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

Mar 2024

Project Reference Number

NIA_NGT0229

Project Registration

Project Title

Network policies and procedures - Development roadmap

Project Reference Number

NIA_NGT0229

Project Licensee(s)

National Gas Transmission PLC

Project Start

February 2024

Project Duration

0 years and 7 months

Nominated Project Contact(s)

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Project Budget

£270,111.00

Summary

UK gas networks are managed and maintained using an extensive suite of policies, standards and procedures. These documents have been developed gradually over decades of gas network operation, however the transition to hydrogen necessitates a wholesale review of all existing documents and update of those that are affected by the transition to hydrogen. There is much commonality between the networks' documents and therefore it would be most efficient to update these documents in a coordinated way to avoid the unnecessary duplication of effort.

This project will align the networks' documents, assess the requirements for document revision and develop a roadmap to creating a hydrogen-ready document suite

Preceding Projects

NGGTGN04 - HyNTS FutureGrid Phase 1 – Transmission Test Facility NIC

NIA_NGN_270 - H21 Initial Hydrogen Supply Strategy

Third Party Collaborators

QEM Solutions

Nominated Contact Email Address(es)

Box.GT.Innovation@nationalgrid.com

Problem Being Solved

The UK Gas networks each manage document suites which comprise hundreds of Policies, Technical Standards, Specifications, Management Procedures and Work Procedures. As the gas networks move their operations, either in part or in full, to hydrogen operation, they will each need a new (or updated) document suite which reflects the changes required to operate a safe hydrogen network.

Both distribution and transmission trials are now moving ahead at speed and any new or updated operational documents will be required in the near future to facilitate live network trials. The scale of work required to create or update these document suites is far in excess of the capacity of network document control teams and therefore a concerted programme of work will be required to ensure that an updated suite of documents can be delivered within the required timescales.

The document suites of networks have diverged since the days of a single national gas system, however there have been efforts in the industry to align documents where possible resulting in GIS (Gas Industry Standard) documents as well as IDN and GDN combined documents. With the level of development required, and the similarity of network operations, creating a new suite of hydrogen documents could also provide an opportunity to further align network operations and reduce the overall administrative burden.

Method(s)

This project will first assess the existing document suites across the GDNs and NGT and align documents which may have diverged over time. Documents will be grouped into themes and the level of divergence will be mapped across the different parties. For areas where there is a significant divergence between networks there will be a discussion on how to proceed – whether to amalgamate the documents into an agreed version or to treat them as distinct for the purposes of the review. This will create a 'master' suite of documents which will form the basis of the review moving forward.

Once a master suite has been developed, these documents should be mapped against the requirements of planned network trials. This exercise will allow for the prioritisation of documents and the development of a programme of work which will be designed to deliver operational documents to facilitate planned network trials. The programme should divide the delivery of the updated master suite into three tranches with the first focused on trials delivery.

Master suite documents will then be assessed based on the level of change required and the extent of evidence required to enable that change, including an assessment of where that evidence can be found. A triage process has already been completed for the document suites of NGN and NGT which identifies the level of change required. However, these exercises did not identify sources of evidence and therefore this will be required to determine whether there are any urgent evidence gaps which may require new work or the expedition of existing work.

This stage should incorporate work from the following innovation projects:

National Gas – FutureGrid Phase 1 – Assessment of the impact of hydrogen on NGT policies, management procedures, standards, and work procedures

Northern Gas Networks – H21 Phase 2 – Review of NGN's gas distribution procedures

SGN – H100 bridging documents

Northern Gas Networks – Hydeploy 2 – NGN Standards Review

Due to the breadth of network document suites these exercises should be divided into workshops based on the subject matter. These workshops will have Subject Matter Expert attendees from each of the networks to input on the requirements of the documents in question. Grouping the documents by theme will avoid wasting SME time and ensure discussions are targeted.

Once more information on the available evidence and the extent of the change required has been gathered, the programme of work should be updated to reflect the expected effort for each document and what SMEs, additional evidence or resources will be required for the document updates. This should also include commentary on where certain requirements are driven by higher level standards such as TD/1 and GS(M)R and any other potential dependencies.

