

NIA Project Registration and PEA Document

Date of Submission

Jul 2014

Project Reference Number

2012_02

Project Registration

Project Title

Aberdeen Hydrogen Feasibility Study

Project Reference Number

2012_02

Project Licensee(s)

Scottish and Southern Electricity Networks Distribution

Project Start

January 2012

Project Duration

-1 years and -9 months

Nominated Project Contact(s)

SSEN Future Networks Team

Project Budget

£257,817.00

Summary

Hydrogen has the potential to be a key element in the process of displacing fossil fuels for our future energy needs. As hydrogen is not a freely occurring element in nature, a process is required to release it, one of which is by electrolysis. It is proposed in this project to investigate the risks and opportunities from the connection of electrolyzers to the distribution network. This will inform the development of a subsequent project which would, in conjunction with a range of partners, connect an electrolyser and wind turbine to the local network and produce hydrogen for transport applications. The expected benefits are in the reduction of potential reinforcement costs and the potential to create new generation capacity on constrained sections of network.

Nominated Contact Email Address(es)

fnp.pmo@sse.com

Problem Being Solved

Method(s)

Scope

Objective(s)

This project provides the initial analysis to understand the opportunities and risks that exist for DNOs from the uptake of hydrogen technologies. Analysis from the UK H2 Mobility Project gives potential uptake figures of 1.6m hydrogen fuelled vehicles by 2030. In this scenario annual hydrogen consumption would be 254,000 tonnes, with a little over half of this coming from electrolysis. This would represent between 350-800MW of new demand being connected to the electricity network. This demand would potentially require significant and expensive network re-enforcement, but it also introduces a new demand which has substantial potential for flexible operation.

This project is developing learning in the following areas:

- Identification of appropriate learning and baseline data from other hydrogen electrolyser, DSM, and ANM projects;
- From the projects identified in above, extraction and collation of useful assessment criteria and baseline data sets;
- From the projects identified above, identification of ‘lessons learnt’ which would influence the potential uptake of this approach and inform a proposed trial;
- Understanding of the technology which could be used for this application and a commercial arrangement for utilising the service to remove network constraints;
- Potential operational profiles for a demonstration system which would utilise the above learning and provide quantifiable evidence of system performance.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

n/a

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

n/a

Geographical Area

Revenue Allowed for the RIIO Settlement

Indicative 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)

n/a

Please provide a calculation of the expected benefits the Solution

n/a

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

n/a

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

n/a

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

- ☐ Has the Potential to Develop Learning That Can be Applied by all Relevant Network Licensees

Is the default IPR position being applied?

- ☐ Yes

Please demonstrate how the learning from the project can be successfully disseminated to Network Licensees and other interested parties.

Please describe how many potential constraints or costs caused, or resulting from the imposed IPR arrangements.<

Please justify why the proposed IPR arrangements provide value for money for customers.

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