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

Feb 2026

Project Reference Number

NIA_UKPN0120

Project Registration

Project Title

PULSE (Patterns of Usage and Load for Support Evaluation)

Project Reference Number

NIA_UKPN0120

Project Licensee(s)

UK Power Networks

Project Start

March 2026

Project Duration

1 year and 10 months

Nominated Project Contact(s)

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Project Budget

£1,037,000.00

Summary

The PULSE project develops a first-of-its-kind, evidence-based methodology to measure the long-term effectiveness of fuel-poverty interventions. The project introduces a new approach that uses household-level consumption to understand how energy-use behaviours change following support. This enables greater insight into whether interventions truly alleviate or prevent fuel poverty. Ultimately, PULSE aims to enhance the targeting and impact of future vulnerability programmes.

Third Party Collaborators

SIRIO Multilateral Strategies Ltd

Citizen Advice Arun & Chichester

Urban Tide

Nominated Contact Email Address(es)

innovation@ukpowernetworks.co.uk

Problem Being Solved

To assess the impact of fuel poverty support services, the current approach utilises the Social Return on Investment (SROI) framework. This is an assumption-based methodology, presenting an estimate of the assumed impact but not answering the key questions:
Are the support services effectively lifting customers out of fuel poverty – or, at least alleviating fuel poverty (i.e. reducing the fuel poverty gap)?
Is the investment delivering the intended impact?
Critically, networks do not have any insight into how customers' energy-use behaviours change over time following an intervention. Important behaviours linked to vulnerability — such as self-rationing and self-disconnection — are not captured, meaning network

operators cannot determine whether support services are influencing the day‑to‑day decisions customers make about energy use. This limits the ability to understand whether positive changes are occurring, whether negative behaviours persist, or whether some customers return to fuel‑poverty risk even after receiving help.
This project aims to address these limitations by developing a methodology that uses household‑level consumption data to understand customer behaviour before and after fuel‑poverty interventions. The methodology will enable the industry to identify patterns of behaviour that indicate vulnerability, assess whether these behaviours change in response to support, and evaluate the long‑term effectiveness of intervention measures. This is expected to help network operators ensure that they can efficiently deliver impactful support for customers in vulnerable circumstances.

Method(s)

To address the problems outlined above, the project will develop an evidence‑based methodology for assessing the effectiveness of fuel poverty interventions by creating an advanced statistical model. The methodology's output will then be integrated into existing consumer vulnerability tool to ensure it fits smoothly into BAU. The work will also measure the solution's impact on SROI to provide insight into the accuracy of the existing framework. More broadly, the methodology will be documented and shared to support learning and potentially create a route to more accurate reporting and assessment of programmes supporting customers in vulnerable circumstances.

This methodology and approach are the first of their kind and therefore have the potential to shift how the industry assesses the success of programmes supporting customers in vulnerable circumstances.

Measurement Quality Statement

All data used within this project is for the purposes described above, and therefore quality will be measured on this basis. The project will follow all data quality rules, logging, and prioritising issues as they arise in line with the approved methodology set out in our Enterprise Data Management Policy, which forms part of the UK Power Networks Integrated Management System.

Data quality will be measured across five dimensions where applicable:
Accuracy
Completeness
Consistency
Validity
Uniqueness
Data quality rules for each of the appropriate data quality dimensions above will be set by the project, measuring them closely on a regular basis to identify quality issues.

Data Quality Statement:

Data quality issues will be logged in a central location and prioritised using an approved matrix which combines the importance of the issue, and the amount of data affected, this gives an indication of the issue's impact on the project and wider business, considering factors such as:
The impact on the project outcomes and the performance evaluation of the solution
The impact on the health and safety of the public and employees
The impact on UK Power Networks' reputation
The impact on our operations and efficiency
The financial impact, including project delays and charges from external service providers.
The project will then seek support for resolving the issues in priority order. All data and background information will be stored centrally and securely in a project specific SharePoint folder or in our Enterprise Data Store if required by the wider business in accordance with data protection requirements.

Scope

The project will be split into three work packages, with relevant activities split across the work packages.
Work Package 1 (WP1), Proof of Concept (PoC)
Project Set-Up and Survey Design: Following project kick-off, any final set-up will be completed and a survey for qualitative data collection designed.
Data Collection and Ingestion: Twelve months of historical data and ongoing live data will be ingested and processed. Customer satisfaction and sufficiency of the data being collected will be assessed on an ongoing basis.
Model Development: In parallel to data collection, the data will be analysed, and an estimation model will be developed and validated. The model will analyse the data to estimate impact of fuel poverty delivery services.

