items under new learning, can you provide further detail on the specific outcomes from each area?
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<b>Answer:</b>	<p>The ultimate outcome is the delivery of the Distribution Energy Management System (DEMS). This will be a physical system working in harmony with the existing control systems and pulling together the individual elements of learning described below. In developing the DEMS we will need to ensure we learn from:</p> <ol style="list-style-type: none"> <li>1. Consideration of the multiple interfaces, many to sub processes also under development, necessary to design and construct a practical DEMS;</li> <li>2. The integration of sufficiently developed network models through which a DEMS can operate;</li> <li>3. The strengths and weaknesses of a variety of appropriate communication technologies;</li> <li>4. The DEMS' capability to respond to network events and to control the network and influence customer behaviour;</li> <li>5. How reliable any demand side response is and to investigate the implications for system security;</li> <li>6. Ensuring that the data from multiple parties (eg Smart Meter Data &amp; Comms company) is</li> </ol>
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	<p>useable; and</p> <p>7. Ensuring that an appropriate commercial and regulatory framework exists to support a DEMS.</p> <p>The Universal Demand Side Management Initiative builds on the industry leading approaches Electricity North West has developed and is continuing to develop. Specific outcomes for this Project include:</p> <ol style="list-style-type: none"> <li>1. Development of further options for demand side response at the distribution level, including all customer types;</li> <li>2. Development of a technical and commercial framework for the co-ordinated demand side response; and</li> <li>3. Development and promotion of changes to industry governance arrangements based on learning within Electricity North West.</li> </ol> <p>Our expected outcomes for the development and deployment of Network Modelling tools are as follows:</p> <ol style="list-style-type: none"> <li>1. An evaluation of all the existing underlying techniques of power system modelling, eg how load flow and fault level algorithms execute, to identify those that are capable of being adapted for the challenges of unbalanced networks with sparse network data, and multiple time sequenced loading data;</li> <li>2. The identification of the most likely techniques that can be developed into standardised approaches that can be deployed at scale both for the planning of future networks, and also for their real time operation and management;</li> <li>3. The identification of the integration that will be required with existing network management systems, with existing asset data (eg Geographical Information System of HV and LV cables), and with new sources of loading data, particularly from smart metering;</li> <li>4. Trialling of the above techniques and data to find (a) the most efficient way of undertaking the modelling and (b) ensuring that the complexity of smart grids are reduced in the modelling techniques to ensure that algorithms still converge efficiently on solutions and do not require inordinate processing power;</li> </ol>
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	<ol style="list-style-type: none"> <li>5. Assessment of techniques to handle the inadequacies of records of existing LV circuits, and to test the sensitivity of models to this, tested against reality;</li> <li>6. Assessment of the redundancy of smart metering data;</li> <li>7. The identification of appropriate suppliers of techniques and equipment necessary to implement at scale on an efficient commercial basis; and</li> <li>8. Integrate model into DEMS.</li> </ol> <p>We will integrate smart charging of Electric Vehicles (EV) within our overall network management and as such will target our learning in the following areas:</p> <ol style="list-style-type: none"> <li>1. Learn how to integrate the EV refuelling stations the DEMS system;</li> <li>2. Engage with EV users and monitor initial use and behaviour;</li> <li>3. Develop mechanisms, technical and commercial, to effect EV customer behaviour to maximise network utilisation; and</li> <li>4. Identification and dissemination on the customer experience, take-up and utilisation of EV refueling stations.</li> </ol> <p>We recognise that no single communications technology is currently available to meet all application requirements and consider this project will provide the ability to test each available communications technology and identify which is best suited to which application. We expect this project to provide insight and learning across the following parameters:</p> <ol style="list-style-type: none"> <li>1. The ease of deploying each identified technology within the various relevant environments;</li> <li>2. The performance against expectation of the technology type within each solution and environmental context in terms of: <ol style="list-style-type: none"> <li>a. Data throughput and quality of service;</li> <li>b. Resilience and reliability;</li> <li>c. Response time and control;</li> <li>d. Cost of implementation and operation;</li> <li>e. Security and network integrity.</li> </ol> </li> <li>3. Identification and validation of the suitability of</li> </ol>
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	<p>each technology to each application;</p> <p>4. The scalability of each technology where this can be appropriately tested.</p> <p>To ensure a sufficiently robust layer of security is available in the operation of a Smart Grid, we intend to implement appropriate security solutions which will secure the newly deployed technologies. The following outcomes are expected:</p> <ol style="list-style-type: none"> <li>1. Identification of security policies and practises appropriate in the deployment of each new technology;</li> <li>2. Experience in the implementation of desired security policies and practises;</li> <li>3. Identification of the practical limitations to implementation of desired security and the resulting workarounds or security risks requiring management;</li> <li>4. Experience in the developing the right mix of security approaches and consolidation into a risk management framework; and</li> <li>5. Expertise in the resulting testing and validation of security measures in place at each deployment stage, and any additional security issues that are identified.</li> </ol>
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<b>Attachments:</b>	None.
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