



SSEN DISTRIBUTION

NETWORK INNOVATION ALLOWANCE

SUMMARY REPORT

1 APRIL 2025 TO 31 MARCH 2026



**Scottish & Southern
Electricity Networks**



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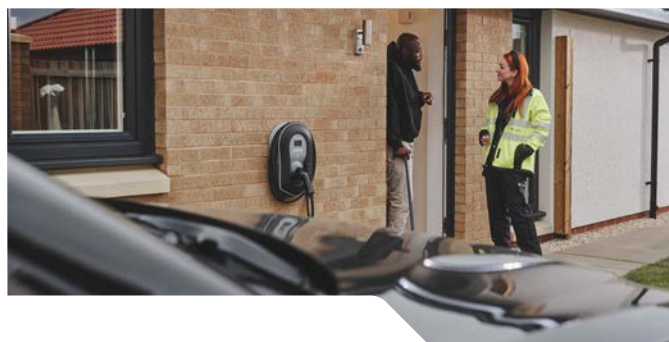
FOREWORD

SSEN Distribution's ambition is to power communities to thrive today and to enable acceleration of electrification for the future, whilst delivering a safe, smart and resilient network for all customers. Over the past year, we have continued to develop our portfolio, building on our previous progress, by continuing to deliver new innovations into the business. These bring benefits for customers, the environment and for wider society.

So far in the RIIO-ED2 price control, we have initiated fourteen Network Innovation Allowance (NIA) projects and partnered on a further twelve with both gas and electricity networks. To date we have completed eight NIA projects and have a pipeline of projects in development. We are on track to fully utilise our NIA allowance by the end of this price control, reflecting both the depth of our innovation pipeline, and our ability to deliver projects at pace.

Alongside this, we have a growing portfolio of Strategic Innovation Fund (SIF) projects. The SIF was introduced at the start of RIIO-ED2, replacing the Network Innovation Competition and became available for Distribution Network Operators (DNOs) in April 2023. Since then, we have participated in all funding rounds. To date, we have secured £33.24m in funding across 28 projects, comprising 16 Discoveries, nine Alphas and three Betas (see page 19 for full details).

In SSEN, SIF and NIA are only part of the overall innovation portfolio. Alongside this, we have a portfolio of Business-as-Usual (BaU) funded initiatives. In general, if an initiative is well-enough developed and ready, we will deploy it directly into the business and only use SIF or NIA if the level of risk or uncertainty is higher. Examples of innovation we have directly delivered this year include Smart Video Surveys, new Systems for Flexibility, and a New Natural Asset Platform.



Based on analysis of our innovation portfolio since the start of RIIO-ED1, we estimate that for every £1 spent on innovation, there is the potential to deliver up to £4 of wider societal benefits. These benefits are typically realised over the course of project initiation, deployment and benefit realisation.

For our RIIO-ED2 portfolio, this equates to the potential to deliver up to £200m of benefits by the end of ED3.

Key highlights include:

- Providing a valued and trusted service for customers and communities LCT Connection Readiness Indicator**
 The Low-Carbon Technology (LCT) Connections Readiness Indicator (CRI) project develops a data-driven tool to assess how ready a property's electricity connection is for technologies like EVs (Electric Vehicles) and heat pumps. This solution will help enable proactive customer engagement and more efficient network planning.
- Accelerating progress towards a net zero world FORTRESS**
 FORTRESS explores how critical and protected sites, such as hospitals, can decarbonise while maintaining resilience and essential services. The project improves visibility of future energy demand and develops commercial and operational models that enable flexibility without compromising safety, informing smarter network planning and investment.
- Delivering a safe, resilient and responsive network Voltmetric**
 The Voltmetric project develops a data-driven index of voltage and power quality health, combining smart meter, Low Voltage (LV) and network data to support more targeted, efficient and proactive network investment and management.
- Making a positive impact on society Nature4Networks**
 Nature4Networks explores how Nature-based Solutions (NbS) can be used as sustainable, resilient alternatives to traditional engineering for electricity networks. The project builds evidence, standards and tools to enable NbS to be credibly adopted within network planning, investment and regulation.



For more information on our strategic approach, please visit <https://ssen-innovation.co.uk/innovation-strategy>

For SSEN, getting the outputs from our innovation portfolio deployed into our BaU activities, is vital. In the past year, we have started deploying Smart Hammer and HV fault location equipment which were initially developed in our NIA portfolio. When deployed, we anticipate that these initiatives have the potential to deliver wider societal benefits of approximately £26 million by 2050. These examples demonstrate our ability not only to trial innovative solutions, but to integrate them successfully into BaU processes where they deliver sustained customer and network value.

