

NIA Project Registration and PEA Document

Date of Submission

Jul 2015

Project Reference

NIA_SSEPD_0013

Project Registration

Project Title

Network Resilient Zone Utilising Standby Generation – Feasibility Study

Project Reference

NIA_SSEPD_0013

Project Licensee(s)

Scottish & Southern Electricity Networks

Project Start

July 2015

Project Duration

0 years and 8 months

Nominated Project Contact(s)

SSEN Future Networks Team

Project Budget

£26,000.00

Summary

The concept of proactively installing standby generators to local communities has been previously investigated for particular locations such as a single community hall but proactively providing a standby supply to a wider local network is certainly not common practice and has not been reported on as an operational practice in the UK to our knowledge.

The community is supplied by two 11kV to LV pole mounted transformers with one supplying the community hall and the other supplying the rest of the village. The LV network consists of underground cabling.

This project is innovative as it will consider how the village is affected by weather related faults and consider options to improve resilience by the provision of standby generation at a community level.

The project will estimate the enhancement to supply continuity from the standby generator options and quantify this improvement in supply. The costs associated with the range of options will be estimated then the costs and benefits will be compared to determine the nett effect.

Nominated Contact Email Address(es)

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Problem Being Solved

Within the SHEPD license area, there are a large number of rural communities. These are normally fed by radial 11 kV overhead lines with no alternative source of supply.

This makes these communities more susceptible to weather related fault occurrences.

Many of these rural communities have difficult access arrangements such as the ones located on islands where the only access is by boat which can often exacerbate the delay in reconnection due to their remoteness.

Method(s)

The proposal is to explore alternative ways of improving the resilience of supply to remote communities by undertaking a feasibility study on the viability for the village community at Arinagour on the island of Coll to have a back up source of supply in the form of a standby generator. Technical and commercial options will be considered such as whether the generator is permanently connected or be brought to site when required or connected over the winter period.

It is also proposed to consider the reconfiguration of the village low voltage network to improve resilience as the incoming supply to the village is an 11kV overhead line but the village LV network is underground which is less likely to be affected by adverse weather.

The project will also consider how the local system will be operated under fault conditions.

This study will be applicable to other areas of the network as the level of service to remote communities is one indicator of the quality of service provided by a UK DNO. A specific output will be the knowledge to enable a future project to prepare a tool to assess the viability of this methodology to other communities on the network.

Scope

The concept of proactively installing standby generators to local communities has been previously investigated for particular locations such as a single community hall but proactively providing a standby supply to a wider local network is certainly not common practice and has not been reported on as an operational practice in the UK to our knowledge.

The community is supplied by two 11kV to LV pole mounted transformers with one supplying the community hall and the other supplying the rest of the village. The LV network consists of underground cabling.

This project is innovative as it will consider how the village is affected by weather related faults and consider options to improve resilience by the provision of standby generation at a community level.

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Objective(s)

The aim of this project is to determine the viability of options to improve the resilience of supply to a remote village community.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The delivery of a study which determines the viability of options to improve network resilience to a remote village community by the provision of standby generation.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

The scale of this project is limited to a single remote village community.

Technology Readiness at Start

TRL3 Proof of Concept

Technology Readiness at End

TRL4 Bench Scale Research

Geographical Area

The study will consider the village of Arinagour on the island of Coll.

Revenue Allowed for the RIIO Settlement

At this stage no saving on expenditure can be assumed.

Indicative Total NIA Project Expenditure

The indicative Total NIA Project Expenditure is £26,000, 90% of which (£23,400) is Allowable NIA Expenditure.

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)

Over the past 3 years the average value of CI/CHL's at Arinagour Village is around £18,000 per annum.

The feasibility study will inform the estimate of saving but it is assessed this stage that a 50% reduction in CI/CHLs may be achieved over the 8 year RIIO-ED1 period leading to a benefit in the order of £72,000.

Please provide a calculation of the expected benefits the Solution

N/A-Research Project

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

The methodology could be applied by all UK DNOs to remote village communities.

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

The use of the methodology to determine the viability of options will be able to be applied with minimal extra cost.

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

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)

Our RIIO- ED1 submission outputs relating to reliability, availability, social obligations and customer service will be directly addressed by this project.

In addition, our 2015 Annual Distribution Survey of Domestic Customers noted:

- 92% of domestic customers surveyed are supportive of a project to establish 'zones' where the electricity network is more resilient to provide a local haven when exceptional weather impacts on local communities;
- 95% of domestic customers surveyed are supportive of a project to develop a new solution to keeping the power on in homes when the network is damaged;
- 99% of domestic customers surveyed say it is important for SSEPD to invest in the network to maintain security and reliability of their electricity supply.

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