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

Dec 2013

Project Reference Number

NIA_NGET0013

Project Registration

Project Title

Tablet interface for a SF6 mass flow top-up device

Project Reference Number

NIA_NGET0013

Project Licensee(s)

National Grid Electricity Transmission

Project Start

October 2012

Project Duration

1 year and 6 months

Nominated Project Contact(s)

Adam Baker & Carl Johnstone

Project Budget

£78,000.00

Summary

This project will focus on SF6 top-ups and will be to replace the current interface on SF6 mass flow meters with a tablet interface which will become the one point of contact for asset management equipment onsite. This interface will control the mass flow meter during a top-up and collecting information on what asset is being topped-up. It will also be capable of sending the top-up data back to SAM (Strategic Asset Management) system automatically instead of the operator entering the data into the system manually via a script on there laptop.

Nominated Contact Email Address(es)

box.NG.ETInnovation@nationalgrid.com

Problem Being Solved

National Grid have provided a highly available network to date, but the many challenges, such as environmental and Risk & Criticality, moving forward we will require greater levels of information open to a greater audience in the most cost effective way. The Project will be designed to be a generic platform so that other technologies such as portable DGA and PD can use the project as a platform so that there is one interface used for different technologies on site. This will drive a single solution so we're not reliant on suppler solutions that may not meet all of our requirements and will add extra training for their stand alone solution.

Currently SF6 top-ups require the person doing the top-up on site to fill in an FFE script on there laptop. This can lead to problems with data entry, filling in data in the wrong place, miss typing data or delayed reporting of top-ups. Because of this possibility of problems once a quarter two people sit down for a day and review the top-up data and correct any data errors they find.

By implementing a system that collects the information at time of top-up and gives the user information to select from drop down boxes it will improve the timeliness of the reporting and also the accuracy of the data collected. Also by collecting the data directly from the mass flow to SAM it will remove errors from copying the top-up mass value from the meter to the FFE Script like mistyping the values or rounding errors from happening.

Method(s)

Development

The method that has been proposed for this project includes:

- Working mass flow interface box
- Working tablet application
- Fully integrated mass flow unit with interface and site test unit
- Full prototype setup
- Production of 20 interface units
- 10 mass flow units upgraded
- Alterative mass flow unit integrated with interface box

Scope

This project will focus on SF6 top-ups and will be to replace the current interface on SF6 mass flow meters with a tablet interface which will become the one point of contact for asset management equipment onsite. This interface will control the mass flow meter during a top-up and collecting information on what asset is being topped-up. It will also be capable of sending the top-up data back to SAM (Strategic Asset Management) system automatically instead of the operator entering the data into the system manually via a script on there laptop.

Objective(s)

To create a sustainable template and process to reduce total cost on a solution that will use ‘off the shelf’ technology and open protocols with the intention that it will be scalable across multiple technologies. This project will also provide understanding of the methodology to indentify potential challenges and benefits associated with mobile data capture of test equipment.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

This project will be successful if we trial a remote SF6 mass flow top up device

Further success will include integration into the SAM platform, a more accurate data capture methodology and a business implimentation proceedure.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

This project is focussed at substation scale, specifically at SF6 assets.

Technology Readiness at Start

TRL5 Pilot Scale

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

The project will deliver tools and techniques suitable for use on the whole of the GB transmission system.

Revenue Allowed for the RIIO Settlement

Zero

Indicative Total NIA Project Expenditure

IFI - £13,000

NIA - £65,000

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)

Avoiding costs in replacement of mass flows by increasing the longevity of existing mass flows with an upgrade to a tablet interface. If the company decided to replace the existing units they would look to replace 20% of the units per year and if these were upgraded instead of replaced this could save around £390,000 annum. These numbers are based on an engineering estimate of £15,000 per new unit as appose to £2,000 for an upgrade and a total fleet of 150 units.

As part of National Grid longer term plan to replace OITH devices on site, this project could help influence what device is chosen. This could then help to reduce cost as one device could then be used for multiple tasks, and the condition monitoring devices could be less complex as the interface is already onsite.

The project benefits above are based on replacement of the existing 150 units on the system, if the company upgraded the units instead of replaced them, we could save £390k p/a

Please provide a calculation of the expected benefits the Solution

Base Cost - £390,000

Method Cost - £78,000

B-M = £312,000

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

This learning can be applied to all GIS sites.

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

National Grid IS would provide this equipment, however the final implementation costs are uncertain.

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)

This project addresses the themes of reliability and environment as the project focuses on better asset management as well as enabling National Grid to direct innovation to reducing SF6 emissions.

☑ 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.

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