So far in RIIO-ED2 we have developed a strong pipeline of projects which combined with our strengthened focus on delivery and deployment have allowed us to make meaningful progress for our customers. As we begin to prepare for ED3 we will look to build on our track record and maintain the delivery momentum we have established in RIIO-ED2.

We will continue to work with a wide range of project partners and stakeholders to develop and co-create our innovation projects. If you have an idea or area where you think we should be focusing, then we want to hear from you via <https://www.ssen-innovation.co.uk>

Catherine Winning
Head of Future Networks
Scottish and Southern
Electricity Networks





PROJECT RECOGNITION

We are proud of the progress we continue to make toward a cleaner, greener future. In 2025–26, several of our projects were recognised for their forward-thinking approaches and meaningful contributions to innovation.

Our **Vulnerability Future Energy Scenarios (VFES)** project addressed gaps in our Distribution Future Energy Scenarios (DFES) by using new forecasting methods to better reflect the specific needs of vulnerable customers. VFES provides clear, practical recommendations to support more inclusive operations and smarter investment decisions



VFES
The National AI Awards
2025
WINNER
16 October 2025



VFES
British Data Awards
2025
WINNER
14 May 2025

HOMEflex established the first GB-wide independent compliance scheme setting the 'rules of the road' for domestic flexibility. Since the innovation project this has evolved into **The Domestic and Microbusiness Code of Conduct.**

The code aims to accelerate market maturity by laying the foundations for a flexibility service market that everyone can engage with confidently and in a way that works for them.

The **Nature4Networks** project demonstrated how NbS can reduce climate risk for electricity networks while delivering wider environmental and cost benefits. The current Beta phase will focus on embedding these approaches alongside traditional infrastructure to support decarbonisation, resilience, and long-term value.

The project has also been listed on the **Renewable Grid Initiative** website as an example of good practice. The Renewable Grid Initiative is a unique collaboration of Non-Governmental Organisations (NGO) and Transmission System Operators (TSO) from across Europe engaging in an 'energy transition ecosystem-of-actors'.



Homeflex

Flex Awards 2026 finalists – Utility Week Awards
Announced on 23 March 2026
(awards are in May 2026)



Nature4Networks

Utility Week Awards 2025
Environmental, Social & Governance (ESG)
Initiative of the Year
2 December 2025



NIA PROJECTS

In the year ending 31 March 2026, 21 projects were funded under the SEPD and SHEPD Network Innovation Allowance, of which ten were led by us.

Each project accumulates knowledge and learning which aligns with one or more of our Strategic Objectives. The relevant primary Strategic Objective is denoted via the inclusion of its icon.



**DELIVERING A SAFE,
RESILIENT AND
RESPONSIVE NETWORK**



**PROVIDING A VALUED
AND TRUSTED SERVICE
FOR CUSTOMERS
AND COMMUNITIES**



**ACCELERATING
PROGRESS TOWARDS
A NET ZERO WORLD**



**MAKING A POSITIVE
IMPACT ON SOCIETY**



LANCET

NIA SSEN 0082



KEY ACTIVITIES

The Lancet project is delivering an innovative live line oil sampling solution that enables oil to be safely taken from energised pole mounted transformers (PMTs) without the need for planned outages. Activities have focused on technical assurance, safety validation and preparing the solution for network testing. Early work reviewed the tool against SSEN safety, operational and network assurance requirements. Following this review, technical documentation and delivery processes were refined and an emergency cap solution was introduced to mitigate risk should drilling be unsuccessful. In parallel, preparations have been completed to progress the solution into controlled on network testing across SSEN licence areas, supported by factory based testing of modified components.

EXPECTED BENEFITS

The project is expected to deliver significant operational, customer and environmental benefits. By enabling oil sampling from PMTs without de energising the asset, the Lancet Tool reduces planned outages and customer disruption, improves network availability and avoids unnecessary removals. This reduces waste, lowers carbon impact and delivers long term cost efficiencies for consumers. The solution will also support ongoing compliance with PCB regulations beyond 2025 and has strong potential for replication across GB networks.

