

NIA Project Registration and PEA Document

Date of Submission

Nov 2013

Project Reference Number

NIA_NGGT0032

Project Registration

Project Title

Gas quality limits in emergency situations

Project Reference Number

NIA_NGGT0032

Project Licensee(s)

National Gas Transmission PLC

Project Start

April 2013

Project Duration

1 year and 0 months

Nominated Project Contact(s)

David Lavender, box.GT.innovation@nationalgrid.com

Project Budget

£26,000.00

Summary

Previously it was understood that only small volumes of Schedule 3 Part II gas would be available for delivery to the National Transmission System (NTS) and that it would be possible to blend this gas within the NTS before it was delivered to a Distribution Network (DN) offtake. This would ensure that gas conforming to the expected quality as determined in Schedule 3 Part I of GS(M)R would always be supplied to industrial and domestic consumers.

A number of new NTS system entry points that have been commissioned since GS(M)R came into effect in 1996. These entry points either rely on nitrogen ballasting to control gas quality or could import high calorific value (CV) gas from continental Europe. Thus, there is potential for greater volumes of Schedule 3 Part II gas to be made available for delivery to the NTS if required by the NEC. This increases the risk that Schedule 3 Part II gas could be supplied to a Distribution Network. Before the NEC could authorise the admission of Part II gas they would require sufficient evidence to show the safety benefits are not compromised by permitting this gas to enter the NTS to avert or minimising the consequences of a network supply emergency.

Third Party Collaborators

DNV

Nominated Contact Email Address(es)

Box.GT.Innovation@nationalgrid.com

Problem Being Solved

This project aims to provide clarification of the effects of the allowing gas that conforms to outer quality extremities (Schedule 3 Part II) prescribed by the Gas Safety (Management) Regulations 1996 into the network. The use of Schedule 3 Part II gas by the Network

Emergency Controller (NEC) may be required to reduce the risk of a supply deficit emergency developing thus protecting downstream gas consumers.

Method(s)

Deliverables of study are as follows:

- Undertake a review of the existing published technical literature on Schedule 3 Part II gas and its effect on industrial and domestic consumers' appliances.
- Identify if the questions to be considered by the study can be satisfactorily answered using the existing published technical literature.
- Provide answers to the questions to be considered by the study using the existing published technical literature if relevant information is available.
- Publish a report on conclusion of the study identifying if the questions to be considered by the study can be satisfactorily answered and if so provide the answers.
- Identify any further work including, but not limited to, experimental work that may need to be undertaken to answer the questions to be considered by the study if satisfactory answers can not be prepared from the existing published technical literature.

Scope

Previously it was understood that only small volumes of Schedule 3 Part II gas would be available for delivery to the National Transmission System (NTS) and that it would be possible to blend this gas within the NTS before it was delivered to a Distribution Network (DN) offtake. This would ensure that gas conforming to the expected quality as determined in Schedule 3 Part I of GS(M)R would always be supplied to industrial and domestic consumers.

A number of new NTS system entry points that have been commissioned since GS(M)R came into effect in 1996. These entry points either rely on nitrogen ballasting to control gas quality or could import high calorific value (CV) gas from continental Europe. Thus, there is potential for greater volumes of Schedule 3 Part II gas to be made available for delivery to the NTS if required by the NEC. This increases the risk that Schedule 3 Part II gas could be supplied to a Distribution Network. Before the NEC could authorise the admission of Part II gas they would require sufficient evidence to show the safety benefits are not compromised by permitting this gas to enter the NTS to avert or minimising the consequences of a network supply emergency.

Objective(s)

This research programme forms the basis of the assessment process developed to provide the NEC with the required evidence for them to be able to authorise the admission of greater quantities of Schedule 3 Part II gas into the network in accordance with their statutory responsibilities.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

An increased understanding of the potential of effects of wider specifications of gas entering the Transmission System which will improve National Grid's ability to maintain security of supply.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

The programme will be a desk top review with a formal report as output.

Technology Readiness at Start

TRL3 Proof of Concept

Technology Readiness at End

TRL4 Bench Scale Research

Geographical Area

These standards documents provide the safety, legislative and operational framework for the National Transmission System (NTS) in the UK.

Revenue Allowed for the RIIO Settlement

None.

Indicative Total NIA Project Expenditure

Total project expenditure anticipated - £26k.

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)

A Significant Code Review ("SCR") is currently being undertaken by Ofgem, concerned with the security of UK gas supply. The SCR proposes that consumers who lose supply during a gas supply emergency are compensated at £20 per therm of supply lost. This equates to an industry cost of £7.4m per million cubic metre of supply lost. The admission of significant quantities of Part II gas into the network could reduce the risk of extreme industry costs being incurred.

Please provide a calculation of the expected benefits the Solution

Not required for a research project.

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

The programme will provide a generic review of NTS gas quality allowances and the effects of variations within these tolerances.

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

No implementation costs are envisaged at this stage.

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 trialed 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

n/a

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

Safety: Safe Working Practices.

Reliability: Gas Quality.

The programme will deliver a more detailed understanding of the effects of widening the gas quality tolerances in the event of a supply emergency thus maintaining a high level of safety to downstream gas consumers.

- 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