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 2016

Project Reference Number

NIA_SPEN0017

Project Registration

Project Title

Secondary Communications Phase 2 - Consultancy Engagement

Project Reference Number

NIA_SPEN0017

Project Licensee(s)

SP Energy Networks Distribution

Project Start

January 2017

Project Duration

1 year and 1 month

Nominated Project Contact(s)

Brian Thomas, Watson Peat

Project Budget

£120,000.00

Summary

The project is split into 12 tasks:

1. Confirm Trial site location.
2. Define Scope of trial at PNDC.
3. Report on Detail of hardware and software solution.
4. Report on detail of 4G/IOT solution.
5. Produce Draft costing proposal.
6. Analyse similarities between communications for Secondary Automation and for full smart grid enablement.
7. Finalise Test and Development Licence for communication frequency.
8. Investigate cybersecurity compliance.
9. Investigate Protocol conversion for legacy compatibility
10. Analyse existing and new telemetry systems.
11. Engage with GE's Poweron Fusion team regarding their vision of smart grids, and their communication requirements.
12. Produce a costed proposal for implementation.

Preceding Projects

NIA_ENWL004 - Combined On-line Transformer Monitoring

Nominated Contact Email Address(es)

innovate@spenergynetworks.co.uk

Problem Being Solved

This is Phase two of a research and development project, looking to investigate a future-proofed communications network for

secondary automation on the distribution network. It will determine a number of external influencing factors which will affect the reqirements for the communications network.

Method(s)

The project will analyse various aspects of the requirements of the future network of the Smart grid, and its comparison to what is required for Secondary automation; it will look at the communications requirements, protocols and their backward compatibility, and various telemetry systems. Additionally, it will identify the scope and parameters of the future trials, which will be carried out as part of a future phase.

Scope

The project is split into 12 tasks:

1. Confirm Trial site location

2. Define Scope of trial at PNDC

3. Report on Detail of hardware and software solution

4. Report on detail of 4G/IOT solution

5. Produce Draft costing proposal

6. Analyse similarities between communications for Secondary Automation and for full smart grid enablement.

7. Finalise Test and Development Licence for communication frequency.

8. Investigate cybersecurity compliance.

9. Investigate Protocol conversion for legacy compatibility.

10. Analyse existing and new telemetry systems.

11. Engage with GE's Poweron Fusion team rearding their vision of smart grids, and their communication requirements

12. Produce a costed proposal for implementation.

Objective(s)

The project will have three deliverables:

1) Analysis documents for Smart Grid Communication requirements

2) Draft Costing proposal for network Trials

3) Costed and specified Implementation proposal for the communication system.

This will also be useful for other electricity licensees

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 appropiate.

The staged outcomes will include reports and specifications available for other licencees.

A clear follow up strategy should be defined as part of the delivery

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

This project's scale is largely determined by the number of external factors and influences which are being considered. The project's scale as it is takes into account the main aspects which will allow the final proposal to be robust and suitable; anythng less than this scope would leave out vital aspects.

Technology Readiness at Start

TRL3 Proof of Concept

Technology Readiness at End

TRL6 Large Scale

Geographical Area

Part of the stage outcome of this project will include a criteria list for future application/trial. The potential trial area will be within SPEN's licenseed area, e.g. in Dumfries and Galloway, with potential to expand into an area within the SP Manweb region.

Revenue Allowed for the RIIO Settlement

None

Indicative Total NIA Project Expenditure

£70,000

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)

The implementation of a future-proofed communications network will ensure that the network is ready for deeper integaration of automation and control. This will increase the network's reliability and ability to recover from interruptions and mitigate faults on the network.

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

The Principles of the analysis can be used by all other DNOs. The learnings will be able to be integrated into their future work on their communications systems to prepare for the smart grid and secondary automation. Their communications networks are based on the same principles as SP Energy Networks', so it will be directly relevant to all DNOs.

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

The rollout costs are dependant on the degree to which each DNO adopts the learnings of this project. The costings for implementation will be produced as part of the project.

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

Every DNO in the UK uses a communications network. All of these networks face similar issues and opportunities to future-proof their networks. The learning which will come of this project will help shape what direction all other DNOs will take, as it will provide an analysis of the potential options, along with an analysis of protocol conversion for legacy systen integration.

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.

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