PROGRESS

The project is progressing in line with the original aims and objectives. Early assurance activities have been completed, with technical and process issues addressed through iterative refinement. These actions have

strengthened confidence in the safety, operability and deploy ability of the Lancet Tool. Approval has been granted to proceed with testing on our 11kV networks. In parallel, Steer Energy has modified and successfully factory tested the emergency cap design, demonstrating continued progress towards a safe, practical and network ready solution.

PRIMARY STRATEGIC OBJECTIVE



**DELIVERING A SAFE,
RESILIENT AND
RESPONSIVE NETWORK**

COLLABORATORS



PROJECT BUDGET

£100,200

START/END DATE

February 2026 – July 2026

WEBSITE

https://smarter.energynetworks.org/projects/nia_ssen_0082

PROJECT MANAGER

Rob Britton



VOLTMETRIC

NIA SSEN 0080



KEY ACTIVITIES

The Voltmetric project aims to utilise the increased volume of granular voltage data to create a whole network voltage index (VI) or health score. To do this the project will identify the data required to determine a voltage or power quality index, implement a data collection method and frequency, determine a calculation method for various voltage scenarios, consider and assess the impact of applying different network interventions and run test cases to verify this approach.

While the project is underway, we will begin to engage with our DNO and regulatory partners to understand the impact this VI may have on network planning and operational consideration. We will explore the impact of regulatory change and financial impact a new VI score may have on DNOs.

EXPECTED BENEFITS

When combined with the cost of the interventions that are driving this performance, the Voltage and Power Quality index will allow whole system investment decisions to be made in an informed manner across a large population of sites in the same way that Load and Health indices currently do. This should facilitate further LCT connections by allowing networks to make proactive interventions to avoid voltage driven constraints.

PROGRESS

The project has commenced development of a Voltage and Power Quality Index. It has considered the key data sets required to support this, including connectivity, load flow, smart meter data, network monitoring, and power quality measurements.

Work has also begun on ingesting large volumes of smart meter voltage data to better understand the impact of assessing extensive areas of the network against a defined voltage metric. In parallel, the team is defining what the Voltage Index should include, how it should be structured, and how it can be presented at the MPAN level while being aggregated and interpreted at the grid level.

PRIMARY STRATEGIC OBJECTIVE



COLLABORATORS



PROJECT BUDGET

£996,000

START/END DATE

April 2025 – October 2026

WEBSITE

https://smarter.energynetworks.org/projects/nia_ssen_0080

PROJECT MANAGER

Phillip Clarke



NET ZERO TERMINATION 2 PROJECT

NIA SSEN 0079



KEY ACTIVITIES

This was a follow-on project from the Net Zero Service Termination Project (https://smarter.energynetworks.org/projects/nia_ssen_0055), created to review the learnings and analyse them against the data containing whole customer load information. The original Net Zero Termination project highlighted the impact high loads, consistent with extended use, could have on a single-phase domestic cut-out. The scope of the project was to analyse over 200 customer properties with LCTs and gain greater understanding of the risks these devices may pose to the cut-out or service cables through possible thermal damage.

EXPECTED BENEFITS

The project ran as a desktop study of the customer consumption data and the collected data from the original Net Zero Termination project. As a result of this project, we expected to have a better understanding of the impact high customer loads, driven by LCT usage, will have on our equipment so we can make appropriate action. With this greater understanding of the risks involved and their potential root causes, we can begin to explore solutions for mitigating these risks.

PROGRESS

The desktop study has been completed, and the final report has been published. We are now moving ahead with plans to engage with relevant stakeholders. We and other DNOs are using this information to assess our policies around size and replacement of cut-outs. Several meetings with DNOs were held, a white paper was produced by SSEN and the ENA with key findings and next steps. We will also contact other external stakeholders within the ENAs LCT

Steering group and the NEOC. A new steering group, the Cut out and Net Zero Group (CANTZ) has been formed and is engaging with industry partners, manufacturers and the regulator to explore how best to resolve the issues highlighted in the final report.

PRIMARY STRATEGIC OBJECTIVE



**ACCELERATING
PROGRESS TOWARDS
A NET ZERO WORLD**

COLLABORATOR



PROJECT BUDGET

£109,982

START/END DATE

October 2024 – September 2025

WEBSITE

https://smarter.energynetworks.org/projects/nia_ssen_0079

PROJECT MANAGER

Phillip Clarke



DEMAND DIVERSIFICATION SERVICE FOR LMAS PHASE 2 – COMMERCIAL TRIALS

NIA SSEN 0078



KEY ACTIVITIES

Demand Diversification Service (DDS) Design: Three flexibility services were designed to be deployed as an alternative to the historical demand management provided by Load Managed Areas. Feedback from the Flexibility Service Providers (FSP) during the trials helped to inform the final design.