Data Validation: Given the myriad factors that can affect consumption data, data validation will be carried out to confirm that the model correctly identifies patterns of self-disconnection and self-rationing. This validation will take the form of a follow-up survey to add qualitative detail to the patterns identified in the model analysis of consumption data.
The scope of WP2 and WP3 is dependent on the learnings and success of WP1 and the proof-of-concept.

Work Package 2, Scoping and (Optionally) Developing a BAU solution
Scoping requirements for a BAU solution: Alongside the PoC, a BAU solution for consent management and a storage solution for household level consumption data will be scoped.
Develop BAU solution: Subject to the success of the PoC, we will develop a consent management platform and data storage solution, assuming that the concept has been proven in WP1 and there is value in progressing the solution.
Work Package 3, (Optional) Predictive modelling
Predictive Modelling: Subject to the success of the PoC, there is the option to develop a predictive algorithm which will enable insights to be extrapolated beyond surveyed customers. Outputs from this will also be integrated into the live tool.
Closedown: A report summarising the predictive modelling methodology, key findings and recommendations, and wider implications for industry best-practice will be written and shared – this will enable industry-wide learning, allowing organisations to enhance how they identify and support customers in vulnerable circumstances.

Objective(s)

Sign up a sufficient number of customers to validate the impact of the proposed methodology, ideally allowing observations during the winter period.
Re-engage a proportion of participants to support validation of emerging findings.
Determine the percentage of households with smart meters that exit or avoid fuel poverty due to fuel poverty interventions to draw out the true impact of fuel poverty intervention programmes.
If the proof of concept proves viable, integrate model outputs into existing consumer vulnerability tool / dashboard as appropriate.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

The project directly involves consumers in vulnerable circumstances through UK Power Networks' vulnerability partners, who will recruit participants and clearly explain the project's purpose and benefits. We have considered the perspective of customers in vulnerable circumstances, and will take steps to minimise, or where possible, prevent, any negative impact. These steps include:
Recruitment by expert vulnerability partners – Customers who may face difficulties in discussing an unfamiliar topic, or in giving consent for their data to be used in this project, will be assisted and guided by expert vulnerability partners who will only propose this study if and where appropriate depending on the customer's individual circumstances.
Development of an accessible information sheet – Customers will have to provide consent for their data to be collected and analysed via the Electralink 'GoSmart' consent management platform. Customers will be provided with an information sheet that explains the objectives of the study, the data used and how it will be analysed. This sheet will be designed in partnership with expert vulnerability partners (who will also deliver and explain the information to customers). This will promote the use of appropriate language and formats, while ensuring that all key questions are answered.
Avoid any day-to-day impact on customers in vulnerable circumstances – Following the provision of consent and the response to a simple and brief survey, customers will not experience any impact and will be automatically unenrolled from the project at the end of the 12-month consent window.
Further support offered to customers identified as remaining in fuel poverty following intervention – An incentive will be offered (e.g. £50-70 fuel voucher) for participating in the follow-up survey in the data analysis to customers identified as exhibiting behaviours that put them at risk of fuel poverty.
Due to the technical nature of this project, specifically its dependence on the availability of granular data on energy consumption, it is essential for participating customers to have a smart meter. Importantly, however, the benefits of the project (i.e. improved fuel poverty support and the reduction on self-disconnection and self-rationing behaviours) would be received by all customers, regardless of their participation in this study or the ownership of a smart meter.
Customers in fuel poverty risk of being left behind in the energy system transition. By targeting our support for customers in fuel poverty, this project helps mitigate the risk that these customers are also left behind in the energy system transition.

Success Criteria

When delivering the project, success will be evaluated against the following criteria:
Data readiness: Successful acquisition and pre-processing of smart meter, survey, and contextual data. Developing a functional algorithm/model that can:
Identify self-disconnection and self-rationing behaviours.
Detect before/after behavioural changes following fuel poverty interventions.
Practical applicability: Demonstrated potential for integration into UK Power Networks' systems and the potential to deliver household level insights.

Model outputs which can successfully integrated into the appropriate consumer vulnerability dashboard to display useable insights into the effectiveness of the programme.
A clearly defined consent management and data storage approach is produced, meeting the requirements set by internal stakeholders.
Dissemination of learnings: Evaluate impact on SROI and demonstrate accuracy of methodology. Disseminate learnings to provide an evidence-based assessment methodology and comparison point for SROI proxies.