The final output for the project will be a full programme of work detailing timelines and resource requirements for the master suite of documents, as well as details of any potential constraints and dependencies which could impact the delivery of these documents and have an impact on the delivery of network trials.

Measurement Quality Statement

The measurement approach used to meet Data Quality objectives will be through the identification of high calibre project partners who are experts in their given field. The methodology used in this project will be subject to our supplier's own ISO 9001 certified quality assurance regime and the policies shared will have their processing and categorisation documented and verified by network SMEs. The measurements, designs and economic assessments will also be clearly documented in the relevant deliverables and final project report and made available for review.

Data Quality Statement (DQS)

The project will be delivered under the NIA framework in line with the agreed Energy Networks Innovation Process document and NGT internal policies. Data produced as part of this project will be subject to quality assurance to ensure that the information produced with each deliverable is accurate to the best of our knowledge and sources of information are appropriately documented. All deliverables and project outputs will be stored on our internal SharePoint platform ensuring backup and version management. Relevant project documentation and reports will also be made available on the ENA Smarter Networks Portal and dissemination material will be shared with the relevant stakeholders.

Scope

This project will be divided into 4 work packages:

WP1 – Development of master document suite (2 months)

Consolidation of network document suites to facilitate the development of a programme of work to deliver hydrogen ready document suites for the networks. This master suite is not required to be adopted by any networks, its main purpose is to avoid the duplication of effort by assessing very similar documents multiple times.

This work package should include regular conversations between the delivery partner and the networks to ensure that the approach is still valid based on the review of existing work and documents. This work package will also include the consolidation of existing work on assessing the requirements for updates to policies and procedures as detailed in section 2.2

Network representatives will each share a complete archive of their networks' document suites which will be reviewed and consolidated by the delivery partner. This exercise will build on work done within FutureGrid Phase 1: Assessment of the impact of hydrogen on NGT policies, management procedures, standards and work procedures and H21 Phase 2: Review of NGN's gas distribution procedures projects.

Note: Cadent will not transfer documents in WP 1, but review the output and highlight any changes that the Cadent documents create in the master list

Stage gate 1 – Feasibility of collaboration

This project is predicated on the assumption that there is significant commonality between the document suites of the gas networks. If it is found through the development of WP1 that the document suites differ to such a degree that it is not practical to form a master document suite then the scope of the project must be reviewed by the networks. If it is found that there is little value in continuing the project then it will be closed at this stage.

WP2 – Prioritisation of document delivery (1 month)

Prioritisation of the delivery of new hydrogen operational documents based on the delivery of key network trials.

Network representatives will identify key milestones and technical requirements for the delivery of network trials and conduct a workshop to map these to the required documents within the master document suite. This exercise will be used to determine which documents will form the first phase of the delivery programme as developed in WP4.

WP3A – Assessment of technical requirements (2 months)

Assessment of the technical evidence required to provide a hydrogen-compatible version of each document and whether this information is available or whether it remains a knowledge gap for the networks.

The master document suite will be divided into themes based on the technical expertise required to provide input to the documents (eg mechanical maintenance, gas quality etc). These will then be grouped into workshops attended by representatives of each network as required to determine the technical evidence required and the availability of any existing or forthcoming evidence.

As there are many hundreds of documents to consider, these workshops will be very narrow in scope and strictly keep to the high level requirements of the documents in question, and signposting to available evidence, rather than providing detailed answers to any specific questions.

WP3B – Exploring alternative approaches to document development (2 months) in parallel with WP3A. Networks will consider options for the development of documentation required for hydrogen, including changes to current documentation, exploring application of different approaches challenging the status quo. This will then feed into the programme delivery to capture best practice from other companies approach to hydrogen documentation development.

WP4 – Development of a Programme of Delivery for network documents (1 month)

The consolidation of information on document priority, required evidence and evidence availability to develop a coordinated programme of delivery to update each document included in the master document suite (and the corresponding network specific documents).