Virtual Network Trials: The project worked with the Power Networks Development Centre and the Energy Systems Catapult Living Laboratory (ESCLL) to model various virtual network configurations. By using real world data captured from ESCLL volunteers, the project has analysed the impact of DDS across a wide range of loads and at various penetrations of the network.

Field Trials: Non-geographic Field Trials were planned to be run with FSP and their customers.

EXPECTED BENEFITS

To clearly establish the next steps for introducing DDS as a BaU service, and its potential to enable the removal of Load Managed Areas.

PROGRESS

The project concluded, successfully designing and testing three LV network flexibility services: Allocated Capacity, Dynamic Congestion Response (DCR), and Load Factor Optimization. Based on the success of the Virtual Network trials, the decision was taken to cancel the Field Trials and move straight to a limited BaU release later in 2026. This will enable us to work directly with flexibility providers to find solutions to the challenges uncovered during the project, namely:

- Uncoordinated smart tariffs have the potential to very quickly create new peaks on the network.
- Most schedulable loads are being driven to the same Time of Use tariffs, which is exacerbating the issue.
- The initial design of real-time response to congestion in the DCR model looks like it can't react quickly enough and, when multiple FSPs react, it may amplify the peak.
- The volume of potential sites for DDS (1000s) may require a new approach to flexibility at LV; supported by new or enhanced systems and processes.

PRIMARY STRATEGIC OBJECTIVE



**ACCELERATING
PROGRESS TOWARDS
A NET ZERO WORLD**

COLLABORATORS



connectedresponse

PROJECT BUDGET

£2,059,238

START/END DATE

September 2024 – February 2026

WEBSITE

https://smarter.energynetworks.org/projects/nia_ssen_0078

PROJECT MANAGER

Kevin Stewart



LCT CONNECTIONS READINESS INDICATOR

NIA SSEN 0077



KEY ACTIVITIES

The project aims to develop the logic for a LCT Connections Readiness Indicator for properties – a combination of a logic flow creating a hierarchical/decision tree model that uses known looped services/fuse ratings with assumptions to infer likelihood where data is not present, along with machine learning to improve the outputs. The project also aims to create a customer messaging strategy that will be tested in a field trial with real customers, and the customer sentiment towards the LCT Connections Readiness Indicator tool assessed.

EXPECTED BENEFITS

LCT Connections Readiness Indicator is expected to improve the customer experience with LCT uptake by managing expectations at the start of the customer journey as to whether any additional time/DNO upgrade works may be needed to be factored into their plans, increasing our customers' satisfaction and reducing complaints associated with LCT connections applications.

PROGRESS

The project carried out the field trial, testing the customer messaging strategy by contacting several hundred customers across two areas and evaluating the level of interaction with the project's webpages where they were able to look up their property's readiness information. Unfortunately, relatively low levels of customer engagement were experienced, and interviews with customers are expected to reveal insights as to why that may be.

PRIMARY STRATEGIC OBJECTIVE



**ACCELERATING
PROGRESS TOWARDS
A NET ZERO WORLD**

COLLABORATORS



Centre for Net Zero
Powered by Octopus Energy Group

+impact⁷



PROJECT BUDGET

£555,575

START/END DATE

October 2024 – April 2026

WEBSITE

https://smarter.energynetworks.org/projects/nia_ssen_0077

PROJECT MANAGER

Richard Hartshorn



ALTERNATIVE JOINTING 2

NIA SSEN 0075



KEY ACTIVITIES

This project is divided into two key stages:

Stage 1: Development of foam compounds, shell and a shrink wrap LV straight joint to pass the required standard BS EN 50393:2015 and tests set by the ENA (C81). Provide health and safety assessments on new materials/processes and report cost breakdowns of the final product based on testing the products in an operational environment.

Stage 2: Deliver field trials of successful new LV straight joints and develop and test prototypes of other joint types including breach, service and multiple service.

EXPECTED BENEFITS

The energy system transition requires the large-scale deployment of LCTs within SSEN's licence areas, resulting in increased load and a consequential increase in LV jointing activity. Improving the efficiency and reducing the waste and carbon footprint of LV jointing would therefore provide benefits to customers and enable a faster and more effective energy system transition.