Project Partners and External Funding

Sirio Strategies is a consultancy specialising in stakeholder engagement and consumer vulnerability within the regulated UK energy market. Sirio is leading on the development of the updated methodology, carrying out analysis of the data, developing an advanced statistical model, qualitatively validating results and analysing the methodology's impact. Sirio is also the current independent assurance provider for the Consumer Vulnerability Incentive, making them well placed to compare results with those proxies utilised in the SROI rulebook.
Urban Tide is a software development company that develops scalable AI solutions across energy, transport and Government. They are providing technical/expert advice through integration of the model outputs into the consumer vulnerability dashboard.
Citizens Advice Arun & Chichester is currently delivering fuel poverty services for the UK Power Networks Consumer Vulnerability team and is providing technical/expert advice through recruiting customers for this innovation project. They will also re-engage customers to validate the outputs of Sirio's model.
External funding: Sirio is providing £10,000 in-kind funding through funding the costs of subcontracting Electralink's consent management platform "GoSmart". No other partners are providing in-kind funding, and there is no additional external funding.

Potential for New Learning

The project will enable UK Power Networks to enhance its ability to identify customers in, or at risk of, fuel poverty and adapt support services accordingly.
The project aims to generate insight and learnings across few key areas, specifically by addressing the following questions:
Can self-disconnection and self-rationing be reliably identified using live smart meter data?
Can we model expected behaviours at customer level and detect significant patterns of behaviour that indicate vulnerability?
Can we link these behavioural insights to specific customer characteristics to inform more targeted interventions?
Taken together, these insights will help us understand the impact of fuel poverty interventions and identify which approaches deliver the greatest benefit, enabling more efficient and targeted support in future.
Findings will be compiled into project progress and closedown reports to be shared on the ENA's Smarter Networks Portal.
In the long-term, this project can be viewed as the cornerstone of a new paradigm for supporting customers in vulnerable situations. The technology ideated, developed, and tested throughout this initiative establishes the foundation for future proactive customer support services. For example, delivering an emergency fuel voucher proactively would help prevent self-disconnection and self-rationing behaviours. This approach significantly enhances the effectiveness of support by intervening before harm occurs, addressing customer needs based on actual conditions rather than reacting after negative impacts have already taken place.

Scale of Project

The PULSE project has been designed at a scale that enables UK Power Networks to generate statistically robust insights into the long-term effectiveness of its support interventions. A cohort of up to 150 customers is required to achieve meaningful confidence levels for this piece of work and develop an initial proof of concept which can be evaluated before the methodology is rolled out across UK Power Networks' licence areas. Once proven, the methodology can be scaled to deliver an improved assessment of the support delivered, more effective targeting of support services, and potentially influence industry-wide reporting practices. A smaller-scale trial would not deliver the depth or reliability of learning needed to unlock these wider benefits or the opportunity to scale these insights at pace.
By operating at this scale, the project can fully test the methodology, including the practicalities of necessary data collection at a manageable scale before expanding further. This ensures that innovation funding is used efficiently to refine the approach before expanding.

Technology Readiness at Start

TRL2 Invention and Research

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

This project will cover all three of UK Power Networks' licence areas, to enable the methodology to be applied to the entirety of the UK

Power Networks fuel poverty programme.

The proof of concept developed in WP1 will focus on customers in the South Eastern Power Networks (SPN) licence area, mainly those in the Arun and Chichester localities, through collaboration with Citizens Advice Arun & Chichester.

Revenue Allowed for the RIIO Settlement

No funding was provided within the current RIIO settlement that will become surplus to requirements as a result of this project.

Indicative Total NIA Project Expenditure

We estimate the project expenditure to be £1,037,000 of which £933,300 (90%) will be recovered from 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:

This project has the potential to improve outcomes for customers in vulnerable situations by creating an evidence‐based, long‐term method for assessing how effective fuel poverty interventions are in helping households. This methodology will help ensure that consumers receive the right fuel‐poverty support at the right time. By using smart‐meter data in this work we hope to provide a clearer picture of whether households are moving out of fuel poverty and experiencing improved wellbeing as a result of support delivered. This evidence will enable network operators and their partners to target support more effectively, reduce self‐disconnection and self‐rationing, and design services that better meet the long‐term needs of customers in vulnerable circumstances.

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)

N/A

Please provide a calculation of the expected benefits the Solution

The PULSE project is expected to deliver £1,018,000 in benefits by improving how UK Power Networks measures and targets its fuel‐poverty interventions. By shifting from assumption‐based SROI calculations to an evidence‐based methodology, the project should enable UK Power Networks to deliver our support more effectively to maximise the impact of the investment in support programmes.

