Notes on Completion: Please refer to the appropriate NIA Governance Document to assist in the completion of this form. The full completed submission should not exceed 6 pages in total.

NIA Project Registration and PEA Document

Date of Submission

Aug 2017

Project Reference Number

NIA_UKPN0026

Project Registration

Project Title

Black Cab Green

Project Reference Number

NIA_UKPN0026

Project Licensee(s)

UK Power Networks

Project Start

August 2017

Project Duration

1 year and 1 month

Nominated Project Contact(s)

Thazi Edwards

Project Budget

£175,000.00

Summary

- Taxis and private hire vehicles licenced in Greater London
- Taxi Drivers using residential/on-street ("overnight") parking (these are therefore the expected charging locations for vehicles in future)
- Operated by owner-operators who will charge at home (commercial or share use vehicles will be heavily dependent on rapid charger networks, which are outside the scope of this work)
- Uptake as a minimum to 2022 (date at which emissions regulations will be fully enforced), but data likely to allow analysis up to 2025

Nominated Contact Email Address(es)

innovation@ukpowernetworks.co.uk

Problem Being Solved

The problem that this project aims to address is high conventional network reinforcement costs to accommodate EV uptake, especially in areas of clustering. This follows Transport for London (TfL) introducing new license requirements for all taxis and private hire vehicles to become Zero Emission Capable in Greater London. The advance data from these studies will also prepare planning tools and models to enable more proactive planning methodologies in context with increasing volumes of Low Carbon Technologies.

Method(s)

The project will take information from TfL and London Electric Vehicle Company (LEVC) regarding the anticipated uptake of EV taxis in London. It will translate this into the network impacts, identifying and quantifying areas of UK Power Networks' network which will require some intervention to accommodate this uptake. It will promote stakeholder engagement, now and into the future between UK Power Networks and key taxi industry representatives.

Scope

- Taxis and private hire vehicles licenced in Greater London
- Taxi Drivers using residential/on-street ("overnight") parking (these are therefore the expected charging locations for vehicles in future)
- Operated by owner-operators who will charge at home (commercial or share use vehicles will be heavily dependent on rapid charger networks, which are outside the scope of this work)
- Uptake as a minimum to 2022 (date at which emissions regulations will be fully enforced), but data likely to allow analysis up to 2025

Objective(s)

The objective of this project is to deliver a robust forecast of the uptake and impact of plug-in taxis within the London area, allowing UK Power Networks to manage the network impact and risks associated with the plug-in vehicle uptake which will be accelerated by the 'zero emission by 2022' scheme.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The delivery of the following outcomes will be considered when assessing whether the project has been successful:

1) Calculation of expected demand (volumes and load forecast) and impact from EV taxis charging on residential networks until a minimum of 2022 (preferably 2025)
2) Identification of at risk network types i.e. establish any correlation between EV demand and certain network types/ configurations
3) Solution recommendations to manage impacted networks to asset management and innovation team (where to focus more research)
4) Longer-term engagement strategy developed for taxi community over the coming years as electrification of taxis increases
5) Enhancements recommended to our planning tools and processes to facilitate connection of higher volumes of EVs

Project Partners and External Funding

The project partner will include EA Technology for the provision of consultancy services and Imperial College for modelling services.

There is no external funding.

Potential for New Learning

The project will generate recommendations to planning models that will be shared as learning within UK Power Networks and with other DNOs. This work will also provide recommendations to inform a future strategy for deploying smart solutions.

The learning generated from the project outputs will be relevant to other DNOs which are expected to see increased uptake of EVs and this will be disseminated through several forms of engagement including webinars, press releases and/or workshops.

Scale of Project

The scale of the study will include all Taxi and private hire vehicles licensed in Greater London, however, network modelling will only be conducted across UK Power Networks' license areas.

Technology Readiness at Start

TRL1 Basic Principles

Technology Readiness at End

TRL3 Proof of Concept

Geographical Area

The geographical area will include sites where there is an expected impact from TfL licensed drivers. This will include regions across all three license areas belonging to UK Power Networks.

Revenue Allowed for the RIIO Settlement

No revenue has been allowed specifically for the electrification of London taxis and private hire vehicles

Indicative Total NIA Project Expenditure

£175,000 is the total expenditure which is expected to be incurred.

Project Eligibility Assessment Part 1

There are slightly differing requirements for RIIO-1 and RIIO-2 NIA projects. This is noted in each case, with the requirement numbers listed for both where they differ (shown as RIIO-2 / RIIO-1).

