

NIA Project Registration and PEA Document

Date of Submission

Dec 2013

Project Reference Number

NIA_NGGT0003

Project Registration

Project Title

PRCI - Pipeline Research Council International

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NIA_NGGT0003

Project Licensee(s)

National Gas Transmission PLC

Project Start

April 2013

Project Duration

1 year and 1 month

Nominated Project Contact(s)

Tony Stonehewer & Robert Owen

Project Budget

£150,000.00

Summary

Participation in PRCI gives National Grid Gas access to research projects that may otherwise be more difficult to fund on an individual basis, as well as the opportunity of validating work carried out on internal programmes. There are extensive networking opportunities with other gas transporters and across the wider industry. Collaboration through this organisation will continue to play a key role in the innovation portfolio.

Third Party Collaborators

Pipeline Research Council International

Nominated Contact Email Address(es)

Box.GT.Innovation@nationalgrid.com

Problem Being Solved

The Pipeline Research Council International (PRCI) is the basis of much of the international research for gas pipelines and above ground installations, providing knowledge to members effectively and economically. PRCI aims to conduct a collaboratively-funded research & development programme that enables energy pipeline companies around the world to provide safe, reliable, environmentally compatible, cost-efficient service to meet customer energy requirements.

Method(s)

The Pipeline Research Council International (PRCI) facilitates a collaborative R&D programme, funded by contributions based on the total length of pipelines operated by each member company. Each member company contributes to the projects that most closely address their needs, but all member companies have access to the output of the complete programme.

Projects are balloted annually and members participate in projects that most closely meet their individual network needs. National Grid completed a review of the projects on the 2013 ballot and committed contributions to nineteen projects. The review process involves:

- Assessment of the full ballot list to identify relevant projects for the licensee.
- Discussion with the relevant technical specialists to evaluate potential project value and benefits.
- Identification of National Grid team member for each project.
- Participation in the annual voting process. PRCI projects go through three rounds of voting to determine which projects will be taken forward.

The nineteen projects that National Grid participate in for the 2013 programme offer leverage of 65:1 and broadly these fall into four key areas:

- Time-dependent Threat Management (including External Corrosion and Mechanical Damage)
- Time-independent Threat Management (including Mechanical Damage, Weather and External Force)
- Design and Construction
- Measurement

The 2013 ballot is presented in the attached appendix with National Grid contributions highlighted in blue.

Scope

Participation in PRCI gives National Grid Gas access to research projects that may otherwise be more difficult to fund on an individual basis, as well as the opportunity of validating work carried out on internal programmes. There are extensive networking opportunities with other gas transporters and across the wider industry. Collaboration through this organisation will continue to play a key role in the innovation portfolio.

Objective(s)

National Grid wants to establish best practice technologies and techniques to allow safe, reliable, efficient and economic use of the gas network with a reducing impact on the environment. By participating in PRCI, National Grid has and will continue to benefit from the international experience of the other member companies' representatives, while benefiting from significant leverage on project activity from the other member companies.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

National Grid assesses the collaboration through individual projects against the ability to develop improvements to how we build, manage and operate the network. Success is also determined by the level of influence we can exert on each research programme and the financial leverage available compared to self funding the research.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

The project has an annual spend of £150k, and the projects are hugely varied in scale. For example "Right of Way Automated Monitoring" has a project spend of \$836k in 2013 involves full scale trials of unmanned aerial vehicles and software recognition tools. Overall we have access to research programmes with a total spend of over \$10m per annum.

Technology Readiness at Start

TRL2 Invention and Research

Technology Readiness at End

TRL6 Large Scale

Geographical Area

The results from this project will be applicable across gas networks throughout the world.

Revenue Allowed for the RIIO Settlement

None

Indicative Total NIA Project Expenditure

£150,000 - Annual NIA spend of which £75,000 is National Grid Gas Transmission expenditure and £75,000 is National Grid Gas Distribution 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)

For the PRCI, formal cost/benefit studies of member participation show a consistently positive ratio the reduced costs of operations and maintenance, inspection, materials, design, construction and testing. Examples of completed projects include:

- **Human Factors Analysis** -Research in process control safety and efficiency has highlighted an increasing awareness of the many "human factors" in the operational environment that directly affect the performance of the system operator. Operator performance is often critical in maintaining a process within limits and responding to abnormal conditions, these human factors can have a substantial effect on the ultimate safety and operational effectiveness of an entire system. This research work under PRCI has resulted in cost avoidance for National Grid, as research would otherwise have been fully funded without the opportunities for leverage.
- **Extended Low Flow Range Metering** - Output from a PRCI report was used in the development of a National Grid innovation project scope. Further test work took place at the flow centre at Bishop Auckland, UK. The results from low flow orifice plate testing do largely match the work of *Morrow and George et al* done under PRCI, although the National Grid study has additionally tried to offer some theoretical understanding to the variability of the observed results. The alignment of PRCI and National Grid activities has huge benefits as we strive to maximise the value during the RIIO period

In the case of PRCI, National Grid can use its subscription fee to support its choice of projects, but additionally, National Grid Gas has full access to the results of all other projects that it does not specifically support.

Please provide a calculation of the expected benefits the Solution

Research therefore N/A

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

Knowledge from participation in the various international innovation programmes is applicable across the gas transmission and distribution network, for example research on pipeline materials and third party damage.

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

This could range from £0 to approximately £100,000 but is completely dependant of the project specific details. In some cases results may be used to update policy, standards and specifications in order to reflect best practice. In other instances further work may be triggered to fully assess the implications for the GB networks. Alternatively results may simply improve the knowledge base and avoid

unnecessary future expenditure.

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 used to direct future developments into the most promising areas and where applicable update policies and standards. This will allow the research results generated to be applied to our networks.

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

Knowledge from this project will address many areas identified in the Innovation Strategy including safety, reliability, environment and strategic issues.

- 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