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NIA Project Registration and PEA Document

Date of Submission

Sep 2024

Project Reference Number

NIA_SSEN_0079

Project Registration

Project Title

Net Zero Service Termination 2 Project

Project Reference Number

NIA_SSEN_0079

Project Licensee(s)

Scottish and Southern Electricity Networks Distribution

Project Start

October 2024

Project Duration

1 year and 0 months

Nominated Project Contact(s)

Tim Sammon, Innovation Programme Delivery Manager at SSEN

Project Budget

£109,982.00

Summary

A follow on project from the Net Zero Service Termination Project to review the captured learnings and analyse these learnings against data containing whole customer load information. The scope of the original project was to capture learnings on the sustainability of service cables and cut-outs to accommodate the increased loading because of connections from Low Carbon Technologies (LCTs).

Preceding Projects

NIA_SSEN_0055 - Net Zero Service Termination Project

Nominated Contact Email Address(es)

frp.pmo@sse.com

Problem Being Solved

The previous project has identified there is a potential overheating issue with cut-outs and service cables. This issue was identified when the cables were exposed to a high continuous load over a period of time. The project is exploring how many customers may be experiencing this issue or may experience it in the future.

Method(s)

The project will use the data collected from the previous project and analyse it against 1-minute resolution data provided by Octopus Energy. These homes will have a combination of LCTs and are likely to represent a pool of customers who may have higher than normal sustained loads running through their cut-outs and service cables. Analysis of their metering data will indicate if this is the case.

The use of 1-minute data will allow us to see in greater detail the amount of load running through the cut-out and better analyse possible impacts. This data has been collected from over 200 customer properties, which all have confirmed LCTs on site.

The expected output from this will be for the Energy Networks Association (ENA) and its members to have a greater understanding of the risk posed by increased loads running through domestic properties.

Scope

The scope of the project is to analyse over 200 customer properties with LCTs connect to them and gain greater understanding of the risks these devices may pose to the cut-out or service cables through possible thermal damage. This data is being provided by Octopus.

It is in scope to purchase additional 30-minute data but this would be completed after the analysis of the 1-minute data, if it is deemed necessary.

This may lead to a change in internal governance for the management of cut-outs and reduce the risk of damage to either equipment of the Distribution Network Operator (DNO) or customer premises.

Objective(s)

The main objectives of the project are:

1. The clarification of the overall problem
2. Data import and analysis of the 1-minute data
3. Presentation of the findings
4. A final project report

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

A greater understanding of this issue will allow us to ensure a fair transition to LCTs for all customers and will help limit the impact of these technologies on our network. This project clearly has benefits in relation to customer vulnerability and will ensure all customers will be able to connect LCTs and engage with the decarbonisation of their energy.

Figure 1

Success Criteria

The outputs of this project will enable DNOs to understand the risk factors associated with types of cut-outs that may exist in their license areas. It will also enable DNOs to accurately forecast how this risk may increase over time as more LCTs are connected to customers' properties.

Project Partners and External Funding

This project is being supported by the ENA Low Carbon Technology Working Group. It will be a collaboration between the following DNO groups with the £110,000 project budget being distributed evenly amongst the participating DNOs.

1. Scottish and Southern Electricity Networks (Lead DNO group)
2. SP Energy Networks
3. National Grid Electricity Distribution
4. Electricity North West Limited
5. Northern Powergrid
6. UK Power Networks

Potential for New Learning

The analysis of customer data will give us a greater understanding of the potential scale of risk we are or may see in the future relating to high loads due to LCTs. This may lead to changes in current working assumptions.

Scale of Project

The project has been provided with over 200 customer load profiles and these load profiles will be used in conjunction with the data already gathered in the previous NZT project. The scale of this project is already limited by the amount of customer load data available to us.

Technology Readiness at Start

TRL8 Active Commissioning

Technology Readiness at End

TRL9 Operations

Geographical Area

Not Applicable – Desktop exercise.

Revenue Allowed for the RIIO Settlement

No surplus is expected.

Indicative Total NIA Project Expenditure

The total expenditure expected from the project is £110,000, 80% of which is allowable NIA expenditure (£88,000). The external expenditure will be split evenly across all DNO partners.

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:

Early identification of risks from increased loads due to LCT installation will allow DNOs to mitigate these issues before they constrain a customer's ability to safely connect LCTs to their property.

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)

Not Applicable

Please provide a calculation of the expected benefits the Solution

SSEN LCT connections by 2030 to meet DFES net zero projections.

Base cost

SSEN potential new LCT connection requests between 2021 and 2030 = 676,493 LCT connection requests requiring a loading inspection (42.6%) = 288,186 Inspection cost = £14.4m

Total cost = £14.4m

Method cost

LCT connection requests requiring a loading inspection (10.7% - assumes 75% of inspections avoided) = 72,384 Inspection cost = £3.6m

Total cost = £3.6m

Base cost – Method cost = £14.4m – £3.6m = £10.8m saving between 2021 and 2030

In addition to this there will be safety benefits through ensuring service terminations can sustain additional LCT loading, mitigating potential overheating, fire or injury.

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

This is a challenge for all GB DNOs, so could be replicated across the whole of GB. Assuming SSEN represents 2/14ths of the GB network, the potential saving nationally could be up to £75.6m by 2030.

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

The cost of roll out will be determined by the success of the method and as a result the answer to this question will be an output, within the analysis of the data and in the final report.

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 learnings from the project could immediately be used to forecast potential load related risk due to LCTs in a network licence area.

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

Not Applicable

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.

Energy Networks Association portal has been checked to confirm there is no duplication.

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

As this is a follow-on project no one has yet tried to use the outputs from the Net Zero Service Termination project and 1-minute

customer data to analyse the potential risk to the cut-outs or services cables.

Relevant Foreground IPR

Not Applicable

Data Access Details

For information how to request data gathered in the course of this project, see Network Innovation Competition (NIC) and Network Innovation Allowance (NIA) Data Sharing Procedure at <https://ssen-innovation.co.uk/innovation-strategy/>.

Not Applicable - Data is being purchased from a Supplier with existing relevant authorisation from relevant customers.

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

This is a follow on from a previous NIA project and is being continued for the benefit of all network licensees.

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

The need for this work has been accelerated by the ever-increasing focus on delivering Net Zero and the cost for this is beyond that which has been budgeted for in the current price control.

This project has been approved by a senior member of staff

Yes