This programme should take into account the requirements of networks to deliver both discrete trials and the eventual conversion of large areas of the networks. This programme must be accepted by the networks with a view to begin the first phase of delivery in earnest.

WP5 – Reporting

The outputs and findings of this process must be reported as per the NIA guidelines. This should also include any findings or recommendations relating to dependencies for specific documents.

Month

1
2
3
4
5
6
WP1

Stage gate 1

WP2

WP3

WP4

WP5

In scope:

- Consolidation of network documents
- High-level requirements for document updates
- Recommendations for delivery of hydrogen-ready network documents
- Plans for 100% hydrogen-ready documents
- Gas network documents

Out of scope:

- Detailed analysis of specific documents
- Detailed technical requirements
- Updates to any documents
- Formal adoption of any elements by the networks
- Blended hydrogen documents
- End-user documents

Financial benefits

The FutureGrid Policies & Procedures work package estimated 27.5 ‘person years’ of effort for a full document suite update which would roughly equate to a cost of around £4m for the NTS. GDNs have document suites also covering the LTS and distribution network. Assuming a similar level of effort would be required for these documents, the total cost of updating these individually would be around £36m. Collaborating and jointly producing new documents could cost <£10m and therefore provide savings of £25-30m to UK gas consumers.

Objective(s)

The objectives for this project are to:

- Understand the requirements for a new hydrogen-ready document suite for each of the networks

o Which documents will need to change, which documents can be excluded, what is the level of change required for each document

- Establish the key milestones for document delivery

o Ensuring that delivery of key documents doesn’t become a barrier to either trials or wider hydrogen conversion

- Establish the key technical requirements for document delivery

o Assess what evidence is required, whether it is available and if not when/where it could be acquired

- Develop a programme of work to deliver on these findings

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

The National Transmission System (NTS), Local Transmission System (LTS) and Gas Distribution Networks (GDNs) are key UK infrastructure for the transportation of gas to consumers, including those considered vulnerable. In a scenario where hydrogen replaces methane as a household heat source, it is essential the vulnerable are not excluded by virtue of fuel inaccessibility. In cases where vulnerable consumers already utilise gas, it is likely that in a net zero future the optimum option is to provide a consistent energy solution. The transition to hydrogen within the NTS, LTS and distribution network provides continuity of access to the vulnerable of hydrogen as a replacement to methane, with ongoing benefits of efficiency and economy of scale within a closely regulated environment. This project supports the transition of the GB gas network to hydrogen which in turn supports the availability of gas to the vulnerable.

An assessment of distributional impacts (technical, financial and wellbeing related) for this project has been carried out using a bespoke assessment tool, which assesses the project as having a positive, negative or neutral effect on consumers in vulnerable situations. To help inform the assessment, this tool considers the categories of consumers identified in the Priority Services Register.

This project has been assessed as having a neutral impact on customers in vulnerable situations.

Success Criteria

The following key criteria need to be met for the project to be considered successful:

- Master document suite developed and agreed by networks

- Technical requirements noted for each document

- Programme of work developed for delivery of new documents

Project Partners and External Funding

Gas Networks:

National Gas Transmission PLC

Cadent - External costs:

Northern Gas Networks

SGN - External costs:

Wales & West Utilities

Delivery partner:

QEM Solutions with the project wholly funded via NIA.

Potential for New Learning

This project will highlight the requirements and evidence gaps to deliver a new hydrogen-ready suite of governing documents for each of the networks. It will clearly lay out the timeline to allow networks to move forward in a coordinated and well-considered way.

As this is a collaborative project between the networks dissemination will be ongoing throughout the course of the project.

Scale of Project

This project is a desktop-based study that utilises information from each of the networks. An updated document suite is required by each of the networks to allow the safe delivery of trials and operation of any converted areas of the network and therefore ensuring this is delivered in a timely manner will prevent any further delays.

A smaller project, focused on a specific network, would be far less efficient as there is considerable overlap between the document suites of the networks, including many shared documents. A joint project allows use of the combined resources of all the networks and will deliver a document suite which can be utilised by all.