Requirement 1

Facilitate the energy system transition and/or benefit consumers in vulnerable situations (Please complete sections 3.1.1 and 3.1.2 for RIIO-2 projects only)

Please answer **at least one** of the following:

How the Project has the potential to facilitate the energy system transition:

n/a

How the Project has potential to benefit consumer in vulnerable situations:

n/a

Requirement 2 / 2b

Has the potential to deliver net benefits to consumers

Project must have the potential to deliver a Solution that delivers a net benefit to consumers of the Gas Transporter and/or Electricity Transmission or Electricity Distribution licensee, as the context requires. This could include delivering a Solution at a lower cost than the most efficient Method currently in use on the GB Gas Transportation System, the Gas Transporter's and/or Electricity Transmission or Electricity Distribution licensee's network, or wider benefits, such as social or environmental.

Please provide an estimate of the saving if the Problem is solved (RIIO-1 projects only)

This impact study defines preliminary work (equivalent to a low TRL level) for wider studies investigating the transition to EVs and therefore the reporting of smart benefits cannot be claimed at this stage.

The next phase of the project, following this scope of work, would involve development of smart solutions and tools to cater planning for EV uptake. These tools and processes would support more advanced decision planning, of which could be reported as a smart benefit in the next phase.

Please provide a calculation of the expected benefits the Solution

N/A (research project)

Please provide an estimate of how replicable the Method is across GB

This method could be applied across the whole of GB and applies to all network operators.

Please provide an outline of the costs of rolling out the Method across GB.

It is expected that the costs for rolling out similar studies across other DNO groups would be comparable to UK Power Networks, although additional costs would be potentially be incurred to create networks models if they don't already exist in their planning tools. This project covers one of six DNO groups, therefore the expected costs across GB would be approximately £1m.

London is leading large scale taxi electrification in GB due to the new license requirements imposed by TfL. It is expected that similar electrification schemes and impact studies could be replicated with taxi licensing organisations across other regions in GB.

Requirement 3 / 1

Involve Research, Development or Demonstration

A RIIO-1 NIA Project must have the potential to have a Direct Impact on a Network Licensee's network or the operations of the System Operator and involve the Research, Development, or Demonstration of at least one of the following (please tick which applies):

☐ A specific piece of new (i.e. unproven in GB, or where a method has been trialled outside GB the Network Licensee must justify repeating it as part of a project) equipment (including control and communications system software).

☑ A specific novel arrangement or application of existing licensee equipment (including control and/or communications systems and/or software)

☐ A specific novel operational practice directly related to the operation of the Network Licensees system

☐ A specific novel commercial arrangement

RIIO-2 Projects

☐ A specific piece of new equipment (including monitoring, control and communications systems and software)

☐ A specific piece of new technology (including analysis and modelling systems or software), in relation to which the Method is unproven

☐ A new methodology (including the identification of specific new procedures or techniques used to identify, select, process, and analyse information)

☐ A specific novel arrangement or application of existing gas transportation, electricity transmission or electricity distribution equipment, technology or methodology

☐ A specific novel operational practice directly related to the operation of the GB Gas Transportation System, electricity transmission or electricity distribution

☐ A specific novel commercial arrangement

Specific Requirements 4 / 2a

Please explain how the learning that will be generated could be used by the relevant Network Licensees

Once the project is complete, the learning could be used by relevant Network licenses to refine their planning models and processes for the facilitation of electric vehicles.

Or, please describe what specific challenge identified in the Network Licensee's innovation strategy that is being addressed by the project (RIIO-1 only)

n/a

☑ Has the Potential to Develop Learning That Can be Applied by all Relevant Network Licensees

Is the default IPR position being applied?

☑ Yes

Project Eligibility Assessment Part 2

Not lead to unnecessary duplication

A Project must not lead to unnecessary duplication of any other Project, including but not limited to IFI, LCNF, NIA, NIC or SIF projects already registered, being carried out or completed.

Please demonstrate below that no unnecessary duplication will occur as a result of the Project.

There is no duplication occurring as part of this project as this specific problem was not previously pertinent. The new licensing requirement is a new development for Greater London and hence this study is newly relevant. In planning the project we have interfaced with existing projects in the EV industry, including My Electric Avenue and Electric Nation, to leverage their learning and build on this by producing new learning from taxi and private hire vehicle data.

If applicable, justify why you are undertaking a Project similar to those being carried out by any other Network Licensees.

n/a

Additional Governance And Document Upload

Please identify why the project is innovative and has not been tried before

n/a

Relevant Foreground IPR

n/a

Data Access Details

n/a

Please identify why the Network Licensees will not fund the project as apart of it's business and usual activities

n/a

Please identify why the project can only be undertaken with the support of the NIA, including reference to the specific risks(e.g. commercial, technical, operational or regulatory) associated with the project

n/a

This project has been approved by a senior member of staff

☑ Yes