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

Aug 2015

Project Reference Number

NIA_NGET0160

Project Registration

Project Title

Feasibility of Risk based Network Planning

Project Reference Number

NIA_NGET0160

Project Licensee(s)

National Grid Electricity Transmission

Project Start

April 2015

Project Duration

4 years and 1 month

Nominated Project Contact(s)

Mark Osborne

Project Budget

£200,000.00

Summary

The feasibility and assessment will consider a small representative section of the National Grid Electricity Transmission Network, such that asset performance information can be provided and coupled with additional system conditions to provide a comprehensive set of conditions which can be processed to establish the risk levels associated with different planning scenarios.

Nominated Contact Email Address(es)

box.NG.ETInnovation@nationalgrid.com

Problem Being Solved

The current industry network planning tools employ deterministic criteria but do not indicate the risks associated with design decisions and the areas to focus investment or resource. Asset management is fundamentally about managing risk and providing information for the Network Owners to make decisions which affect investment and network security. As higher demands are being made on the Network infrastructure this becomes increasingly important. Bringing together the network design process, with network output measures (NOMs) and network monitoring will potentially help to address this.

Method(s)

The approach to this problem will involve researching the capability of National Grid's network design tool (PowerFactory) to include factors associated with asset condition, strategic importance, weather, environment and complex network interactions, which could affect the performance of an asset or the network in which it features. These asset management decision making tools will then be either incorporated into or interfaced with PowerFactory to provide visibility of the 'levels of risk' associated with planning and operational scenarios and decisions.

Scope

The feasibility and assessment will consider a small representative section of the National Grid Electricity Transmission Network, such

that asset performance information can be provided and coupled with additional system conditions to provide a comprehensive set of conditions which can be processed to establish the risk levels associated with different planning scenarios.

Objective(s)

The key objectives of this research is to:

1. Establish the viability of developing and adopting a more risk based approach to network planning based around system and asset management factors.
2. Scope out the level of data, analysis and resources necessary to provide this level of information and study capacity.
3. Understand the likelihood that this method could be reliably and robustly incorporated into future Network Owner business planning models.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The development of a visualisation module incorporated into/ interfacing with PowerFactory to demonstrate the feasibility of this concept.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

The project will consider a section of a National Grid network sufficient to be considered representative of a Transmission Network.

Technology Readiness at Start

TRL2 Invention and Research

Technology Readiness at End

TRL3 Proof of Concept

Geographical Area

This will be agreed early in the project and based on part of the GB electricity transmission network.

Revenue Allowed for the RIIO Settlement

None

Indicative Total NIA Project Expenditure

Indicative NGET NIA £200,000 costs

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)

If this application is successfully researched and developed to cater for the whole network it could result in network planning decisions which defer the need for asset replacement or new build. Optimising the use of existing assets is in the interests of the industry and the consumer. However, it is difficult to put a specific financial benefit as the ability to deploy the concept needs to be researched, developed and proven before any benefits could be generated.

Please provide a calculation of the expected benefits the Solution

This is an early stage TRL research project

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

This application could be picked up by the Transmission Owners and the Distribution Network Operators (DNO) as part of their planning and operational tool kit to serve their entire networks, ultimately benefiting the consumer.

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

It is difficult to give a figure here since this will depend on the outcomes of the project and the recommendations for implementation which could necessitate a significant IS project.

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 other transmission licensees use similar network planning tools, therefore, the application, if feasible, could be adopted if they have the appropriate data on their own assets (and resources) to inform the application.

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

This activity will aim to address the Management of new Network Risks through better informed decision making and maximising the utilisation of existing assets.

☑ 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