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

Dec 2021

Project Reference Number

NIA_ENWL_029

Project Registration

Project Title

A Statistical model for determining cut out failures

Project Reference Number

NIA_ENWL_029

Project Licensee(s)

Electricity North West

Project Start

December 2021

Project Duration

1 year and 7 months

Nominated Project Contact(s)

Innovation Team (InnovationTeam@enwl.co.uk)

Project Budget

£138,000.00

Summary

Across the UK, DNOs are faced with an aging population of cut outs in customer premises. With the rise of self-submitted meter readings, and the roll out of Smart Meters, these are no longer routinely observed by trained personnel. As such these units are currently replaced on failure when reported by customers or meter change operatives, leading to disruption and potential safety issues. This project will look to develop a statistical model on cut out failure modes to better allow DNO's to prioritise the replacement programme

Third Party Collaborators

Kinectrics Inc

Nominated Contact Email Address(es)

innovation@enwl.co.uk

Problem Being Solved

Across the UK, DNOs are faced with an aging population of cut outs in customer premises. With the rise of self-submitted meter readings, and the roll out of Smart Meters, these are no longer routinely observed by trained personnel. As such these units are currently replaced on failure when reported by customers or meter change operatives, leading to disruption and potential safety issues.

Method(s)

The project proposes to take an engineering-led approach by carrying out a combination of literature review and data analysis around modes of cut out failure. This will be coupled with a set of laboratory analyses of failed units to understand how these failure modes manifest. The aim will be to use this information to generate a condition assessment model to allow targeted replacement of cut outs in a controlled manner.

Scope

The project will carry out the following:

Examine existing ENW data around cut out failures, along with publicly available manufacturer data and use this to create a statistical model of cut out failure modes. If required a forensic analysis of around 100 units from the ENW license area will be carried out and used to further refine the model

Objective(s)

To create a statistical model around cut out failure modes

To refine the model following the forensic examination of around 100 units

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

Not applicable

Success Criteria

A statistical model of cut out failure modes produced to help inform the asset replacement strategy

Project Partners and External Funding

None

Potential for New Learning

If successful, the project will create a statistical model that can assist with better targeting the asset replacement programme for cut outs

Scale of Project

This project will take the form of a desk top research study to create the statistical model, with additional laboratory examination of units to refine the model.

Technology Readiness at Start

TRL1 Basic Principles

Technology Readiness at End

TRL4 Bench Scale Research

Geographical Area

North West England

Revenue Allowed for the RIIO Settlement

£0

Indicative Total NIA Project Expenditure

£125,454

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:

Not applicable

How the Project has potential to benefit consumer in vulnerable situations:

Not applicable

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)

This project is expected to lead to method of better targeting the replacement of cut out, which will allow for a more efficient allocation of staff over the current fix on failure method employed.

Please provide a calculation of the expected benefits the Solution

N/A as this is a research project

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

The model will be applicable to all GB Electricity Distribution Network Licensees.

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

There is no roll out cost as we expect the model to be available in standard software used by all Network Licensees

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 statistical model will be made available to other network licensees allowing them to apply it to their assets and asset replacement programme.

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 project will address the 'Improve Network Reliability' objective which sits in our Optimised Assets and Practices theme

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.

A review of the Smarter Networks Portal has revealed projects looking at alternative cut outs and assessing cut out's suitability for the connection of LCTS but there are no projects looking at the modelling of failure modes.

If applicable, justify why you are undertaking a Project similar to those being carried out by any other Network Licensees.

Not applicable

Additional Governance And Document Upload

Please identify why the project is innovative and has not been tried before

Historically cut outs have been replaced on a fix on failure basis, however with the continually aging asset base a more targeted approach is likely to be needed in ED2

Relevant Foreground IPR

Not applicable

Data Access Details

Electricity North West's innovation data sharing policy can be found on our website.

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

The issue of an aging asset base of installed cut outs is a UK wide one and would benefit from a consistent approach. The costs of defining this approach have not been budgeted for in the ED1 submission

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

This project is looking to determine if it is possible to create a statistical model to better target cut out replacements, there is a risk that the failure modes seen do not lend themselves to this approach

This project has been approved by a senior member of staff

☑ Yes