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 2014

Project Reference Number

NIA_NGGD0003

Project Registration

Project Title

Asset Health Modelling

Project Reference Number

NIA_NGGD0003

Project Licensee(s)

Cadent

Project Start

October 2011

Project Duration

2 years and 0 months

Nominated Project Contact(s)

John Madden – Project Manager and Darren White – Innovation Portfolio Manager

Project Budget

£552,148.00

Summary

The scope of this project includes:

Stage 1: Gap Analysis / Development of Proof of Concept Model.

- CBRM Audit across all (2) asset categories
- Completion of CBRM excel model (District Governors) (Pressure Reduction Installations)
- Gap Analysis – RIIO GD1
- Roadmap plan for 2013 submission
- Commencement of CBRM excel model.

Nominated Contact Email Address(es)

Innovation@cadentgas.com

Problem Being Solved

National Grid Gas Distribution does not currently have a Condition Based Risk Model (CBRM) that will determine the future health index of key assets, in order to prioritise future investment decisions.

A CBRM tool would allow the future Health Index (HI) and Probability of Failure (POF) of assets to be simulated and assessed. This would enable understanding of asset condition and criticality, identifying and modelling different interventions to mitigate risk, in order to prioritise and select optimal expenditure via a condition based risk approach.

Method(s)

An initial top level CBRM audit will be performed across all two (2) named asset categories. Additionally a gap analysis will be undertaken to assess the inconsistencies of data capture in order to support application of the CBRM process.

A potential further piece of work may follow to include individual CBRM modelling across all named asset classes.

Scope

The scope of this project includes:

Stage 1: Gap Analysis / Development of Proof of Concept Model

- CBRM Audit across all (2) asset categories
- Completion of CBRM excel model (District Governors) (Pressure Reduction Installations)
- Gap Analysis – RIIO GD1
- Roadmap plan for 2013 submission
- Commencement of CBRM excel model

Objective(s)

The objective of this project is to develop a Condition Based Risk Model (CBRM) that will determine the future health index of National Grid Gas Distribution's governors and pressure reduction assets in order to prioritise future investment decisions. The CBRM tool will allow the future Health Index (HI) and Probability of Failure (POF) of these assets to be simulated and assessed. This will enable understanding of asset condition and criticality, identifying and modelling different interventions to mitigate risk, and prioritise and select optimal expenditure via a condition based risk approach.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

Development of an asset expenditure modelling tool which is based on asset condition, probability of asset failure and risk. This risk model will provide a robust, auditable and refreshable system for asset management which will support all future RIIO-GD regulatory submissions, and has a user interface that allows the following:

- The ability to compare and manage governor and pressure reduction installation asset groups on a comparable basis;
- The ability to create robust and defendable investment plans based on a sound understanding of the assets;
- Providing demonstrative evidence of asset condition that can assist in out performing regulatory incentive output measures;
- A quantifiable, risk based approach to both CAPEX and OPEX investment with a clear audit trail;
- A proven methodology, employed by others to support their regulatory submissions;
- An on-going framework for managing assets using industry best practice techniques.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

This project includes proof of concept through to development and testing of a Asset Health model. These phases are deemed necessary in order to develop a fully robust model that provides the required functionality and covers all required asset categories.

Technology Readiness at Start

TRL3 Proof of Concept

Technology Readiness at End

TRL7 Inactive Commissioning

Geographical Area

Chester - EA Technology offices

Revenue Allowed for the RIIO Settlement

Revenue allowed for in the RIIO Settlement totals £40m

Indicative Total NIA Project Expenditure

£435,108 total IFI expenditure

£117,040 total NIA expenditure

£552,148 Total 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)

£8 million with robust CBRM data, for all asset classes.

Please provide a calculation of the expected benefits the Solution

Potential of up to £1 million, for the 2 asset classes.

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

This method is applicable to all Network Licensees whom are seeking an asset health solution for all asset classes.

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

£2 million for the refinement of models, collection of required condition data and adding fields into SAP around field force data capture. Further integration work between CBRM and SAP , if desired would involve further costs. Please note roll out costs for National Grid UKD only.

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 from the project will detail the successfulness of the asset health model to categorise all key assets on the gas distribution network, which has not previously been explored. This will provide an understanding as to the condition and deterioration factors that impact upon the performance of key assets and how risk is determined.

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