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

Jun 2015

Project Reference Number

NIA_WWU_026

Project Registration

Project Title

Bridgend Future Modelling – Phase 2 – Willingness to Pay

Project Reference Number

NIA_WWU_026

Project Licensee(s)

Wales & West Utilities

Project Start

June 2015

Project Duration

0 years and 3 months

Nominated Project Contact(s)

Chris Clarke, Director of Asset Management and HS&E

Project Budget

£30,720.00

Summary

The scope of this work would be in the following stages:

Phase 1

1. Assess current available options for energy supply and willingness to pay based on known examples (gas, ground source heat pumps, air source heat pumps, heat networks etc)

2. Carry out a document search of stakeholder engagement to confirm current willingness to pay. Search carried out over the internet and summarised as part of the final report.

3. Investigate and confirm the willingness of pay split by landlord, public and private owned properties within the Bridgend area.

4. Forecast the willingness to pay over time within the Bridgend area.

Phase 2

1. Draft report to conclude findings and inform next stage of project if required

Preceding Projects

NIA_WWU_024 - Bridgend Future Modelling

Nominated Contact Email Address(es)

innovation@wwutilities.co.uk

Problem Being Solved

The future of gas debate has become critical in deciding future investment policy and asset lifespans and as such is impacting investment decisions and in future, will impact negotiations for funding allowances within the regulated timelines (Mid-point being 2017 and GD2 being post 2021).

More recently, the Department of Energy & Climate Change (DECC) have launched a study into the viability of investing in iron mains and the Gas Distribution Network Operators Gas Futures group has evaluated top down "WHAT WILL THE GAS DISTRIBUTION NETWORK LOOK LIKE IN 2050?", but this doesn't give insight into how gas will be used at a dwelling level and hence which iron mains will be needed in future.

As a result of phase 1, it is apparent that one of the key factors in this view of the future use of gas is the willingness of the public to pay for new alternative forms of energy for their homes and businesses. This willingness to pay impacts the uptake of new alternative forms of energy. There is currently very little evidence to assess this figure and this could range from 1% to 100%.

It is assumed that the cost of switching over from gas to an alternative energy source would be dependent on the initial and ongoing costs, however, there is little evidence to back this up and quantifying this will also inform the next phase of the project which looks at the necessary policy changes and probable incentives required.

Method(s)

To determine the certainty of gas use, the uptake of alternative energy sources need to be known or evaluated. The current WWU infill process gives good insight into the likelihood of uptake of an alternative fuel source. Infills are extensions of the existing gas network into areas previously without gas. It is proposed to use this experience of infills and conversion to other energy sources to build a picture of the likely impact on the gas distribution requirements. The cost paid by the end user includes a contribution to the installation of a gas main, the connection to the gas main and the conversion of the boiler. In this way the costs and uptake rate of infills is a good comparator.

Infills carried out previously have also shown that larger schemes are more unlikely to progress, with smaller schemes being completed but only in small numbers. WWU have experienced an increase over the past 4 years due to the Fuel Poor Network Extension scheme, and part of this study will need to look at the change in uptake with an incentive.

In many cases the payback period of changing to an alternative energy source will be the determining factor for the end user to pay the initial cost of switching. This study is to confirm; current payback periods for the different alternative fuels, willingness to pay over a period of time, and the likely uptake as a result.

It is proposed to research by carrying out an extensive document review, followed by the building of a financial model and report.

This bottom up/statistical analysis will assist all GDNs address the energy trilemma that is currently being discussed. This considers;

1. Reliability, Availability & Sustainability
2. Best Cost for all Stakeholders
3. Environmentally Considerate Energy Provision

Scope

The scope of this work would be in the following stages:

Phase 1

1. Assess current available options for energy supply and willingness to pay based on known examples (gas, ground source heat pumps, air source heat pumps, heat networks etc)
2. Carry out a document search of stakeholder engagement to confirm current willingness to pay. Search carried out over the internet and summarised as part of the final report.
3. Investigate and confirm the willingness of pay split by landlord, public and private owned properties within the Bridgend area.
4. Forecast the willingness to pay over time within the Bridgend area.

Phase 2

1. Draft report to conclude findings and inform next stage of project if required

Objective(s)

To confirm the likely impact of the introduction of alternative forms of energy on the gas distribution network, by understanding the level of uptake over time.

Broken down as:

1. Produce model to assess what incentives would be needed and over what time period
2. Establish an investment appraisal period
3. Assess the impact on the customer bill
4. Research and confirm customer behaviour in previous examples and therefore inform what ranges and period of payback would make people switch to alternative forms of energy supply

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

A financial model and report that evidences the likely uptake of alternative forms of energy and therefore quantifies the impact on gas distribution in the future; to include initial uptake after installation and rate of uptake over time.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

This short research project will support DECC's study into the viability of investing in iron mains. The Bridgend Network has been chosen to compliment the decision to install heat networks in this area

Technology Readiness at Start

TRL2 Invention and Research

Technology Readiness at End

TRL3 Proof of Concept

Geographical Area

The bottom up analysis will be based on the Bridgend Network area, South Wales.

Examples used of previous new gas and alternative energy installation may be taken from Wales and the South West of England.

The top down assumptions will be taken from the published reports Carbon Connect report (Dec 14) and DECC Pathways to Heat report (2013)

Revenue Allowed for the RIIO Settlement

None

Indicative Total NIA Project Expenditure

External Costs - £23,040

Internal costs - £7,680

Total cost - £30,720

Project Value claimable under NIA (90% of total cost) - £27,648

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 research project will provide long term savings to GB customers by providing better information on which to base long term planning decisions.

This work will support the UK's strategic aim to decarbonise energy over the next 40 years.

Please provide a calculation of the expected benefits the Solution

This is a Research Project

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

This is a Research Project

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

The results from this project and any subsequent further research pieces can be considered by UK GDNs and will be presented to DECC.

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

This research will provide the networks with a typical view of what it would take to deliver a low carbon town to determine the investment period that gas assets should be assessed to stimulate debate. This work will support the UK's strategic aim to decarbonise energy over the next 40 years

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

All GB Gas Networks recognise the role gas plays within UK's energy requirements and its impact on the environment. We are undertaking this research projects to ensure we can plan to meet the future requirements of customers, UK economy, reduction in emissions and future investment decisions.

We believe this type of research will provide valuable insights that will result in more efficient long term planning decisions across all Networks.

☑ 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