PROGRESS

The development of an isocyanate-free foam that reduces weight, waste, and the time required to fill a joint is technically feasible, and significant progress has been made this year. However, certain foam properties have presented challenges that were not identified at the outset of the project. These issues are currently being addressed prior to testing the system against British Standards.

The project has identified two epoxy resin solutions from separate suppliers. Both resins are isocyanate-free and have demonstrated strong performance during testing.

In addition, a new joint shell design has been agreed and is currently progressing through tooling manufacture.

Once the shell has been produced, the combined foam and shell system will undergo British Standard testing, in accordance with BS EN 50393:2015 and ENA C81 for LV straight joints.

PRIMARY STRATEGIC OBJECTIVE



COLLABORATORS



PROJECT BUDGET

£2,470,000

START/END DATE

July 2024 – June 2028

WEBSITE

https://smarter.energynetworks.org/projects/nia_ssen_0075-1

PROJECT MANAGER

Timothy Watts



REGIONAL ENERGY SYSTEM OPTIMISATION PLANNING (RESOP) NIA SSEN 0071



KEY ACTIVITIES

The RESOP project is a continuation of NIA Whole Systems Growth Scenario Modelling Phase 2 (WSGSM2). It will continue to develop digital tools necessary to create Local Area Energy Plans (LAEPs) and Local Heat and Energy Efficiency Strategies (LHEES). It aims to bring together a wider range of experts, including DNOs, Gas Distribution Networks (GDNs), Heat Network Specialists, Water Networks and LCT specialists, for the purpose of building LAEPs.

EXPECTED BENEFITS

Presently, the main way of creating a LAEP is employing a consultant, typically taking about nine months and costing hundreds of thousands of pounds. The LAEP output is a pdf file that quickly becomes outdated and it is suggested that it should be renewed every four years. This is a significant ongoing cost to Local Authorities and due to the fast-moving nature of the energy industry the plans can become outdated quickly and present a challenge to turn the plans into delivery work.

PROGRESS

Within the reporting year the project agreed to progress with the RESOP+ change request, to increase the scope for a Winchester digital LAEP and hybrid gas heating. The development of the LAEP and a Community-Led Energy Plan (CLEP) for Harestock allowed us to trial and evidence the deliverables against expected outcomes.

Work has been focussed on developing LENZA functionality to run scenarios on all data held within LENZA. This allows bespoke forecasts down to building level to be run using

Local Authority and platform data. Additional development on the Master Plan functionality continues, which allows Local Authorities to share their digital LAEPs with DNOs. Finally, work has continued to progress on the Winchester LAEP, which will be available both as a paper-based document and within LENZA's Master Plan, making it the first ever digital LAEP that will revolutionise data exchange between Local Authorities and DNOs.

