![SP Energy Networks logo] **SP Energy Networks**

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

Jul 2022

Project Reference Number

NIA_SPEN_0076

Project Registration

Project Title

Vulnerability in the Energy System Transition

Project Reference Number

NIA_SPEN_0076

Project Licensee(s)

SP Energy Networks Distribution

Project Start

June 2022

Project Duration

1 year and 1 month

Nominated Project Contact(s)

Robbie MacQuarrie

Project Budget

£154,000.00

Summary

Vulnerability in the Energy System Transition is a project that will develop a tool to create an overall score that captures the likelihood of customers in different geographical areas being left behind in the energy system transition. A breakdown of which specific barriers determine the likelihood of customers being left behind across geographical areas will allow SP Energy Networks to provide tailored advice and support to customers, addressing the identified challenges and barriers.

Third Party Collaborators

SIRIO Multilateral Strategies Ltd

Nominated Contact Email Address(es)

innovate@spenergynetworks.co.uk

Problem Being Solved

SP Energy Networks vulnerability strategy proposes a set of commitments to address three areas (supporting customers during power cuts, addressing fuel poverty and ensuring that no customer is left behind in the energy system transition). There is no tool available to measure the risk of being left behind and therefore, data or information on which customers are more likely to be left behind.

Method(s)

1. Build phase - using datasets to measure the risk of customers being left behind
2. Test and refine - verify the quality and validity of the model's output
3. Visualisation - build interactive map to visualise across geographical layers
4. Platform expansion - Bring together the three types of vulnerability data

Scope

The scope of the project consists of:

- Statistical modelling to create a score for each blocker to the energy system transition
- Assess the degree to which each dataset explains the likelihood that a customer may face the LCT blockers
- Developing interactive map using open source tools and conduct usability testing to refine functionalities/options
- Develop a mathematical approach to calculating a single overarching vulnerability score based on the three types of data

Objective(s)

- Using datasets to measure the risk of customers being left behind in the energy system transition and the blockers driving the risk across SP Energy Networks communities
- Build a clear, powerful and user friendly interactive map to visualise the risk of being left behind
- Bring together into a single tool the three types of vulnerability data

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

- Detailed report highlighting geographical areas with the greatest risk of being left behind, key blockers driving the risks of being left behind, and the tendency for similar blockers to exist together.
- Interactive map to visualise the risk of being left behind in the energy system transiton across geographical layers.
- Single vulnerability mapping tool that brings together risk of being left behind, fuel poverty and PSR data.

Project Partners and External Funding

SIRIO Multilateral Strategies

Potential for New Learning

The development of a tool to identify the likelihood of customers being left behind will inform the development of new advice and support services tailored to address the challenges and obstacles of groups of customer facing combinations of blockers.

Scale of Project

This project will develop a tool to be used by SPEN across licence areas.

Technology Readiness at Start

TRL2 Invention and Research

Technology Readiness at End

TRL5 Pilot Scale

Geographical Area

Focus will be on SP Energy Networks licencee areas

Revenue Allowed for the RIIO Settlement

N/A

Indicative Total NIA Project Expenditure

£154,000

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:

By identifying the likelihood of customers being left behind and understanding what specific barriers determine this across geographical areas will allow SP Energy Networks to inform the development of new advice and support services tailored to adress the challenges and obstacles of groups of customers facing these blockers.

It will also benefit the customer as SP Energy Networks will have the ability to shape the development of local partnerships to address key blockers locally.

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)

The benefits will be generated as a result of SP Energy Networks provision of LCT advice and support is set to increase as a result of more effective targeting of customers realised via the tool. The tool will enhance the probability that an increased number of the 40,000 customers who are targeted will realise the envisaged benefits (e.g. bill savings from adoption of energy efficient technologies).

There could be benefits of up to £3m over RIIO-ED2 through more customers realising envisaged benefits.

Please provide a calculation of the expected benefits the Solution

The deadweight % (percentage of expected benefits that would have occurred in the absence of the tool's employment) is based upon the finding that, per the energy saving trust, 36% of British households have not made changes to their energy in recent years. As such, the baseline calculation (in which the tool is not employed) is set at 64% (100%-36% = 64% of British households would have made changes to their energy usage irrespective of the tool's employment).

The deadweight % in the most conservative scenario is reduced by 25% (i.e. the benefits generated as a result of SPEN's provision of LCT advice and support is set to increase as a result of more effective targeting of customers realised via the tool).

Baseline calculation:

PV (Present Value, sum of all financial and societal benefits) of customer benefits = £6.76m

Estimated costs = £2.35m (BaU cost for LCT advice)

NPV (Net Present Value) = £4.42m

Benefits of solution:

PV of customer benefits = £9.7m

Estimated costs = £2.35m

NPV = £7.35m

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

The method is highly replicable across GB. The steps being developed as part of the Method to (i) join vulnerability datasets to measure the risk of being left behind at a local level, (ii) join PSR data, fuel poverty data and this novel measurement of the risk of being left behind in an overarching vulnerability score, and to (iii) present the results in a user friendly, visualisation can be followed and replicated (and if required, adapted) by any network company. The mathematical approach to cleaning and joining datasets into a measure of the risk of being left behind and an overall vulnerability score, as well as the steps to replicate this approach into an environment that allows for the creation of interactive analyses and maps, can be fully replicated in the same/similar software solution are adopted. These approaches will likely require only slight adaptions for implementation in different environments. The selection of datasets (and, therefore, the effort required to manipulate and link these datasets to the full data model) may vary depending on the geographical areas of interest.

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

The findings from the study will be made available to enable roll out across GB.

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 Innovation Strategy has a strong focus on consumer vulnerability and ensuring no customer is left behind in the energy system transition. Our vulnerability strategy proposes a set of commitments to address key focus areas. Several of these commitments will see SPEN delivering different programs of support and advice. To guide the delivery of these programs, SPEN will require comprehensive and up-to-date data. While efforts to support customers during power cuts and addressing fuel poverty can be guided by existing data, SPEN, like every other network in the UK, does not have a way to measure the risk of being left behind; and therefore, any data or information on which customers are more likely to be left behind in the energy system transition.

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 search of the ENA smarter network portal and publication on the ENA huddle portal has revealed no other projects carrying out this specific work.

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

The project undertakes a novel approach to identify the likelihood of customers in different geographical areas being left behind in the energy system transition. This will be the first study to carry out such an investigation.

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

The novel aspects of the project to identify the likelihood of customers being left behind

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 project carries considerable commercial and operational risk given its novelty. Notwithstanding the importance of assessing the risk of customers being left behind in the energy system transition, a measurement of such risk has never been attempted. NIA funding will facilitate SPEN in attempting the successful delivery of this project despite its exploratory aims and the associated uncertainities.

This project has been approved by a senior member of staff

☑ Yes