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

Apr 2020

Project Reference Number

WPDEN04

Project Registration

Project Title

DC Share

Project Reference Number

WPDEN04

Project Licensee(s)

National Grid Electricity Distribution

Project Start

January 2020

Project Duration

2 years and 4 months

Nominated Project Contact(s)

Ricky Duke

Project Budget

£5,629,000.00

Summary

This project will assist with the facilitation of rapid EV charging equipment by providing appropriate network connections where they are needed, whilst making optimal use of the available network capacity.

The connection costs for rapid EV charging facilities are a critical consideration for developers. Provision of rapid charging facilities is key to the uptake of electric vehicles (particularly for fleets and urban delivery services) and hence high connection costs in some areas could be seen as a potential barrier to the uptake of EVs. Users must be able to charge their EVs in a manner that is at least as convenient as current refuelling methods, which means minimum dwell time, or opportunity charging where vehicles may stop.

DC share is a smart DC network solution that facilitates rapid charging in constrained areas by using the available latent capacity across a number of substations. The solution will mesh a number of distribution substations, with DC converters and high capacity DC links. The DC system will then determine the best point to draw power from for the charger and it will also support heavily loaded transformers.

Third Party Collaborators

Turbo Power Systems

Vectos

Ricardo

Problem Being Solved

Method(s)

Scope

Objective(s)

This project will assist with rapid EV charging requirements by providing facilities where they are needed, whilst making optimal use of the available network capacity.

The Problem

The connection costs for rapid EV charging facilities are a critical consideration for developers. Provision of rapid charging facilities is key to their uptake (particularly for fleets and urban delivery services) and hence high connection costs will be a barrier to the uptake of EVs. Users must be able to charge their EVs in a manner that is at least as convenient as current refuelling methods.

The Solution

A Smart network solution that allows rapid charging by using the available capacity across a number of substations. The solution will determine the best connection point to draw power from and will also support heavily loaded transformers.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

At the time of writing the FSP, the following deliverables were designed to demonstrate clear progress towards the project objectives and dissemination of valuable learning. Work progressed in a manner pursuant of completing these deliverables up until the point when we requested that the project be halted.

Deliverable 1: Site Selection Complete

Evidenced by a report detailing: process used to select the site including equalisation benefits estimations, planning considerations and charger usage estimations, evidence of support from relevant stakeholders, final trial site decision and next steps action plan.

Deliverable 2: Final System Design Report

Evidenced by a report detailing: full description and specification of the trial installation, final system design and product specification, System Functional Definition Document and detailed status of developments of hardware and software.

Deliverable 3: Factory Acceptance

Evidenced by a report detailing: description of the testing, installation and commissioning processes, equipment acceptance and compliance certification, detailed plan for onsite installation and analysis of the results and improvements for future iterations.

Deliverable 4: Installation Completion

Evidenced by installations completed and presented for inspection: equalisation at substations, DC ring cabling, DC charge points and other system components such as switching, metering, control, and comms system.

Deliverable 5: Trial Interim Report

Evidenced by a report detailing: lessons learned during installation and initial testing, details of activities and success in engaging with potential users, customer survey interim results and details of events and conferences.

Deliverable 6: Trial Results Report and EV Charging Customer Experience

Evidenced by a report detailing: analysis of the data obtained from the trial installation, its effectiveness to deliver rapid charging and

network equalisation benefits, public presentation of the results from customer engagement to determine positive and negative elements of the trial installation (e.g. location and logistical factors, prioritisation logic/curtailment of charging).

Deliverable 7: Closedown Report

Evidenced by a report detailing: final conclusions and BaU recommendation.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

n/a

Geographical Area

Revenue Allowed for the RIIO Settlement

Indicative Total NIA Project Expenditure

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)

n/a

Please provide a calculation of the expected benefits the Solution

n/a

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

n/a

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

n/a

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

n/a

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

Please demonstrate how the learning from the project can be successfully disseminated to Network Licensees and other interested parties.

Please describe how many potential constraints or costs caused, or resulting from the imposed IPR arrangements.<

Please justify why the proposed IPR arrangements provide value for money for customers.

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.

n/a

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