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

Sep 2013

Project Reference Number

NIA_NGN_011

Project Registration

Project Title

Study of proposed sources and quantities of Biomethane to Grid

Project Reference Number

NIA_NGN_011

Project Licensee(s)

Northern Gas Networks

Project Start

December 2012

Project Duration

0 years and 10 months

Nominated Project Contact(s)

Dan Sadler (Head of Head of Energy Futures)

Project Budget

£29,771.00

Summary

The take up of possible biomethane to grid by various sectors has been particularly slow due to the uncertainty about volumes from each sector, the availability of a roadmap to access the network and suitable injection locations. Quantification of the potentially available feedstock volumes that are suitable for AD (anaerobic digestion) processing in the NGN area is not fully understood. No research, modeling and report exist by postcode area that matches the availability of feedstock by sector with easy access points to NGN's Network.

Third Party Collaborators

Rob Heap Consulting

Nominated Contact Email Address(es)

innovation@northerngas.co.uk

Problem Being Solved

The take up of possible biomethane to grid by various sectors has been particularly slow due to the uncertainty about volumes from each sector, the availability of a roadmap to access the network and suitable injection locations. Quantification of the potentially available feedstock volumes that are suitable for AD (anaerobic digestion) processing in the NGN area is not fully understood. No research, modeling and report exist by postcode area that matches the availability of feedstock by sector with easy access points to NGN's Network.

Method(s)

To undertake a detailed study that will identify targets, within the NGN distribution area, which could be approached to explore collaboration opportunities to develop projects for biogas production and biomethane to grid injection.

Scope

The study will be undertaken across all postcode areas stated in geographical area section and will embrace the following sectors:

- Agriculture: Pig, poultry, dairy and arable enterprises
- Council: Waste food collected / other appropriate feedstock
- Commercial: Appropriate sources of catering / food preparation feedstock
- Industrial: Food preparation and manufacturing feedstock
- Waste Water: Sewage treatment.

In each sector, where possible anticipated volumes of the biomethane potential from available feedstock will be presented. In each sector, an assessment will be provided that identifies the geographical areas that present the highest potential to process available feedstock via AD. Data will be listed, tabulated or overlaid on regional maps as appropriate. Existing AD facilities within the NGN area will be located and the biomethane capacity and potential capacity included in the report where possible.

Objective(s)

Undertake a study into the potential sources and quantities of biogas that could be produced from anaerobic digestion processes in the NGN distribution area. The study will focus on areas of potential within appropriate sectors of agriculture, council collected waste food, commercial, industrial and the wastewater industry. The study will identify targets within the NGN distribution area that could be approached to explore collaboration opportunities to develop projects for biogas production and biomethane to grid injection (BtG).

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

A report highlighting specific locations and identifying potential partners to work with NGN to develop AD production and supply Bio-Methane to Grid.

- Provide a guide on future potential areas for development of Biomethane to Grid
- Produce a roadmap for future feasible projects at specific location within NGN Network
- Identify specific sectors for potential collaboration opportunities to develop B2G projects
- Provide quantification of the potentially available feedstock volumes that are suitable for AD processing in the NGN area
- An assessment will be provided that identifies the geographical areas that present the highest potential to process available feedstock

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

Agriculture:

- Provide an assessment of biomethane potential from each sub-sector of pig herds, poultry flocks, dairy herds, vegetable production and energy crops
- Calculate the feedstock volume potential using industry standard metrics and modeling for each sub-sector
- Using the feedstock volume potential, assess and model the biomethane potential arising from AD processing of the feedstock, using industry standard biomethane potential metrics for each feedstock

- Where possible, provide data regarding operating or proposed AD plants in the sector
- Provide an assessment of the most appropriate sectors and geographical areas for further research and targeting
- Where possible commentary will be provided on which sectors &/or which geographical areas will present an opportunity for farmers and agri-businesses to work together in a cooperative or partnership venture to accelerate and increase biomethane production.

