

NIA Project Registration and PEA Document

Date of Submission

Mar 2015

Project Reference Number

Project Registration

Project Title

Protection and Control Roadmap

Project Reference Number

Project Licensee(s)

National Energy System Operator

Project Start

January 2010

Project Duration

4 years and 10 months

Nominated Project Contact(s)

National Grid TO Innovation Team

Project Budget

£37,000.00

Summary

Clearly National Grid is entering a new phase of uncertainty in the optimum requirements for providing a “fit for purpose” protection and control solution to meet the needs of the changing transmission network. This is being driven by a need to adapt more quickly to change, to accommodate and manage the connection of intermittent wind generation at the extremities of the network, series compensation, embedded HVDC connections, offshore AC and HVDC connections and larger nuclear generation sets, together with the closure of many traditional coal fired power stations. This is leading to a situation where much larger, critical hub substations will be built requiring higher integrity P&C systems and with a further need to modify easily and extend them over significant periods of time. This will require protection and control solutions which are not only adaptable and flexible to meet the fast changing needs of the network, but need to address the consequential impacts on existing systems in older substations which may need to be progressively upgraded.

There are also threats to the P&C settings and configurations process, which has traditionally resulted in well tested and fixed parameters for a fixed network, but will have to adapt in near real time to changing network configurations, load flows and fault in-feed capability.

Nominated Contact Email Address(es)

box.so.innovation@nationalgrid.com

Problem Being Solved

Method(s)

Scope

Objective(s)

This R&D Project is to provide a set of detailed reports on the technical challenges faced by National Grid in the general areas of Protection & Control (P&C), which will clearly identify the technical and process risks faced and the options on how these may be mitigated. It will identify, review and prioritise the Protection & Control technical and asset management challenges likely to be faced by National Grid in the time frames of 2020, 2030, with a view beyond. This will help provide a common focus for existing strategies based on technical expertise and feasibility and R&D projects with timelines for implementation and also establish a further set of prioritised R&D required to manage these identified risks, leading to a clear vision and consolidated plan for implementation of future.

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 RII0-1 and RII0-2 NIA projects. This is noted in each case, with the requirement numbers listed for both where they differ (shown as RII0-2 / RII0-1).

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 RII0-2 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 (RII0-1 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 RII0-1 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

RII0-2 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