

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 2025

### Project Reference Number

NPG\_NIA\_056

## Project Registration

### Project Title

Inclusive Flexibility

### Project Reference Number

NPG\_NIA\_056

### Project Licensee(s)

Northern Powergrid

### Project Start

August 2025

### Project Duration

0 years and 11 months

### Nominated Project Contact(s)

innovation@northernpowergrid.com

### Project Budget

£225,000.00

## Summary

Incorporating vulnerable consumers in energy flexibility initiatives is essential for creating an inclusive and resilient energy system and supporting decarbonised power. Vulnerable consumers, who typically have less control over their energy usage and fewer resources for energy-efficient technologies, may struggle to participate. By ensuring their inclusion in energy flexibility, it is possible to provide financial support, smart technologies, and incentives tailored to their needs. This enables vulnerable consumers to benefit from lower energy costs and participate in initiatives that offer rewards for flexible energy use. It also helps prevent widening inequalities in energy access, while enhancing overall system stability, reducing peak demand and enabling demand side flexibility as well as supporting the transition to low carbon renewable energy sources.

### Nominated Contact Email Address(es)

yourpowergrid@northernpowergrid.com

## Problem Being Solved

Incorporating vulnerable consumers in energy flexibility initiatives is essential for creating an inclusive and resilient energy system and supporting decarbonised power. Vulnerable consumers, who typically have less control over their energy usage and fewer resources for energy-efficient technologies, may struggle to participate. By ensuring their inclusion in energy flexibility, it is possible to provide financial support, smart technologies, and incentives tailored to their needs. This enables vulnerable consumers to benefit from lower energy costs and participate in initiatives that offer rewards for flexible energy use. It also helps prevent widening inequalities in energy access, while enhancing overall system stability, reducing peak demand and enabling demand side flexibility as well as supporting the transition to low carbon renewable energy sources.

## Method(s)

The project will identify solutions or actions that NPg can implement that support vulnerable consumers to participate in energy flexibility initiatives. This would happen by identifying the challenges facing vulnerable consumers and generating ideas for solutions that allow them to participate in energy flexibility initiatives. As a result, the project will produce an understanding of the key steps that these households need to go through to result in meaningful engagement in energy flexibility initiatives long term and design how (up to) 3 new solutions can be trialled with vulnerable households. This will improve the advice that NPg (and other partner organisations) can provide households on flexibility and in the long term this will provide new solutions that NPg can utilise to maximise participation in domestic energy flexibility. It is unique to involve householders in the complete design and development of new solutions that will be scaled to work for them specifically. This will deliver value for money as changes to the solutions' requirements can be made during development rather than afterwards and the solutions generated will be proven to be desirable to consumers before they are rolled out en masse.

## Scope

Stage 1 Insights Review  
Stage 2 Challenge Definition  
Stage 3 Idea Generation  
Stage 4 Trial Design & Development

## Objective(s)

Stage 1 Insights Review

- Gather existing insights from Northern Power Grid and Energy Systems Catapult reports
- Back casting exercise (e.g. workshop) to work backwards from desirable future outcomes
- Qualitative engagement with householders (e.g. interviews)
- Insights synthesised and summarised

Stage 2 Challenge Definition

- Potential challenges identified following insights review
- Challenges discussed and prioritised with householders
- Develop challenge criteria (number of criteria to be determined in response to the challenges identified and householder feedback)

Stage 3: Idea Generation

- Develop potential solutions to key challenges
- Engagement with householders and NPg stakeholders
- Refine priority solutions

Stage 4: Trial Design & Development

- Develop template trial design
- Develop trial designs for priority solutions

## Consumer Vulnerability Impact Assessment

Sirio tool score:

Overall Project Score:10.0/10

Relative Impact Score: 5.5/10

Positive Impact Score:1.0/10

Negative Impact Score:0.0/10

## Success Criteria

- New insights are generated about the problems that low income and vulnerable consumers may face participating in energy flexibility

- Identification of steps for NPg to address key vulnerable consumer challenges in support of significant participation in energy flexibility
- Vulnerable households will be effectively engaged in identifying future consumer problems for people in their situation and in the ideation of possible solutions
- Potential solutions and appropriate trial designs developed for subsequent research projects

## Project Partners and External Funding

N/A

## Potential for New Learning

- The problems vulnerable consumers may face participating in future energy flexibility
- What elements of future energy flexibility are most relevant to vulnerable consumers in the near term
- The relative position of consumer problems for vulnerable households on the journey to significant participation in energy flexibility (i.e. which they may face in the short, medium or long term)
- Solutions to up to 3 priority problems that vulnerable consumers are likely to find desirable and acceptable to interact with

## Scale of Project

This 10 month project is predominantly desktop based research that is expected to be applicable/scalable to all network operators.

## Technology Readiness at Start

TRL2 Invention and Research

## Technology Readiness at End

TRL4 Bench Scale Research

## Geographical Area

Research will focus on the Northern Powergrid network area, but is expected to be replicable/scalable GB-wide

## Revenue Allowed for the RIIO Settlement

None

## Indicative Total NIA Project Expenditure

£225,000

# Project Eligibility Assessment Part 1

## Requirement 1

Facilitate the energy system transition and/or benefit consumers in vulnerable situations

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:

The project will provide insight into low income and vulnerable customers could participate in energy flexibility equitably. It will improve consumer advocacy and other organisations' ability to understand and advise householders on flexibility and identify how LTV consumers can be involved in the development of priority solutions with innovators/through trials

## 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

N/A

### Please provide a calculation and/or description of the expected benefits of the solution

The project is a desktop research activity and no financial benefits can be calculated at this stage.

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

The solution is expected to be entirely replicable across GB networks

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

Not applicable as the outputs are learning focussed and expected to lead on to a further project rather than a BAU rollout.

## Requirement 3 / 1

Involve Research, Development or Demonstration

Projects 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

Involve Research, Development or Demonstration - Please select all that apply

- 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 learning generated is expected to inform development of a further project.

N/A

### 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. Networks must explicitly mention similar projects that they have considered and how these differ.

### Please demonstrate below that no unnecessary duplication will occur as a result of the Project.

We are not aware of any other project that explores how LIV customers can be included in flexibility initiatives.

### 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

We are not aware of any other project that explores how LIV customers can be included in flexibility initiatives.

### Relevant Foreground IPR

N/A

### Data Access Details

N/A

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

The learning is expected to lead to a future innovation trial which would not be fundable under BAU activity due to uncertainty of outcomes and associated risk.

### 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

Outcomes are uncertain due to the novel nature of engagement of LIVs in flexibility initiatives. Avoidance of commercial and regulatory risk mean this is suitable for funding through NIA.

### This project has been approved by a senior member of staff

Yes