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 2015

Project Reference Number

NIA_NGGT0070

Project Registration

Project Title

NTS Block Valve Connections

Project Reference Number

NIA_NGGT0070

Project Licensee(s)

National Gas Transmission PLC

Project Start

April 2015

Project Duration

1 year and 0 months

Nominated Project Contact(s)

James Abrahams, Robert Earl,box.GT.innovation@nationalgrid.com

Project Budget

£114,000.00

Summary

As stated above, third parties looking to connect onto the NTS to follow the Uniform Network Code (UNC) 'Application to Offer' (A2O) process. This process delivers a conceptual design study for the connection and has predominantly been used to connect gas fired power stations and similar large connections over the past 2 years. It has become apparent that the process, which has worked successfully for those types of connections, will not necessarily be the most efficient or effective as smaller gas supplies approach NGGT to connect onto the NTS. Two key challenges include:

1. Long timeline: The standard timeline for a new connection to the National Transmission System is approximately 3 years from initial application through to commissioning of the new asset, which may not be appropriate for unconventional gas supplies.

2. Minimum flowrate: In the UNC guidelines this is currently set at 2 million therms /annum, which may not be appropriate for unconventional gas supplies. Lower flows can be accepted if no local distribution system is available.

Gas Transmission Asset Management and Gas Customer Services would like to understand, and potentially be able to offer alternative options to our customers in the future. It is therefore proposed that a Network Innovation Allowance (NIA) project is initiated to look at the options for a different type of connection process for small gas connections onto the NTS.

Third Party Collaborators

Premtech Ltd

Nominated Contact Email Address(es)

Box.GT.Innovation@nationalgrid.com

Problem Being Solved

Currently National Grid policy directs third parties looking to connect onto the NTS to follow the Uniform Network Code (UNC) 'Application to Offer' (A2O) process. This process, in its simplest form, delivers a conceptual design study for the connection and has predominantly been used to connect gas fired power stations and similar large connections over the past 2 years. However it has been identified that block valves sites could potentially be used to connect smaller types of connections in a more cost effective way which is not something National Grid has done before.

Method(s)

The deliverables are as follows:

- Develop Basis of Design Document (BoDD) - Development and production of a Basis of Design Document (BoDD) to clarify design scope and design parameters.
- Optioneering – Development and production of an Options Report.
- Installation ELD's / PFD's - – Development of various option ELD's / PFD's (up to 6 option arrangements) to enable discussion with National Grid and other stakeholders as appropriate.
- Installation 3D models & GA's - Based on the ELD's and PFD's, develop installation 3D models and GA's for the preferred options.
- BIM / BIM Bank Strategy Document - Development of a strategy report of how BIM can be utilised at the connection sites, discussing the opportunities and constraints with using BIM, and the BIM strategy that could be adopted to reduce cost, carbon and programme. The document will include the learning from other NIA projects.

Renewables Strategy Document - Development of a report of how renewable technology can be

- utilised at the connection sites, discussing the opportunities and constraints of using renewables to provide power, typically wind and solar.
- Opportunities & Constraints Matrix - Population of an Opportunities and Constraints Matrix to critically evaluate each option proposed.
- Project Costing Model Document - Develop a project cost model document to scope and define how a software based cost model tool could be developed to allow project costings to be determined from standard / basic project input data.
- Project Risk Register (Commercial) - Develop a project risk register in order that National Grid can understand the project risks and their potential commercial impacts (cost and programme). The risk register will consider the commercial implications of renewables, BIM and the taking ownership process.
- Project Programmes / Timelines - Develop project programmes, for different project delivery models for example, traditional, using BIM, cost modelling software, taking ownership process etc.
- Design Risk Register (H&S) - Develop a design H&S risk register, the risk register will take the form of a CDM Risk Register that can be developed if future projects develop.
- Taking Ownership Process (Adoption) - Develop a report on how a potential taking ownership (Adoption) process would / may work, detailing National Grid requirements (i.e. audits) and third party requirements etc.

Scope

As stated above, third parties looking to connect onto the NTS to follow the Uniform Network Code (UNC) 'Application to Offer' (A2O) process. This process delivers a conceptual design study for the connection and has predominantly been used to connect gas fired power stations and similar large connections over the past 2 years. It has become apparent that the process, which has worked successfully for those types of connections, will not necessarily be the most efficient or effective as smaller gas supplies approach NGGT to connect onto the NTS. Two key challenges include:

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Gas Transmission Asset Management and Gas Customer Services would like to understand, and potentially be able to offer alternative options to our customers in the future. It is therefore proposed that a Network Innovation Allowance (NIA) project is initiated to look at the options for a different type of connection process for small gas connections onto the NTS.

Objective(s)

To provide an engineering solution for customer connections onto block valve sites.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

To deliver an engineering design and process for using small block valve sites to connect onto the NTS as an alternative to the conventional custom built connection process.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

The project is predominantly desk based work at this stage, and some site visits will be required.

Technology Readiness at Start

TRL4 Bench Scale Research

Technology Readiness at End

TRL6 Large Scale

Geographical Area

The project will take place at National Grid and Premtech offices.

Revenue Allowed for the RIIO Settlement

None

Indicative Total NIA Project Expenditure

£114,000

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)

Potential savings are in the region of £700K – £1m per block valve connection as an alternative to a new connection point. This is against current estimated connection cost of between £1.5m - £2m. There is also potential benefit as part of the customer and stakeholder incentive +/- 1% of revenue.

Please provide a calculation of the expected benefits the Solution

Base cost per connection: £1.5 - £2.m

Method cost per connection: £800k – £1m

Expected financial benefits per connection: £700k - £1m

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

There are 250 block valve sites on the NTS. The number of these which will be suitable for conversion to connection points would be established as part of this project. The number which then proceed in terms of connection applications will be dependent on the individual customer, however NGGT have received in the region of 5 enquiries to date and customers have advised there could be >10 potential projects should this connection option be available by the end of the RIIO T1 period.

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

The project is targeting a cost of connection onto a block valve site in the region of £700k - £1m

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

Learning will directly applicable to all the gas licensee, transmission and distribution, and be disseminated primarily through the ENA portal, monthly GIGG meetings, National Grid website and the annual NIA conference.

Or, please describe what specific challenge identified in the Network Licensee's innovation strategy that is being addressed by the project (RIIO-1 only)

The project is aligned to the enabling connections theme.

☑ 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

- [x] Yes