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

Mar 2018

Project Reference Number

NIA_UKPN0032

Project Registration

Project Title

Mobile Field Control

Project Reference Number

NIA_UKPN0032

Project Licensee(s)

UK Power Networks

Project Start

March 2018

Project Duration

3 years and 10 months

Nominated Project Contact(s)

David O'Riordan and Alex Jakeman

Project Budget

£1,539,960.00

Summary

The objective of the project is to demonstrate the benefits of Mobile Field Control which are in respect of improved customer service for distribution customers. The proposed solution will improve quality of supply on the network by reducing the time taken for Engineers to get customers back on supply. This is a first of a kind solution which will set out a framework for using Mobile Field Control to improve customer service and operational efficiency.

Nominated Contact Email Address(es)

innovation@ukpowernetworks.co.uk

Problem Being Solved

Peaks and troughs of workload especially in storm situations cause inefficiency and delays in restoration due to extensive numbers of calls required between Field Engineers and Control Engineers.

To reduce the delays Field Control occurs when the Field Engineer becomes the Control Engineer for a delegated area of network. Field Control is currently performed using paper documents and doesn't allow Control Engineers to have visibility of the delegated network in real-time. As a result, when the Field Control is handed back to the responsibility of the Control Engineer a confirmation of all network switches, under the control of the Field Operator, is required, which can be time consuming.

Recently, mobile solutions including electronic devices/tablets have been introduced to a number of Field Engineers, however the present mobile solutions, cannot use Field Control, as current software solutions do not have the capability to support Field Control. In addition, the current solutions do not allow the electronic issue and cancellation of documents used to manage safety of the network. Furthermore, existing mobile solutions do not allow for remote tele control.

Method(s)

This is a first of a kind solution which will set out a framework for using Mobile Field Control to improve customer service and operational

efficiency. In order to resolve the problems identified, the Mobile Field Control project will set up a multi-disciplinary project team. Representatives from UK Power Networks' teams in Innovation, Network Operations, Information Systems, and suppliers (Yambay & GE Energy), will design and build first of a kind technology which will allow for Field Control to be performed using mobile solutions

he project will build on current capabilities in UK Power Networks' mobile solution known as PowerOn Mobile. The following innovative functionality not demonstrated or proven elsewhere will be part of the Mobile Field Control solution.

1. Ability to delegate Control to Field Engineers and return delegation via electronic devices.

2. Under Field Control the Control Engineer and Field Control Engineer can see the live running conditions in real time, where communications are available.

3. Field Control Engineers to remotely tele-control operations on the Network using the electronic device.

4. Safety documents can be issued and cancelled by the Field Control Engineer via the electronic devices.

In addition to building the solution with the relevant suppliers, the project will also explore and recommend changes to existing business processes and policies (incl. health and safety) which allow for the solutions to be rolled out as business-as-usual following successful demonstration during the trial project.

Scope

The project will design, build and trial a Mobile Field Control solution in order to deliver a set of requirements, which have been agreed by all stakeholders. A long period is allowed for the trial period to increase the likelihood of there being storm events to ensure the method is fully tested and any potential risks and issues identified and resolved before a business-as-usual deployment can take place.

Time and budget extension was approved in December 2020 to extend the trial period and incorporate more time for data analysis and project closedown. This was due to a delay in the installation and commissioning of the new version of Advanced Distribution Management System (ADMS) required to maximise the project learnings and benefits delivery.

Objective(s)

The objective of the project is to demonstrate the benefits of Mobile Field Control which are in respect of improved customer service for distribution customers. The proposed solution will improve quality of supply on the network by reducing the time taken for Engineers to get customers back on supply. This is a first of a kind solution which will set out a framework for using Mobile Field Control to improve customer service and operational efficiency.

It is anticipated that the trials will demonstrate improved performance in Customer Minutes Lost when using Mobile Field Control rather than existing Field Control and mobile solutions, which currently cannot be aligned due to technical limitations.

Another objective of the project is to design and approve the relevant changes to existing business processes and policies which will enable smooth transition of these solutions into business-as-usual.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The project will be deemed successful if the following benefits can be demonstrated during the trial period:

• Proven successful and safe Mobile Field Control implementation;

• Improved service to customers – through a reduction of Customer Minutes Lost (CMLs) for faults;

• Positive feedback from Field Engineers highlighting reduced waiting time for calls with control engineers and so improved operational efficiency;

• Postive feedback from Control Engineers highlighting the benefits of real-time visibility and auditing of network under Field Control; and

• Demonstrate paperless issuing and receiving of safety documentation

Project Partners and External Funding

Project Partners are GE Grid Solutions and Yambay (No external funding provided)

Potential for New Learning

The project will demonstrate the capabilities of managing Field Control using mobile solutions such as PowerOn Mobile. It will share the learnings developed with all other DNOs ensuring a framework is in place for other DNOs to follow when requiring similar capabilities. Currently, no similar capabilities exist across any of the GB DNOs therefore this will be first of a kind learning.

