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 2016

Project Reference Number

NIA_SGN0094

Project Registration

Project Title

Energy Map and Plan

Project Reference Number

NIA_SGN0094

Project Licensee(s)

SGN

Project Start

March 2016

Project Duration

0 years and 9 months

Nominated Project Contact(s)

Ryan Smith, Innovation Delivery Manager

Project Budget

£193,314.00

Summary

This project aims to complete a study that clearly articulates the net benefits to GB consumers and the GB economy of retaining the use of gas networks within the energy infrastructure mix. It will provide solid analysis and fact-based research to create an 'Energy Map' for use by Network Licensees to help guide through a clear vision of the gas industry in 2050.

Nominated Contact Email Address(es)

sgn.innovation@sgn.co.uk

Problem Being Solved

By 2050, the Great Britain (GB) energy system will be very different from today. The impact of decarbonisation targets, decentralisation, technology innovation/economies, and supply/demand changes are very uncertain and their long-term interactions only partially understood. The energy mix for electricity, heating and transport is likely to change significantly, and be more closely interlinked.

There is a gap in the existing literature between the high-level publications which rarely treat gas and heat options in a nuanced way and the detailed heat studies which do not capture the trade-offs with other decarbonisation routes.

This project aims to complete a holistic study that clearly articulates the net benefits to UK consumers and the UK economy of retaining the use of gas networks within the energy infrastructure mix.

Method(s)

To achieve its objectives this project will include the generation of a set of scenarios describing the possible development of the state of the UK energy industry in the future. Each scenario will be based on a different set of plausible assumptions about coming changes in the industry. The choice of scenarios that will be considered is made by considering the factors that will affect energy production in the future.

Intensive testing of the scenarios will be conducted in partnership with academic advisors. This will focus on quantitative and qualitative analysis of drivers and conditions for the development of alternative futures and estimating cost-benefit case. This will include electricity, gas, heat and transport sector analysis.

Scope

This project aims to complete a study that clearly articulates the net benefits to GB consumers and the GB economy of retaining the use of gas networks within the energy infrastructure mix. It will provide solid analysis and fact-based research to create an 'Energy Map' for use by Network Licensees to help guide through a clear vision of the gas industry in 2050.

Objective(s)

The objectives of the project are to:

- Gather information and complete a review of existing scenarios, with work and relevant analysis available to identify key themes;
- Consider the geographic and regional nuances of a future gas network in a 2050 world and set out plausible pathways;
- Consider the benefits of maintaining a whole energy system, which includes gas in a 2050 world from the following perspectives:
- Economic
- Societal
- Consumer – domestic and industrial
- Technological
- Environmental
- Consider the long term domestic, industrial and commercial annual and peak demand and supply heat, cooking and power requirements from published scenarios; and
- Explore the potential evolution of the gas network to achieve reductions in carbon and other emissions;
- Examine alternatives to the existing assumptions on how emissions targets are split between heat, transport and other sectors for the UK so that policy makers can make more informed decisions for the long term future;
- Provide evidence on the appropriate balance and roles for the gas network out to 2050 and its interactions with other energy vectors.

Work with the Network Licensees to provide linkage with existing innovative projects to create a joined-up result.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The success criteria for the project are:

- Production of a document which clearly articulates a fair reflection of gas and gas transportation in the future of the UK energy network.
- Provide a robust basis for discussion with government, regulators and customers about the importance of gas.
- Pictorially represent the distribution of gas and gas networks under the different scenarios in order to facilitate understanding of the potential future development of the energy infrastructure in the UK and the role of gas within that.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

This project will be carried out by the Energy Networks Association, who will work in close collaboration with KPMG and Kiwa Gastec, to produce a report bringing in qualitative and quantitative evidence.

Technology Readiness at Start

TRL2 Invention and Research

Technology Readiness at End

TRL3 Proof of Concept

Geographical Area

This project is a feasibility study which will be completed by KPMG in their UK offices and will take into account the impact across the UK.

Revenue Allowed for the RIIO Settlement

None

Indicative Total NIA Project Expenditure

£173,983

£145,000 total cost (x1.3332 internal funding calculation) = £193,314

£193,314 x 90% (recoverable NIA funding) = £173,983

Funding split across the networks as follows:

NGGD - £77,326

SGN - £38,665

NGGT - £25,111 (internal funding increased based on NGGT sanctioning)

NGN - £19,332

WWU - £19,332

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)

This is a research project which could contribute to major 'big picture' questions about the long-term distribution of resources and carbon in the energy sector to facilitate improved efficiency and enhanced consumer benefit. It aims to evidence security of supply for gas consumers, and provide a positive outlook for the GB gas industry.

Please provide a calculation of the expected benefits the Solution

N/A

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

The project in itself is a GB wide study, thus there would be no need for replication. It may illustrate or demonstrate the need for further research in specific geographic regions or technical areas and could influence future energy policy.

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

N/A

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 Licensees are participating in this project with key learning and insights being shared across the sector. The learning will help inform how License holders go about the long-term strategic planning of their networks. The project aims to create a picture of the GB gas industry in 2050, supplying relevant scenarios that Network Licensees could face across the coming decades. The outcomes will provide key guidance for the Licensees in supporting future projects and offer reliability that funding spent on these projects will be rooted in facts and solid analysis. In addition it will help Ofgem in their long term planning (e.g. GD2) both for gas networks and in structuring the regulation of other networks.

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