NIA Project Registration and PEA Document

Date of Submission

Apr 2014

Project Reference Number

NIA_NGGD0030

Project Registration

Project Title

Review and Validation of the current gas demand forecasting methodology

Project Reference Number

NIA_NGGD0030

Project Licensee(s)

Cadent

Project Start

April 2014

Project Duration

0 years and 9 months

Nominated Project Contact(s)

Lorna Millington – Project Manager, Andy Newton - Innovation Portfolio Manager

Project Budget

£139,480.00

Summary

The scope of the project includes the following:

- To undertake a comprehensive assessment of the methodology used for generating year-ahead gas demand forecasts

- Independently evaluating the existing methodology, by conducting an exhaustive review of all steps and testing all assumptions

- Exploring potential enhancements to the existing methodology based on sound mathematical and statistical methods, with a view to improving forecasts of annual gas demand and 1 in 20 peak demand

- Providing an insight into and understanding of the technical basis of the year ahead gas demand forecasts, with a view to underpinning their confidence in the use of the forecasts for making 2014/15 year-ahead gas capacity bookings.

Nominated Contact Email Address(es)

Innovation@cadentgas.com

Problem Being Solved

National Grid's National Transmission System (NTS) provides the year-ahead annual gas demand forecasts. These forecasts are then used to book capacity to meet the UK's year-ahead gas demand.

Having accurate and robust demand forecasts is critical to the business. Current annual demand forecasting processes are based on historical methodologies which have not been subject to comprehensive review and there is evidence to suggest that refinements to this process could result in significant capacity booking cost savings to consumers, through the application of appropriate

mathematics, statistics, modelling and algorithms.

Method(s)

This project will conduct an evaluation of the existing gas demand forecasting methodology through an exhaustive review of the intervening steps, and an assessment of the methodology that underpins the generation of the Future Energy Scenarios ('Gone Green' and 'Slow Progression') for the NTS.

There will be an assessment of the methodologies used for generating year-ahead annual gas demand forecast and the 1 in 20 peak demand forecast.

Scope

The scope of the project includes the following:

- To undertake a comprehensive assessment of the methodology used for generating year-ahead gas demand forecasts
- Independently evaluating the existing methodology, by conducting an exhaustive review of all steps and testing all assumptions
- Exploring potential enhancements to the existing methodology based on sound mathematical and statistical methods, with a view to improving forecasts of annual gas demand and 1 in 20 peak demand
- Providing an insight into and understanding of the technical basis of the year ahead gas demand forecasts, with a view to underpinning their confidence in the use of the forecasts for making 2014/15 year-ahead gas capacity bookings

Objective(s)

The aim of this project is to undertake a comprehensive assessment of the methodology used for generating year-ahead gas demand forecasts. To identify enhancements and support scoping the future demand scenario and forecast requirements.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

Success of this project will be a comprehensive assessment of the methodology used for generating year-ahead gas demand forecasts having been successfully carried out and an output report produced to detail the findings and recommendations for suggested enhancements that can be carried forward for implementation.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

This phase is limited to undertaking a comprehensive assessment of the methodology used for generating year-ahead gas demand forecasts.

It is envisaged that if successful this would result in further work to establish the system requirements for the implementation of any suggested enhancements.

Technology Readiness at Start

TRL2 Invention and Research

Technology Readiness at End

TRL3 Proof of Concept

Geographical Area

This project will be undertaken at National Grid and the Smith Institute.

Revenue Allowed for the RIIO Settlement

No Revenue Allowed for in the RIIO Settlement

Indicative Total NIA Project Expenditure

£139,480 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)

As this project focuses on a feasibility study it is difficult to quantify the potential financial benefits at this time.

The work being undertaken in this project will independently evaluate the existing methodology, and test all assumptions used within the existing methodology that are used to determine the percentage increase in demand year-on-year.

If for instance the study were to identify a 50% error in the existing percentage increase this could equate to a reduction in the current demand cost of approximately £4m.

Please provide a calculation of the expected benefits the Solution

Not applicable – Research only

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

This method could be replicated by other Network Licensees in relation to demand forecasting activity. Enhancements identified would ultimately be the DESC's (Demand Estimation Committee) responsibility, to authorise any significant changes to the gas demand forecasting methodology.

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

Costs of implementation of enhancements will be confirmed once the first stage of the research is complete.

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

Learning will be generated regarding the accuracy and potential enhancements that could be applied to the methodologies used for generating year-ahead annual gas demand forecast and the 1 in 20 peak demand forecast. This learning can be shared with Network Licensees in the form of an output report. This output report will contain the findings and recommendations for suggested enhancements that can be carried forward for implementation.

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

☑ Yes