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

Jul 2020

Project Reference Number

NIA_SPEN_0054

Project Registration

Project Title

Transmission OHL Crossing Protection Stage 1

Project Reference Number

NIA_SPEN_0054

Project Licensee(s)

SP Energy Networks Distribution

Project Start

July 2020

Project Duration

1 year and 9 months

Nominated Project Contact(s)

Ranit Edgar

Project Budget

£80,000.00

Summary

This project will develop a system to protect transmission OHL from inadvertent re-energisation from contact with Distribution OHL during reconductoring.

Third Party Collaborators

Red Marine Engineering Ltd

Nominated Contact Email Address(es)

innovate@spenergynetworks.co.uk

Problem Being Solved

When Reconductoring Transmission OHL, there can be issues when the transmission line crosses a section of Distribution OHL. Some action must be taken to ensure that the transmission OHL cannot drop, make contact with the distribution line, and become re-energised, as this could cause harm to the operatives who are working on the isolated line. Currently, this is avoided by undergrounding the section of distribution line, but this can be very expensive once costs such as outages, excavation and reinstatement are factored in.

Method(s)

We propose a system to prevent contact with the distribution OHL by covering it from above. This will be a system installed using live line methods, and will initially be used to protect 132kV systems. A feasibility study has been carried out, and this project will develop a detailed design for the system.

Scope

This project will cover the design the protection system. This will be designed to allow a large proportion of distribution crossings to be protected on the current planned reconductoring projects.

This project will cover only the design to allow assessment against the requirements of the transmission business, and to ensure that it can be applied to a sufficient number of these crossings to make it cost effective for the network licencees to use.

Objective(s)

The development of a technical design of a system to cover distribution OHL while transmission reconductoring is being carried out overhead, with an assessment of how this meets the needs of the business, and what amount of crossings this can be applied to.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The delivery of the above objectives, within budget and within agreed timelines, as is reasonable depending on the knowledge at this stage of the development phase.

The project will be managed within SPEN applying due diligence and best practices where appropriate.

Project Partners and External Funding

RED Engineering, no external funding

Potential for New Learning

The system being developed will be able to be used initially where 132kV lines cross lower distribution lines. If the system can prove cost-effective, it will then be manufactured and trialed.

Scale of Project

This project will cover the design of the protection system.

Technology Readiness at Start

TRL4 Bench Scale Research

Technology Readiness at End

TRL5 Pilot Scale

Geographical Area

N/A

Revenue Allowed for the RIIO Settlement

N/A

Indicative Total NIA Project Expenditure

£80000

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)

The exact saving is dependent on the number of crossings which this can be applied to; there may be some situations (e.g. where the ground is too uneven or steep, or where it at an extreme angle) where this system cannot be deployed. However, there will still be many where it can. We estimate savings annually in the region of hundreds of thousands of pounds.

Please provide a calculation of the expected benefits the Solution

The financial benefits are difficult to estimate at this stage due to variable costs for undergrounding and reinstatement of assets, and the deployment costs of the system are difficult to estimate at this stage.

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

The system could be used by all licencees who have 132kV assets which require reconductoring.

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

This is difficult to assess at this stage due to uncertainty of the costs of manufacturing the system.

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

All network licencees will be able to use the system to protect while reconductoring 132kV OHL, either at transmission or distribution level.

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 equivalent system which is used, and there has not been a similar innovation project.

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 protection system is an innovative solution to this problem which will provide an alternative to temporarily undergrounding sections of OHL as is currently the case.

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

There is a level of technical risk in this project, as described below.

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

The technical risk is that the system cannot be designed to apply to most crossings, or enough to make purchase cost-effective. There may also be risks in terms of withstanding, for instance, high winds, which may limit where and when it can be used. As such, there is a risk that the design cannot be manufactured and used on the network, hence the requirement for NIA support.

This project has been approved by a senior member of staff

☑ Yes