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

Feb 2016

Project Reference Number

NIA_ENWL016

Project Registration

Project Title

Future Network Modelling Functions

Project Reference Number

NIA_ENWL016

Project Licensee(s)

Electricity North West

Project Start

March 2016

Project Duration

1 year and 7 months

Nominated Project Contact(s)

Electricity North West Innovation Team

Project Budget

£125,000.00

Summary

This is a research piece to inform the understanding of the future requirements for system modelling and devise a strategic approach to meet the requirements using both existing and new technologies.

Third Party Collaborators

CGI

Nominated Contact Email Address(es)

innovation@enwl.co.uk

Problem Being Solved

Low carbon technologies and smart grids are asking new, more complex questions of network design and planning. Worst case static load analysis is no longer sufficient with embedded generation, reverse power-flow, time series data, and network solution optimisation now all becoming increasingly relevant.

Electricity North West uses models of varying complexity, such as IPSa, DINIS and LV AFFIRM, for planning on our network. These static models operate independently focusing on one voltage level only and individually provide only a limited range of functionality. Learning obtained from innovation projects both in ENW and elsewhere has shown the benefits of modelling across the whole network and has also demonstrated requirements for more advanced techniques, particularly on the LV network, such as 4 wire assessments or harmonic analysis.

This project is a research piece to better understand the forward requirements for system modeling, the expected functionality of tools, and the associated data and system architectures.

Method(s)

Phase 1 of the project will document the existing challenges/issues/uses around network modelling and identify the new requirements driven by the challenges caused by the introduction of low carbon technologies and the prospect of the role as a distribution system operator. These existing challenges/issues/uses and new requirements will be drawn from the different stakeholders within ENW and will include engineering, IT and business requirements. High level Use Cases will be identified and used to inform the requirements. The output of this phase will be an agreed documented set of as-is and to-be requirements.
Phase 2 will continue the development with a strategic assessment based on the findings from Phase 1 whilst recognising the capabilities of recent investments e.g. the new NMS and the general direction of other technologies in the market.

Scope

This is a research piece to inform the understanding of the future requirements for system modelling and devise a strategic approach to meet the requirements using both existing and new technologies.

Objective(s)

To produce a report based on
• Identified requirements
• Strategic assumptions
• Scenario modelling
• Summary Analysis
• Key risks and dependencies

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

This project will be considered a success upon production and publication of a report on the future requirements for system modelling , including a strategy to meet the requirements using both existing and possibly new technologies

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

The project will cover all the system modelling requirements for Electricity North West.

Technology Readiness at Start

TRL2 Invention and Research

Technology Readiness at End

TRL4 Bench Scale Research

Geographical Area

North West of England

Revenue Allowed for the RIIO Settlement

None

Indicative Total NIA Project Expenditure

£125,000

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)

As this is a research project it is not possible to estimate savings at this point.

Please provide a calculation of the expected benefits the Solution

Not required as this is a research project

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

The recommendations from the report can be used by any DNO to inform their modelling strategy.

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

There is no rollout cost. The report will be made available to all DNOs.

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 report will be made available to all Network Operators for inclusion in their strategy on system modelling

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

By using system wide modelling we will be able to provide better choice to customers through better understanding of how their connection affects the system. We will also be able to maximise the use of our existing assets through increased understanding of our network.

☑ 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