

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

May 2017

### Project Reference Number

NIA\_CAD0002

## Project Registration

### Project Title

Impact of Biomethane on Gas Networks.

### Project Reference Number

NIA\_CAD0002

### Project Licensee(s)

Cadent

### Project Start

March 2017

### Project Duration

0 years and 9 months

### Nominated Project Contact(s)

Scotia Gas Networks (SGN) Northern Gas Networks (NGN) Cadent (CA) Wales & West Utilities (WWU)

### Project Budget

£68,000.00

## Summary

- Synthesis of biomethane quality data collected by different gas operators and of their feedbacks about problems linked to this quality (sources: gas operators and scientific studies).
- Risk Assessment on the grid and storage installations: corrosion conditions within networks.
- Risk Assessment on grid and storage installations and the end users: Siloxanes
- Identification of gaps and the definition of the tests to be conducted in phase 2 (and the associated budgets)
- The impact of biomethane from ALL sources will be included in the project; all known biomethane feedstocks and bio-SNG.
- The impact of biomethane on all pressure tiers found in distribution networks will be considered

### Nominated Contact Email Address(es)

Innovation@cadentgas.com

## Problem Being Solved

- CEN Technical Committee 408 - Natural gas and biomethane for use in transport and biomethane for injection in the natural gas network are creating new specifications for natural gas and biomethane as vehicle fuel and of biomethane for injection in the natural gas grid, including any necessary related methods of analysis and testing. This will ensure that pipeline and asset integrity is maintained and there is a place for biomethane in the future. It is vital that the specification for biomethane quality is based on sound evidence detailed in first of its kind research in order to reduce the risk of inaccurate injection specifications; either too restrictive thus hindering biomethane-to-grid development or too lax which has safety implications for gas networks, appliances and customers.
- Many studies have been carried out by stakeholders within individual EU countries based on the gas network specifications for that country. A common vision needs to be created:

- o To share with CEN TC 408 the technical and documented studies that already exist
- o To prioritise those biomethane compounds that will impact the gas chain and
- o Where technical data is missing, evaluate the true impact of the target biomethane components on the gas chain.

## Method(s)

- This is a collaborative project and DNV GL UK are to be the technical representative of the UK DN's on the GERG project.
- The project whole project consists of two phases, with a decision milestone at the end of phase 1. Phase 1 of the project is to pool together current knowledge, expertise and requirements across the EU countries, which is what the current request for funding is for. Any identified knowledge gaps from this data gathering will be fed into phase 2 to inform the new CEN standard on biomethane.
- The project proposal aims to:
  - Share knowledge on biomethane quality and impact
  - Study the real impact of biomethane quality on gas chain
  - Anticipate potential operational issues for gas operators.

## Scope

- Synthesis of biomethane quality data collected by different gas operators and of their feedbacks about problems linked to this quality (sources: gas operators and scientific studies).
- Risk Assessment on the grid and storage installations: corrosion conditions within networks.
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- Identification of gaps and the definition of the tests to be conducted in phase 2 (and the associated budgets)
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## Objective(s)

- To offer the conditions to allow for the safe development and competitive position for the biomethane industry on the market.
- To learn from existing experience, feedbacks and data within the biomethane industry.
- To support the development of the biomethane supply chain.
- To reduce the costs of gathering and analysing information through collaboration.
- To anticipate the effect/risks of future changes (a) if new substrates are used (less energy crops and more waste products) (b) if biogas receives less treatment and subsequently contains more trace compounds.
- To anticipate the risks concerning the use of different materials (gas grid and end users).
- To prepare the phase 2 tests and ensure these tests capture all gas operators/risks.

## Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

## Success Criteria

- Sharing knowledge on biomethane quality impacts
- Studying the real impact of biomethane quality on the gas chain.
- Anticipating potential operational issues for gas operators.
- Inform the conditions to develop a safe and competitive positioning for biomethane on the market.

## Project Partners and External Funding

n/a

## Potential for New Learning

n/a

## Scale of Project

This project is done at the relevant scale which is a desk top study. The impact of this study, if successful will be to inform a further stage in this project. This will be stage 2.

## Technology Readiness at Start

TRL2 Invention and Research

## Technology Readiness at End

TRL3 Proof of Concept

## Geographical Area

This is a desktop study although its implications will be UK wide, but will also consider the implications of change to the Republic of Ireland and Europe.

## Revenue Allowed for the RIIO Settlement

**Not Applicable**

## Indicative Total NIA Project Expenditure

### NGN Costs

**£8.50K External Costs**

**£2.83K Internal Costs**

### WWU Costs

**£8.5K External Cost**

**£2.83K Internal Cost**

### SGN Costs

**£17K External Costs**

**£5.67K Internal Costs**

### CA Costs

**£34K External Costs**

**£11.33K Internal Costs**

**Total External Cost: £68K**

**Total Internal Cost: £22.67K**

## 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)

NA – no cost saving will be influenced as an outcome of this project.

#### Please provide a calculation of the expected benefits the Solution

NA – this study is purely a review of some of the challenges facing the Biomethane Industry. If solved it will enable gas transporters to transport biomethane safely and efficiently according to their license requirements.

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

NA – There will be no implementation

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

NA – There will be no implementation.

### 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

A comprehensive project report will be compiled detailing the outputs of this project and will be disseminated to all project partners. This learning will then be referenced and taken into a project stage.

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

Ensuring the Biomethane industry is well placed to survive as a strong business in a competitive market.

- 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