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	30
Question date	02/10/18	Answer date	08/10/18
Submission section question relates to			
Topic			
Question	How will Method 1 inform the industry's (including regulators and policy makers) understanding of domestic customers'/employees' behaviour: in using dual tariffs (one for domestic use, and one for charging the commercial vehicle); and in response to the requests for flexibility when charging the EV? Further, how will this deliver learning that is representative of not only large but also small and medium-sized fleet operations across GB?		
Notes on question			
Answer	A commercial electric vehicle (EV) – for Method 1 a light commercial van (LCV) – charging at home is different to a private car charging at home. From a DNO's point of view, the differences are that the vehicle is not owned by the driver/not available for personal use and, according to statistics, a commercial EV does twice the mileage per day that a private car does. Together these mean that: • It will be charged more frequently and for longer time per charge • It will potentially be less flexible compared to a private car as the window of time when the commercial EV is able to charge is shorter. This is amplified by the fact that some commercial EV drivers are on standby and rely on their vehicle always being sufficiently charged • The vehicle is not likely to be available to provide flexibility services controlled by the driver/owner as this could devalue the asset (vehicle) or be construed as a taxable benefit to the driver (resulting in additional tax complexities) From a policy maker's/regulator's point of view, there could be significant commercial EV load distributed at residential level. This commercial EV load is connected behind the meter and using existing supplies. Traditionally, a commercial entity would have to request a connection from the DNO for adding new commercial EV load and would have to pay for this connection. In the		

case of available capacity at the associated substation/electrical circuits, the cost would be for the connection cable from the point of connection to the relevant distribution network asset. If reinforcement is required, the connecting customer (i.e. the commercial entity) would have to bear a portion of those reinforcement costs. Commercial customers also pay use of system charges in proportion to the capacity they are using dissimilar to domestic customers.

With commercial EV load hidden at residential level behind domestic supplies, if reinforcement is triggered, the cost may be socialised, leading to an increase in DUoS charges and opens the debate of whether this is appropriate.

Working in the opposite direction, using domestic supplies for charging commercial EVs would also mean that fleet operators would not pay any connection costs or the ongoing use of system charges proportional for overall capacity they are using, which is then potentially unfair to both DUoS customers and other fleet operators that charge, for example, at depots. This makes the depot charging model less attractive or, in some cases, economically unviable. This could in the future push towards a behavioural change from depot based charging to home charging.

For a fleet operator charging their fleet at home, the operational costs of charging under a domestic electricity tariff are considerably higher than those applicable using a commercial electricity tariff (in our Partner's case, the costs are roughly double).

Within Method 1 of Optimise Prime, we will gather data from commercial vehicles charging at home, investigate potential approaches for separating the commercial load from the domestic one (which will allow the introduction of commercial tariffs for charging the vehicle) and carry out a number of flexibility activities with home based fleet vehicles.

The Expert Panel has stated, and we agree, that this dataset would be really valuable for informing Ofgem's access and charging reform work. It would enable the real impact of different charging arrangements to be tested, something we would support through the project.

The key expected learning and outputs from Method 1 of the project, which will inform industry stakeholders (such as GB DNOs, policy makers and fleet operators) can be summarised as per below:

	GB DNOs	**Policy makers**	**Fleet operators**
Commercial van vs Private car	• Higher, potentially less flexible load • Unknown behaviour	• Socialisation of network upgrade costs	• Higher operational costs • Centralised control
Solution for separation of commercial load / facilitation of commercial tariff	• Load profile / frequency /duration of commercial EV charging • Diversity of EV commercial load	• Solution for un-hiding commercial load at residential level • Estimation of commercial EV load at residential level and associated reinforcement costs	• Reduced operational costs • Easier reconciliation of expenses • Accurate billing

	Flexibility	• Feasibility, cost & value of commercial EV flexibility • Flexibility forecast • Increase market maturity for flexibility engagement	• Highlight possible 'gaming' cases (i.e. flex payments to those who create constraints, customers creating constraints to get paid for resolving)	• Demonstrate value of flexibility • Impact of participation in flexibility events to operations

We expect that most of the learning will be representative but also applicable to all fleet sizes. Specifically:

- Statistics show[1] that on average a commercial tariff is cheaper than domestic tariffs (with the exception of Economy 7 tariffs during the night) even for the smallest fleets. We expect that learning around appropriate approach(es) to separation of commercial load from domestic load, thereby allowing for the introduction of a commercial tariff will be valuable for all fleet types and sizes. We will add a specific learning point on economic viability of the different proposed approaches depending on the size of the fleets; and
- Learning on flexibility will be valuable for all fleet sizes. In the short term, we expect that larger fleets will be more engaged to participate in flexibility events, however as the LV flexibility market matures and more 3rd parties actively start entering the aggregation market, smaller fleets will be incentivised to participate in demand response activities via these aggregators.

We will aim to validate the learning from Method 1 of Optimise Prime by also surveying home based fleet customers via our partner Hitachi Capital Vehicle Solutions.

Attachments	

1 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/695557/Tables_Q4_2017.pdf