Technology Readiness at Start

TRL5 Pilot Scale

Technology Readiness at End

TRL7 Inactive Commissioning

Geographical Area

Great Britain

Revenue Allowed for the RIIO Settlement

None – Hydrogen network focused project

Indicative Total NIA Project Expenditure

National Gas Transmission PLC – External costs: £21,550.56. Internal costs: £7,184

Cadent - External costs: £86,202.22 internal costs: £28,700

Northern Gas Networks - External costs: £21,550.56. Internal costs: £18,735.71

SGN - External costs: £43,101. Internal costs: £14,353

Wales & West Utilities - External costs: £21,550.56. Internal costs: £7,184

Total - £270,111.61

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:

For the transition to hydrogen, the UK gas networks must ensure that hydrogen can be delivered to customers safely. Safety on the gas networks is currently managed by utilising a wide-ranging suite of governing documents which provide guidance for the safe operation and maintenance of UK gas networks. These document suites also dictate emergency response, environmental measures, gas treatment and a host of other network activities.

In order to move to an entirely new mode of operation – transporting hydrogen – these documents suites will need a complete overhaul to ensure their continued applicability. Providing guidance and timelines to deliver these document suites will facilitate the timely delivery of network projects and conversion activities.

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)

n/a

Please provide a calculation of the expected benefits the Solution

The project will ensure strong coordination between the networks and avoid the duplication of effort through the separate delivery of 5 network document suites. The project will also ensure that no trials or conversion activities are delayed due to the lack of governing documents.

The FutureGrid Policies & Procedures work package estimated 27.5 'person years' of effort for a full document suite update which would roughly equate to a cost of around £4m for the NTS. GDNs have document suites also covering the LTS and distribution network. Assuming a similar level of effort would be required for these documents, the total cost of updating these individually would be around £36m. Collaborating and jointly producing new documents could cost <£10m and therefore provide savings of £25-30m to UK gas consumers.

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

As this project includes all the GB networks it will directly apply across the whole of GB.

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

n/a

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 project includes all GB gas networks as partners.

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

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.

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

This project has been designed specifically to avoid duplication of effort. All of the networks are partners and will contribute to the project and therefore there will be no requirement for any network to undertake the same activity in isolation.

. In Project Union effort is being made to carry out to assess which policies and procedures need to change and how, in order to be ready for hydrogen transmission. This project will build on this to make efforts to ensure parity between NGT and the GDNs' hydrogen policies and procedures.

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

Hydrogen-compatible governance documents are well outside the current operational remit of the networks. Developing a full new document suite for hydrogen operation requires evaluating all the hydrogen evidence which networks have been generating in recent years and coalescing it into specific recommendations for network governance.

Relevant Foreground IPR

This project and the resultant outcomes/deliverables will conform to the default treatment of IPR as set out under the agreed NIA Governance (where the default requirements address two types of IPR: Background IPR and Foreground IPR).

The results of the study are not expected to generate any foreground IPR.

Data Access Details

Data for this project, and all other projects funded under the Network Innovation Allowance (NIA) funding scheme, can be found, or requested in a number of ways:

· A request for information (RFI) via the Smarter Networks Portal at https://smarter.energynetworks.org. National Gas Transmission regularly publishes much of the data arising from our innovation projects on the ENA portal, before submitting a RFI check this website.

· Via the NGT managed mailbox box.GT.Innovation@nationalgrid.com. Further data can be shared upon request through the innovation mailbox. Each request will be assessed by the NGT Innovation Team for its merits and viability.

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

A typical document update cycle would involve a small to moderate update to each document every 3-5 years. Document management teams within the networks are only resourced to handle this steady workload and the development of a full new document suite is well outside of the current capabilities of these teams. Furthermore, these activities relate to the repurposing of the networks and as such are not a part of BAU.

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

As stated, the networks do not have the internal capacity to undertake this work and so must look externally to secure the required resource. The NIA funding also provides the perfect framework for networks to collaborate and share knowledge and expertise to reduce the overall workload required for the project.

The project is also necessitated by the hydrogen transition and as such does not form part of a network's typical operation.

This project has been approved by a senior member of staff

☑ Yes