

*Electricity Network Innovation Competition Full Submission*  
**Supplementary Answer Form**

## Project: Optimise Prime

Tick if this answer has been provided verbally: ☒

Project code	UKPNEN03	Question Number	3
Question date	09/08/2018	Answer date	15/08/2018
Submission section question relates to	Section 3		
Topic	Criteria d) Innovative		
Question	As discussed on telephone please explain what are the differences and areas of commonality between the work that is proposed be undertaken through proposed project and the work UKPN Services has undertaken with UPS.		
Notes on question	We believe that the question is specifically referring to the proposed Method 2 of Optimise Prime and as such we have limited the answer to the commonalities and differences between the Smart Electric Urban Logistics project (with UPS) and Method 2 of Optimise Prime.		
Answer	<p>Smart Electric Urban Logistics (SEUL): <a href="https://crossriverpartnership.org/projects/smart-electric-urban-logistics/">https://crossriverpartnership.org/projects/smart-electric-urban-logistics/</a></p> <p>Within the SEUL project, UK Power Networks (a SEUL project partner) is designing and implementing a timed connections assessment tool and process enabling DNOs to offer a new standard type of connection to customers. This assessment tool takes into account time variances in demand and the load profile at the relevant substation, highlighting spare capacity at specific times.</p> <p>Within the same project, UK Power Networks Services were separately and independently contracted by UPS to deliver a smart charging solution combining an Active Network Management (ANM) system and Energy Storage System (ESS). UK Power Networks understands from UK Power Networks Services that the ANM in this case is a software solution responsible for coordinating the EV charging and the dispatch of the ESS. The information factored in for this coordination are the depot site demand, the energy supplied to each of the EVs and the state of charge of the ESS. This solution was deployed and tested at a single UPS depot at Camden.</p>		

The table below highlights the differences and commonalities of the SEUL and Optimise Prime projects and the technology step changes:

<b>Traditional Depot EV connections (pre-UPS)</b>	<b>SEUL (UPS) Solution</b>	<b>Optimise Prime – Method 2</b>
Overestimated capacity needs for new connections by connecting customers	<ul style="list-style-type: none"> <li>Evaluation of different options for avoiding increase in network connection and upstream reinforcement carried out by the UPS contracted party (in this case –UK Power Networks Services).</li> </ul>	<ul style="list-style-type: none"> <li>Site planning tool allows connecting customers to optimally design their EV charging infrastructure and energy assets. Quick, optimised and automated process viable for large scale use.</li> </ul>
Uncoordinated EV charging at depot	<ul style="list-style-type: none"> <li>ANM system for coordinating EV charging, on site demand and dispatch of ESS. The aim of this system is to ensure operations within the network capacity threshold and cover demand needs for the site and EVs.</li> <li>Solution deployed at the UPS Camden depot.</li> </ul>	<ul style="list-style-type: none"> <li>Depot Energy Optimisation system for coordinating EV charging and other energy assets on site incl. renewable generation, storage etc. Aim is to cover demand needs at the depot (incl. EV charging) in the most cost-efficient way (takes energy tariff information into account) for the connecting customer whilst complying with profile of agreed connection. The same system allows for coordination of flexibility activities.</li> <li>Solution will be deployed across several Royal Mail depots to prove it is scalable and works for different site configurations.</li> </ul>
Traditional connection to network (requested capacity allocated on a 24/7 basis)	<ul style="list-style-type: none"> <li>Timed connections assessment tool.</li> <li>Assumed demand profile for assessment based on historic data (analysis carried by the DNO).</li> <li>No way for DNO of ensuring that customers keep within the timed connection capacity limits (limited visibility at LV).</li> </ul>	<ul style="list-style-type: none"> <li>Profiled connections assessment tool.</li> <li>Self service determination of load profiles by connecting customers through the Site Planning Tool.</li> <li>Depot Energy Optimisation system ensures demand at site is kept within the agreed profile of connection.</li> </ul>

Additional points:

	<p>There is a need for a viable and scalable way of optimising capacity needs and network connections. This was highlighted by a recent feasibility study carried out by UK Power Networks for a London based customer for the electrification of their fleet at more than 70 depots (the estimated effort for optimising the capacity through this feasibility study was more than 4 days per depot). This level of effort is clearly not viable in the future, and would be reduced by deploying the Optimise Prime solutions.</p> <p>Such a solution could also allow connection costs and timescales to be significantly reduced (in the aforementioned customer's case the capacity needs can be reduced by as much as 70%). This would enable more depot based fleets to electrify more quickly, without the perception that the electricity network is a barrier.</p>
Attachments	