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

Jul 2015

Project Reference Number

NIA_NGGD0063

Project Registration

Project Title

Leyland CNG Filling Station

Project Reference Number

NIA_NGGD0063

Project Licensee(s)

Cadent

Project Start

July 2015

Project Duration

1 year and 11 months

Nominated Project Contact(s)

Philip Halsey – National Grid, John Baldwin - CNG Services Ltd

Project Budget

£693,705.00

Summary

The scope of the project is to design, install and commission the LTS connection to the CNG filling Station and generate a report on the efficiencies of a station connected to a higher pressure tier system.

1. Design and install a Steel pipeline and appropriate civils protection to connect the filling station to the LTS
2. Record the findings of the project by:

- Outline benefits with back up data
- Record the actual data from the project
- Analysis of the data
- Provide a detailed report and record the findings

Nominated Contact Email Address(es)

Innovation@cadentgas.com

Problem Being Solved

The UK natural gas transport industry infrastructure comprises c.25 private depot stations and 17 public forecourts. Of the infrastructure, 18 stations supply Compressed Natural Gas (CNG). Where a grid connection is utilised to feed these CNG stations none, as yet, have utilised the Local Transmission System (LTS).

It is clear that Natural Gas can play a key role in reducing greenhouse gas & particulate emissions associated with transport, given that fuels costs are c.40% less, and noise emissions are lower than diesel, it means that gas is a viable option as a fuel for HGV's and buses.

Utilisation of the LTS system to supply CNG filling stations has the potential to further improve the environmental & economic credentials for gas in transport. With the source pressure being higher, there is less compression required to reach the 200-250bar for use in buses and trucks, this reduces the operating & maintenance costs of the stations. In addition, there is no leakage from the LTS system, meaning that the 'well to wheel' emission figures for vehicle fed from LTS stations becomes highly favourable.

With dedicated CNG trucks and buses now commercially available, 132 distribution centre locations within 2km of NG's LTS mains, and the European Commission directive requiring a core network of UK wide filling stations, the climate is right to invest innovation funding in the first UK LTS filling station.

The proposed Leyland CNG fuelling station will physically demonstrate the strong environmental and economic case for LTS CNG, acting as a catalyst to grow this emerging market, and allow the UK gas network to be utilised as a backbone for lower carbon transport into the future.

Method(s)

This project is to enable a study of the efficiencies of utilising the LTS for a CNG Station. Provide a detailed design, the installation and commissioning of a 30bar Steel connection to the Local Transmission System (LTS) pipeline to supply a CNG filling station in Leyland, Lancashire. This will include all the necessary civils works to ensure protection of the LTS.

NGGD will also appoint an independent consultant to monitor the performance of the project including analysis of the items covered in the scope below, outlining efficiencies and benefits of the station.

The project will involve CNG Services Ltd and an independent 3rd party to audit the findings and results.

Scope

The scope of the project is to design, install and commission the LTS connection to the CNG filling Station and generate a report on the efficiencies of a station connected to a higher pressure tier system.

1. Design and install a Steel pipeline and appropriate civils protection to connect the filling station to the LTS
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Objective(s)

The objective of the project is to demonstrate the increased efficiencies and benefits of the use of LTS connected CNG filling stations.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The report will show evidence of the effectiveness and efficiency of an LTS connected CNG filling station and the GHG and emissions benefits from dedicated CNG trucks operated by a supplier.

Financial benefits will also be included as part of the detailed analysis in the report.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

The scale of this project includes documenting the performance of the filling station once operational to fully understand the efficiencies of the site including electricity consumption.

Technology Readiness at Start

TRL5 Pilot Scale

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

Leyland, Lancashire

National Grid Offices, Brick Kiln Street Hinckley

Revenue Allowed for the RIIO Settlement

No Revenue Allowed for in the RIIO Settlement.

Indicative Total NIA Project Expenditure

£693,705.00 total NIA project expenditure.

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)

It is estimated that there could be a reduction in opex (electricity and maintenance) of over 50% compared to MP connected CNG filling stations.

In addition, it is estimated that there will be Well to Wheel savings of around 20-30% by using CNG compared to diesel, which represents a material contribution to targets for reducing GHG. This emissions will be further reduced when the Well to wheel emissions for LTS supplied CNG are fully understood.

Please provide a calculation of the expected benefits the Solution

This will form part of the financial benefits review, as part of the project output report by the independent 3rd party.

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

It is estimated that there could be around 50 LTS CNG Stations to provide national coverage, with a number in each GDN area. Note – it is also expected that there could be 50 or more private/depot based LTS Stations for hauliers who already have LTS on site or close by.

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

This will form part of the financial benefits review, as part of the project output report by the independent 3rd party.

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

The technology could be utilised across the UK where there is an LTS network close to a major distribution centre and/or motorway junction.

With the station's economic and environmental credentials proven, it will be possible to promote the use of the UK's LTS system as an optimum solution for the delivery of CNG.

The output report for this project will be shared with the other GDNs.

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

Not applicable.

☑ 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

- [x] Yes