The following assumptions have been made:
Assumed a conservative 1% improvement in the SROI for the leaving no one behind programme and a 2% increase in the SROI for the fuel poverty programme. The baseline is the 2024/25 SROI for these programmes.
Assumed an annual maintenance cost of £28,800.

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

If this project's approach is successful, all GB DNOs could adopt the solution to better evaluate the support they provide to consumers in vulnerable situations.

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

As this is a software project, we expect costs for rolling out this solution across GB to be minimal when compared with the potential benefits. Within the UK Power Networks licence areas, we expect the BAU operational costs to be £28,800 per year. The exact costs will be evaluated in WP2 which will involve scoping and (optionally) developing a BAU solution.

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 this project have the potential to benefit relevant network licensees by introducing an evidence‐based approach to understanding the real‐world impact of fuel‐poverty interventions. Today, the industry relies heavily on assumption‐based frameworks to measure the effectiveness of their support programmes. PULSE aims to enhance this with a method that uses smart meter consumption data to identify behaviours such as self‐disconnection and self‐rationing, and to assess whether customers are being lifted out of fuel poverty.

By demonstrating how self‐rationing and self‐disconnection can be reliably detected, how behavioural change can be monitored over time, and how interventions can be linked to measurable improvements in wellbeing, the project provides a blueprint that other relevant network licensees can adopt. The methodology offers a new route to strengthen reporting, improve targeting of vulnerability services, and support more efficient use of fuel‐poverty funding across the sector.

More broadly, the learning from this project could support industry‐wide updates to SROI modelling, helping licensees more accurately demonstrate the value of the support they deliver. This creates opportunities for better planning, more targeted investment, and ultimately more effective and consistent support for customers in vulnerable circumstances.

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

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.

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

This technology and methodology has not been used before and we therefore believe that no unnecessary duplication will occur as

part of this project. While smart meter data is being collected, this project would be the first to apply machine-learning to detect self-rationing and self-disconnection and measure the impact of fuel-poverty interventions.

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

PULSE is developing a firstofitskind, evidencebased method for assessing the real impact of fuelpoverty interventions. The project will be the first to use smart meter consumption data to detect behaviours such as selfrationing and selfdisconnection and to measure whether the support delivered is resulting in a decrease in these adverse outcomes. No project in the UK has previously applied machinelearning to smart meter data to assess vulnerability or fuelpoverty outcomes in this way.

Relevant Foreground IPR

The outputs and deliverables produced as part of the project will conform to the default treatment of IPR. The relevant foreground IPR will be comprised of the following:
A suitable approach to consumer consent collection and management
Updated SROI proxies or other recommended valuation mechanisms
Any insights which enable improved modelling and support of consumers in vulnerable circumstances
The following background IPR will be leveraged throughout this project:
Electralink's GoSmart customer consent management platform
UrbanTide's UZero dashboard

Data Access Details

Any data gathered during the project such as trial data and analysis, technical feasibility notes, and use case documentation will be stored securely within UK Power Networks' internal systems.
Where appropriate, de-sensitised data and non-confidential findings will be made available to interested parties in alignment with our Data Sharing Policy. UK Power Networks recognises that Innovation projects may produce network and consumption data, and that this data may be useful to others. This may be shared with interested parties, whenever it is practicable and legal to do so, and it is in the interest of GB electricity customers. In accordance with the Innovation Data Sharing Policy, UK Power Networks aims to make available all non-personal, non-confidential-sensitive data on request, so that interested parties can benefit from this data.
To view UK Power Networks' Innovation Data Sharing Policy, please access it through our innovation microsite:
https://innovation.ukpowernetworks.co.uk/

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

This work cannot be funded through businesslaslusual because it aims to test a completely new, evidencelbased methodology for assessing the impact networks' support interventions for customers in vulnerable circumstances. The methodology is unproven and its viability has not yet been tested so it carries technical, analytical and operational risks.

These activities are not part of BAU due to the low Technology Readiness Level (TRL) and the inherent risks associated with the project, given the unproven benefits and sensitive data involved. Therefore, NIA project funding is essential to advance the innovative aspects of the project to explore approaches to ensure that our support is delivering value to customers.

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 PULSE project will develop a novel methodology for evaluating the impact of fuel poverty interventions. As such, the project carries several risks that make it unsuitable for business-as-usual funding and necessitate support through the NIA these include datalquality, modelling accuracy, customerlengagement/acceptance and suitability within the current regulatory framework.

This project has been approved by a senior member of staff

☑ Yes