PRIMARY STRATEGIC OBJECTIVE



**ACCELERATING
PROGRESS TOWARDS
A NET ZERO WORLD**

COLLABORATORS



PROJECT BUDGET

£3,950,085

START/END DATE

October 2023 – September 2026

WEBSITE

https://smarter.energynetworks.org/projects/nia_ssen_0071

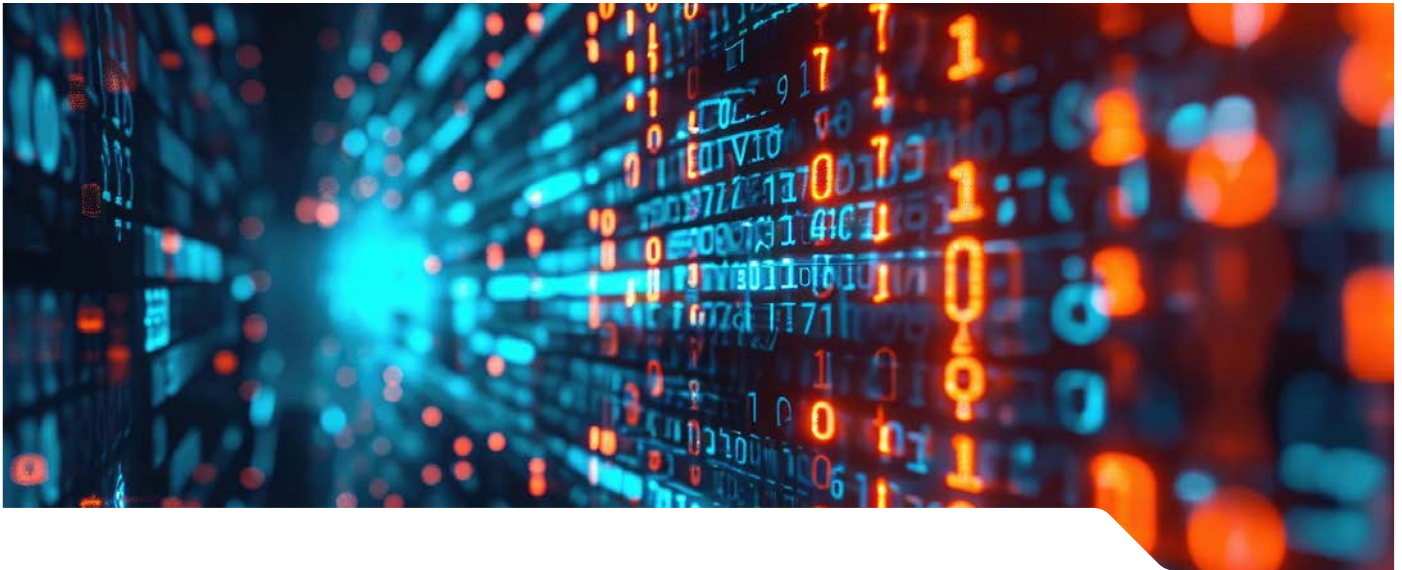
PROJECT MANAGER

Phillip Clarke



NEAR REAL-TIME DATA ACCESS 2 (NeRDA 2)

NIA SSEN 0070



KEY ACTIVITIES

The NeRDA 2 project expanded the geographical scope of the previous NeRDA project (https://smarter.energynetworks.org/projects/nia_ssen_0050) engaging more stakeholders to demonstrate the value of real-time network data. Alongside real-time data, it provided static datasets through the Application Protocol Interface (API), such as capacity and network configuration. Dashboard improvements made data easier to access and interpret, helping users better understand its granularity and assess the value stakeholders can unlock from the data.

EXPECTED BENEFITS

The project provided near real-time network and load data across both SSEN licence areas by sharing available HV and LV data, while improving the APIs to provide users with static data around network configuration and capacity data. NeRDA dashboard improvements help users easily interact with available network data and understand the different levels of data available.

PROGRESS

The NeRDA portal now supports real time data from over 5,000 secondary substations across both SSEN licence areas. Over the last year, it has grown to share around eight million live data points, updated every few minutes, and has recorded over 11,000 user visits – demonstrating strong demand for open network data. As the platform moves into BaU, NeRDA supports over 800 registered users across industry, technology, academia, and the public sector. It delivers direct, practical benefits to customers and network users:

- **Faster connections decisions** – Around half of inbound data queries relate to grid connections, the platform help users check capacity and constraints before applying.
- **Better investment choices** – Highlighting available capacity and likely reinforcement needs for developers and local authorities, reduces delays and aborted projects.
- **Reduced uncertainty and cost** – Trusted data cuts back-and-forth with the DNO and gives customers confidence early in project planning.
- **Supporting net zero delivery** – a catalyst for LCTs, flexibility markets, and local energy planning across SSEN regions.

