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

Oct 2021

Project Reference Number

NIA_NGGT0171

Project Registration

Project Title

PRCI (Pipeline Research Council International) 2021 - 2026

Project Reference Number

NIA_NGGT0171

Project Licensee(s)

National Gas Transmission PLC

Project Start

April 2021

Project Duration

5 years and 0 months

Nominated Project Contact(s)

James Gilliver (NGGT), Luke Hollis (Cadent Gas)
Box.GT.innovation@nationalgrid.com

Project Budget

£1,578,278.36

Summary

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.

Preceding Projects

NIA_NGGT0003 - PRCI - Pipeline Research Council International

NIA_NGGT0061 - PRCI - Pipeline Research Council International 2014

NIA_NGGT0100 - PRCI - Pipeline Research Council International - 2016

NIA_NGGT0119 - PRCI - Pipeline Research Council International - 2017

NIA_NGGT0132 - PRCI (Pipeline Research Council International) 2018

NIA_NGGT0152 - PRCI (Pipeline Research Council International) 2019

NIA_NGGT0162 - PRCI (Pipeline Research Council International) 2020

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. In addition, the industry faces the challenge of achieving Net Zero through safely transporting hydrogen in new and repurposed assets.

Method(s)

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 PRCI programme. Projects are balloted annually, and members participate in projects that most closely meet their individual network needs.

In RIIO-1 PRCI was sanctioned and registered on an annual basis. It is the intention to sanction for the full period of RII-2 with an annual review to ensure value and with annual progress reports.

Scope

Participation in PRCI gives National Grid Gas and Cadent 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 and Cadent Gas want to establish best practice technologies and techniques to allow safe, reliable, efficient and economic use of the gas networks with a reducing impact on the environment. By participating in PRCI, National Grid and Cadent Gas have 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

Technical impact – Research project focussing on informing decisions for future projects that could fall into technical, financial and wellbeing-related projects.

Success Criteria

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

Project Partners and External Funding

PRCI facilitates a collaborative R&D programme, funded by contributions, based on the total length of pipelines operated by each member company. Total annual budget from all member companies is over $10 million/year.

Potential for New Learning

Collaboration through international research programmes, through industry bodies, is essential to ensure we benefit from leveraged research. The programmes allow us to develop new learning for specific challenges we face, for example reducing the unit costs of pipelines through researching new materials, and to understand and benefit from the research on the challenges other operators are facing which we may experience in the future. Without these leveraged research programmes, we would not be able to develop the breadth and depth of knowledge that these afford. Specifically relating to the energy transition, the PRCI hydrogen roadmap outlines topics such as pipeline integrity assessment, hydrogen safety, hydrogen end use requirements, hydrogen metering, implications on network management, maintenance and inspection of hydrogen systems, underground hydrogen gas storage.

Scale of Project

The projects are hugely varied in scale, ranging from full scale trials at a purpose-built Technology Development Centre (TDC) facilities to purely desk based studies.

Technology Readiness at Start

TRL3 Proof of Concept

Technology Readiness at End

TRL5 Pilot 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

£1,578,278.36

Project Eligibility Assessment Part 1

Requirement 1

Facilitate the energy system transition and/or benefit consumers in vulnerable situations

Please answer **at least one** of the following:

How the Project has the potential to facilitate the energy system transition:

Research project - The membership project allows an overview and input on a variety of projects which can support the energy system transition. PRCI have carried out a literature review and produced a Hydrogen Roadmap which outlines areas of research to support the repurposing of existing assets, to be delivered through projects in the technical committees. By supporting these projects, National Grid and Cadent Gas can gain valuable knowledge and support the drive to Net Zero.

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

For the PRCI, formal cost/benefit studies of member participation show a consistently positive ratio for the reduced costs of operations and maintenance, inspection, materials, design, construction and testing. For example: In the case of PRCI, National Grid and Cadent Gas can use its subscription fee to support its choice of projects, but additionally, National Grid and Cadent Gas have full access to the results of all other projects that they do not specifically support.

Please provide a calculation and/or description of the expected benefits of 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 minimal incidental implementation costs to approximately £100,000 but is very dependent on the specific project 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 UK networks. Alternatively, results may simply improve the general knowledge base and avoid unnecessary future expenditure.

Requirement 3 / 1

Involve Research, Development or Demonstration

Projects 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

Involve Research, Development or Demonstration - Please select all that apply

☐ 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 network.

n/a

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. Networks must explicitly mention similar projects that they have considered and how these differ.

Please demonstrate below that no unnecessary duplication will occur as a result of the Project.

The essence of the PRCI project portfolio is to avoid unnecessary international project duplication and therefore National Grid and Cadent Gas are confident that these programmes do not compromise the NIA duplication requirement.

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

The PRCI is an international collaboration of gas transportation companies that undertakes research of common interest and benefit to the membership. Member companies and the PRCI committees consider and review proposals from all members for new projects and interact regularly with other relevant institutions such as the EPRG and national research groups of the member countries, ensuring that duplication of previous work is avoided.

Relevant Foreground IPR

Research – n/a

Data Access Details

Project data will be shared in line with the requirements of the RIIO-2 NIA Governance, specifically sections 2.13 – 2.16.

Please identify why the Network Licensees will not fund the project as a part of it's business and usual activities

The low TRL of the areas under consideration means that the work cannot be categorised as business as usual and there is a risk that research may be unsuccessful or identify unforeseen technical, commercial or regulatory barriers to the development of effective implementations into business as usual by the network licensees. Due to these risks associated with the wide-ranging nature of the PRCI's research activities are mitigated by the consortium approach and is thus considered a natural fit with the NIA funding objectives.

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

The collaborative approach allows for access to wider aspects of research and development such as full-scale testing that could not be funded solely through an individual business. This maximises the chance of successful innovations being developed for the long-term benefit of customers, and hence we believe continued collaboration provides excellent value to customers.

This project has been approved by a senior member of staff

☑ Yes