It is proposed to present the findings of this project at the annual GE User Conference (following project completion) where GB and worldwide electricity companies attend and presentations can be shared with non-attendees.

More specifically the findings of this project will be shared at the UK PowerOn User Conference group (held annually).

Scale of Project

The project will focus on trialling the solution in UK Power Networks' Eastern Power Networks licence area, as existing Field Control methods are currently used within this license area and Field Engineers are already trained in using existing mobile solutions.

The IT implementation required for the system is on a per DNO basis, so a smaller trial area would not materially reduce IT implementation costs but the opportunity for learning would be significantly lower. In storm events staff from any part of Eastern Power Networks may be drafted to the critical locations to carry out work. The trials will include a variety of Field Engineers and Control Engineers across voltage levels.

Technology Readiness at Start

TRL6 Large Scale

Technology Readiness at End

TRL9 Operations

Geographical Area

UK Power Networks' Eastern Power Networks area

Revenue Allowed for the RIIO Settlement

None

Indicative Total NIA Project Expenditure

The project value is £1,539,960 of which 90% is reclaimed through NIA.

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)

When rolled out across a license area it is expected that a improved customer service can be provided. Analysing historic data it is expected that four minute reduction in Customer Minutes Lost for faults can be achieved. This reduction is achieved through a significant reduction in calls to the control centre, associated wait times, and call backs between field and control engineers.

Please provide a calculation of the expected benefits the Solution

Base Cost – Equivalent base costs remain the same once the method is applied, therefore in the financial benefits calculation below this is assumed as £0.

Method Cost - £815,000 per DNO license area.

Based on indications of design and build costs from project suppliers

Benefits - £1,383,811 NPV for CML savings over the RIIO ED1 period.

A reduction in CMLs is achieved which is equivalent to £545k per year. This is achieved every year from 2020 – 2023. The reduction in CMLs has been calculated by analysing previous call logs and identifying how much time can be eliminated by using Mobile Field Control.

Financial benefits (Base Cost – (Method cost –Benefits)

= 0 – (£815,000 - £1,383,811)

= £568,811

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

It is anticipated that the solution can in future be rolled out across all license areas in GB. Although some license areas use different software for mobile solution, the principles of Mobile Field Control can be applied to all license areas.

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

The cost of rolling out the solution would be dependent on additional system upgrades required by certain DNOs however an estimate of £815k per DNO licence is appropriate.

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

This is a first of a kind solution which will set out a framework for using Mobile Field Control to improve customer service and operational efficiency. The vast majority of DNOs use the same control system which is the foundation for this solution, therefore the learning will be directly applicable to their operations.

In addition to the new capabilities developed, the project will set out required changes to business processes and policies in order to allow for mobile field control to be rolled out as business-as-usual. These lessons and recommendations can be applied to any DNO regardless of which control systems are currently being used.

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.

Based on research of the GB DNO market and speaking with specific suppliers, it is clear that no other research or projects are currently being completed in the area of Mobile Field Control. It should be noted that (as described above) this is distinctly different to mobile solutions

that give control system visibility, such as the one already in use by our engineers.

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

The risks associated with aligning the new technological solutions with existing business processes in a high risk network control environment warrants significant risk therefore innovation trials are required to demonstrate the value of these solutions prior to considering a roll out.

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

Due to the risk involved in the project and not fully knowing whether the benefits can be delivered across our licence areas, these activities would not form part of our business as usual activities. In order to progress an innovative project which carries significant risk in implementation, additional innovation funding is required as a stimulus.

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

As noted in the NIA guidance, certain projects are speculative in nature and yield uncertain commercial returns. This is the case for with this project. There is a commercial risk that the solution developed as part of the project is not adopted by the stakeholders involved following the trial period. This could be due to the fact that the solution has not reach the level of maturity required for business-as-usual application. This risk is already being mitigated against through early engagement with stakeholders and ensuring requirements are clearly defined and documented. If the project is successful, it will have proven a number of technical solutions and business processes which will improve customer service. The specific details regarding the benefits are captured under section 2b of this document.

This project has been approved by a senior member of staff

☑ Yes