

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	5
Question date	09/08/2018	Answer date	13/08/2018
Submission section question relates to	Section 4		
Topic	Criteria d) Innovative		
Question	Please provide further detail explaining why the method is not within the scope of the licensee's 'business as usual' and the risk to the licensee. It could use its totex allowance to fund this work and reduce load related expenditure.		
Notes on question			
Answer	<p>Optimise Prime is trialling the following two Methods:</p> <ul style="list-style-type: none">• Method 1: Smart demand response for commercial electric vehicles (EVs) on domestic connections.• Method 2: Depot energy optimisation and planning tools for profiled connections and demand response approaches to identify and quantify the available charging flexibility from an optimal load profile. <p>We have addressed the question for each Method separately.</p> <p><u>For Method 1:</u></p> <p>To date, there have been no flexibility activities on low voltage networks in GB involving EVs that are third party enacted. Electric Nation¹ carried out EV load management activities through the direct control of smart chargers by a DNO owned demand management system. This trial included only residential customers. Optimise Prime will carry out third party enacted flexibility activities to simulate a market-led flexibility model. Within Optimise Prime the DNO will interface with an IoT platform which will then send pricing signals to fleet operators requesting participation in a flexibility event. Trials within Method 1 of Optimise Prime focus on commercial EVs</p>		

¹ <http://www.electricnation.org.uk/about/technical/>

charging at home, which are distinct to residential EVs as explained in the Optimise Prime submission.

Therefore there are a number of uncertainties that justify carrying out such activities using NIC funding:

- The cost of carrying out the Method is currently unknown. Optimise Prime is aiming to understand at what value do commercial EVs respond to demand side response activities.
- The effectiveness of the Method is unproven. Optimise Prime will test the responsiveness of commercial EVs to flexibility activity signals.
- The Method also explores the reliability and predictability of flexibility from commercial EVs and whether or not DNOs can in the future rely on it for reinforcement deferral.

Understanding the magnitude of incentives needed to carry out flexibility activities with commercial EVs at a domestic level and proving the feasibility and reliability of those will help deliver significant financial, capacity and carbon benefits across GB as demonstrated by the Optimise Prime business case.

For Method 2:

The Optimise Prime depots are connected either on the low voltage or high voltage network.

For flexibility activities at low voltage, the same uncertainties apply as in Method 1, as such we consider it a high risk activity that requires proving. Current flexibility activities carried out at higher voltage levels include mainly generation assets (Flexible Distributed Generation) rather than EVs. These are mainly enacted by the DNO through equipment installed at specific substations on a case by case basis.

UK Power Networks are installing, as a business as usual activity, a centralised Active Network Management (ANM) system to interact with third party systems to provide flexibility in a scalable way. Optimise Prime is proposing to use this to trial flexibility with commercial EVs in depots with profiled connections.

The tools to enable this in an efficient and scalable way (the depot energy optimisation system and planning tool) are novel systems that will allow fleet operators to optimise their capacity and EV charging needs and costs. Ultimately the activities carried out by both tools do not sit within the remit of the DNO and as such the DNO could not carry these out as business as usual. They do however deliver clear benefits to DNO customers by increasing the utilisation of existing network infrastructure either by enabling profiled connections or reducing the size of connections of large depots with EVs. As such we believe it an appropriate and beneficial use of innovation funding to prove suitable designs and business cases for these tools to stimulate the commercial market and deliver benefits for GB DNOs and electricity customers.

Both Methods:

In both cases, the cost of the Methods, as well as the complexity of the systems for its delivery, may outweigh the financial benefits to the DNO

	<p>from avoided or deferred reinforcement. This risk means that we would not carry such unproven activities as business as usual.</p> <p>It should be made clear that the Methods also deliver significant carbon benefits and benefits to connecting customers (such as EV fleet operators) that are not monetised by the DNO.</p>
Attachments	