PRIMARY STRATEGIC OBJECTIVE



**ACCELERATING
PROGRESS TOWARDS
A NET ZERO WORLD**

COLLABORATORS



Open Grid Systems



**University of
Strathclyde
Glasgow**



aspentech

PROJECT BUDGET

£935,603

START/END DATE

August 2023 – March 2026

WEBSITE

https://smarter.energynetworks.org/projects/nia_ssen_0070

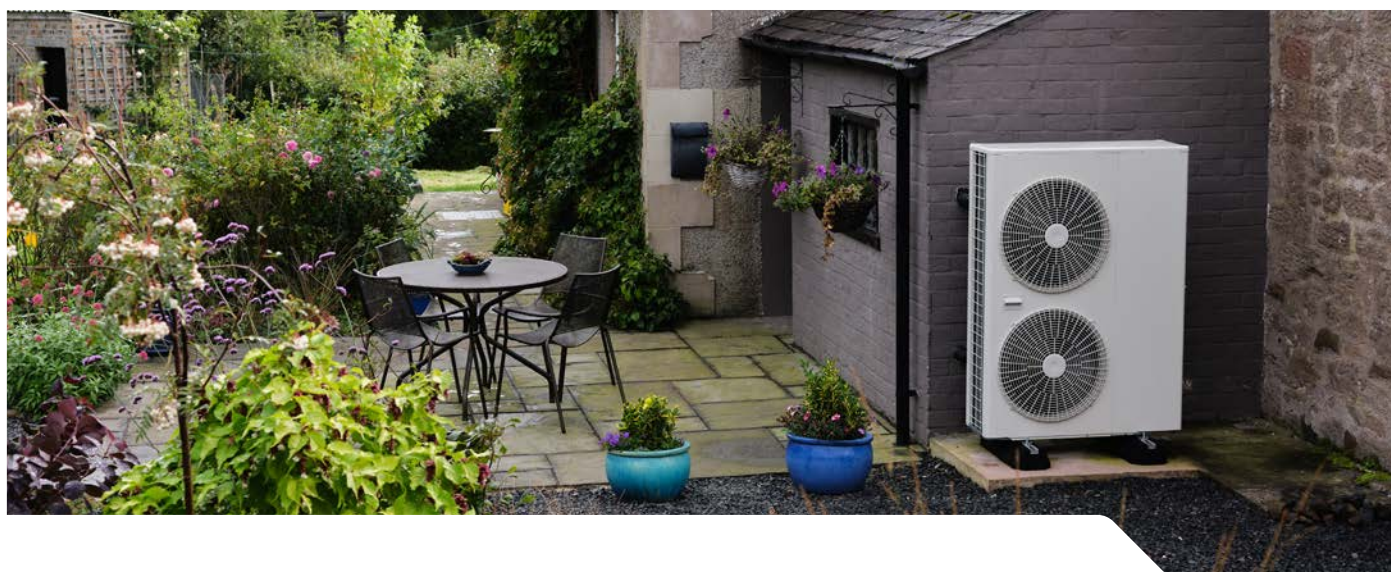
PROJECT MANAGER

Fraser MacIntyre



LOW VOLTAGE POWER QUALITY (LVPQ)

NIA SSSEN 0069



KEY ACTIVITIES

The main goals of the Low Voltage Power Quality (LVPQ) project are to explore and understand the impact of new demand profiles, primarily driven by the uptake in low carbon technologies (LCTs), and how they are impacting the power quality of the LV network. Our focus was on the impact created by heat pumps as customers decarbonise their domestic heating. We will be exploring their singular contribution as well as modelling their aggregated contribution across an LV network.

We are trialling several power quality improvement/mitigation devices at the PNDC to help understand and create a specification for a device which could be used on the LV network. These devices would be located on the overhead and underground networks and would cover as wide a selection of use cases as possible.

EXPECTED BENEFITS

The development of power quality improvement devices to maintain the reliable supply to customers, has the potential to benefit all our customers, including those in vulnerable situations.

Without the improvement devices other network reinforcement would need to occur, typically cable or overhead line replacement, which can be expensive and disruptive. Power Quality improvement devices could potentially defer or avoid this.

PROGRESS

Over the last year, several work packages have been progressed, including installation of power quality monitoring in several homes. Testing has been designed, initiated and

completed on seven power quality mitigation/improvement devices with feedback provided to the manufacturers. Modelling has commenced using heat pump data collected in the previous reporting year and is now incorporating data gathered from customer homes. The design, initiation, and completion of testing have been conducted for seven PQ mitigation devices supported by collaboration with manufacturers. Live trials are being reviewed and developed and will commence in the next reporting year.

PRIMARY STRATEGIC OBJECTIVE



**DELIVERING A SAFE,
RESILIENT AND
RESPONSIVE NETWORK**

COLLABORATORS



PROJECT BUDGET

£1,672,234

START/END DATE

October 2023 – March 2027

WEBSITE

https://smarter.energynetworks.org/projects/nia_ssen_0069

PROJECT MANAGER

Phillip Clarke



ExtenDER

NIA SSEN 0067



KEY ACTIVITIES

The ExtenDER Project tested the feasibility of a market based connection agreement to allow customers to connect earlier under Transmission constraints by enabling peer-to-peer trading of flexibility. A detailed report on the mechanisms of a Neutral Market Facilitator (NMF) to facilitate peer-to-peer trading is available upon request, and a summary is available in the NMF Project Closedown Report via the Smarter Networks Portal. The report goes into detail on:

1. Market-Based Connections Product Overview
2. Commercial Design, Market Design and Gaming Risks
3. Stakeholder Engagement
4. Cost-Benefit Analysis

EXPECTED BENEFITS

During Phase 2 it was established there was an inability to realise the expected benefits, and it was deemed there was no viable route to BaU.