Council:

- Research current local authority collected source separated food waste arisings
- Identify the collection systems deployed and assess the expected contamination levels and resultant suitability of the collected feedstock type for AD processing
- Assess the possibility for local authorities to change from co-mingled collections to source separated collections
- Where possible commentary will be provided to highlight the current end destination and type of processing technologies deployed
- Contact waste collection &/or disposal authorities to establish as far as possible what contractual arrangements are in place for food waste removal and processing
- Assess and estimate the volumes of food waste feedstock that is appropriate for AD processing
- Using the feedstock volume potential, assess and using industry standard metrics, model the biomethane potential arising from AD processing of the feedstock
- Where possible commentary will be provided on which authorities may have plans to introduce source segregated food waste collections and / or have indicated an appetite to consider introduction of such collections.

Commercial:

- From existing data, provide an assessment of commercial organisations that are likely to be producing food waste
- Identify the most prolific food waste producing commercial businesses (e.g. catering chains, public service facilities) and those that are likely to have significant volumes that would justify AD processing to be embraced directly or via existing waste recycling operators third party operations
- Research, assess and estimate the potential capture of the food waste from the sector
- Using the feedstock volume potential, assess and using industry standard metrics, model the biomethane potential arising from AD processing of the feedstock
- Where possible, provide data regarding operating or proposed AD plants in the sector
- Provide an assessment of the most appropriate sectors and geographical areas for further research and targeting.

Industrial:

- Research and estimate the potential capture of bio-wastes from the industrial manufacturing sector
- Identify the most prolific food waste producing commercial businesses (e.g. slaughterhouses.) and those that are likely to have significant volumes of waste that would justify AD processing to be embraced directly or via existing waste recycling operators
- Calculate the feedstock volume potential using industry standard metrics and modeling for each sub-sector
- Research and assess the volumes of potential feedstock for AD processing that is currently being sent to competing technologies, or is being simply “disposed” of
- Research, assess and estimate the potential capture of the food waste from the sector for AD processing
- Using the feedstock volume potential capture, assess and using industry standard metrics, model the bio-methane potential arising

from AD processing of the feedstock

Wastewater:

- Identify all significant wastewater (sewage treatment) works throughout the NGN area that are currently using AD processing
- Assess and estimate the current bio-methane production
- Assess and estimate the potential bio-methane capacity, given favourable conditions
- Identify the wastewater treatment works with the highest potential for bio-methane production
- Provide commentary on the operational approach of water companies to AD and collaboration with third parties in the NGN area

Technology Readiness at Start

TRL3 Proof of Concept

Technology Readiness at End

TRL5 Pilot Scale

Geographical Area

Postcode Areas covered by the study are: CA: Carlisle NE: Newcastle upon Tyne SL: Sunderland DH: Durham TS: Teesside DL: Darlington YO: York HU: Hull WF: Wakefield HD: Huddersfield LS: Leeds BD: Bradford HG: Harrogate

Revenue Allowed for the RIIO Settlement

Nil

Indicative Total NIA Project Expenditure

£35,000

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)

This should speed up access to the gas networks by potential sources thereby impacting on the decarbonisation of gas sooner than currently being adopted.

Please provide a calculation of the expected benefits the Solution

As this is a research project the assessment of Base Cost vs Method Cost cannot be assessed.

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

The research undertaken can be used as a baseline by other GDN's to review the sectors within their geographical location. The findings of the study will share widely within all sectors and inform DECC. Other GDN's will also obtain a copy of guidelines produced by NGN following this study.

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

Unavailable

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

Knowledge generated via a unique independent study that will enhance the Gas Distribution Network ability to engage earlier with various potential sources in meaningful discussions. It will provide potential entrants to the gas network with a roadmap detailing requirements and processes to complete to gain access to the distribution grid.

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

Within NGN's strategy NGN has established partnerships with a range of bio-methane developers and other parties to work on initiatives which have increased the industries understanding of bio-methane connection. This study further develops those relationships and increases the visibility to all sectors.

☑ 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