PROGRESS

The ExtenDER Project was closed early and did not go through the live trial period as initially planned. Various obstacles existed, such as Low Technology Readiness Level (TRL), no business appetite for the tool, high risk of allowing the market to facilitate connections in constrained locations, and the requirement of wider ENA consensus for a market-based approach to be adopted to change commercial processes. Extensive stakeholder engagement was carried out to discover market appetite and use cases. It was predominantly EV charging companies that could

see the benefit and were interested in participating in the trials. Crucially, the use case for connecting houses was not feasible as market-based connection agreement obligations could not be transferred from property developers to domestic consumers, which meant the anticipated benefits described in the Project Eligibility Assessment (PEA) document could not materialise.

PRIMARY STRATEGIC OBJECTIVE



COLLABORATORS



PROJECT BUDGET

£1,410,000

START/END DATE

August 2023 – December 2025

WEBSITE

https://smarter.energynetworks.org/projects/nia_ssen_0067

PROJECT MANAGER

Rhys Williams



NIA COLLABORATION PROJECTS LED BY OTHER LICENSEES

Below is a list of other NIA projects that SSEN is participating in. The projects are led by our collaboration partners; further details of those projects can be found via the listed project links or in the relevant annual reports from each Lead Party.

Project number	Project title	Lead party
NIA_CAD0110	SHINE Non-Electric Boiler	Cadent
NIA_NGN_391	Low to no power heat alternatives	NGN
NIA_NGN_458	Open Maps	NGN
NIA_NGN_492	Rethinking Communication for Digital Exclusion	NGN
NIA_SPEN_0098	Environmentally Acceptable Wood Pole Pre-treatment Alternatives to Creosote (APPEAL) (ED-2)	SPEN-D
NIA_WWU_02_81	Understanding Consumer Behaviours for a Just Energy Transition	WWU
NIA2_NESO089	CASCADE – Communication Adaptive Systems for Coordinated Architecture and Data Exchange (Discovery)	NESO
NIA_SPEN_0101	Switchgear Requirements for Future Networks (ED-2)	SPEN-D
NIA_WWU_2_71	Situational Awareness	WWU
NIA_SHET_0053	Virtual Energy System Data Sharing Infrastructure (DSI) Pilot – SSEN-T Component	SSEN-T
NIA_SPEN_0102	Re-Heat: Enabling Renewable Heat (ED-2)	SPEN-D



RESILIENCE AS A SERVICE

SSEEN_007



NIC PROJECT

In the year ending 31 March 2026, one project was funded by the Network Innovation Competition.

KEY ACTIVITIES

The Resilience as a Service – RaaS – innovation project seeks to improve the operational resilience of electricity distribution networks in remote areas.

The aim is to develop and trial a new market-based solution which can swiftly and automatically restore supply to customers in the event of a fault, using services provided by a local Battery Energy Storage System, and incorporating local Distributed Energy Resources. In addition to demonstrating the technical concept, the work has developed the commercial framework for RaaS – evaluating the financial case from a DNO perspective and assessing the investment case for RaaS Service Providers with options for revenue stacking in other flexibility services markets.

EXPECTED BENEFITS

The application of RaaS would improve Security of Supply for customers, reduce the use of temporary diesel generation, and enhance the use of local renewable schemes, supporting the UK's transition to Net Zero.

PROGRESS

The final phase of the project culminated in the successful deployment of the RaaS infrastructure during the trial period at the demonstration site identified in Phase 1, generating critical commissioning insights and operational learnings that will inform technical guidance to support scheme design for future sites and BaU deployment. Building on this, the project assessed additional use cases

for the RaaS battery and controller to further evaluate the commercial and financial viability of the solution.

As the project progresses toward closure and dissemination, the project has commenced preparation for the final two project deliverables, demonstration analysis results covering both technical and commercial aspects, and technical guidance to support scheme design.

PRIMARY STRATEGIC OBJECTIVE



**DELIVERING A SAFE,
RESILIENT AND
RESPONSIVE NETWORK**

COLLABORATORS



PROJECT BUDGET

£10,900,000

START/END DATE

January 2020 – June 2026

WEBSITE

<https://smarter.energynetworks.org/projects/sseen07>

PROJECT MANAGER

Sarah Rigby / Taz Rajavel



SIF PROJECTS



In the year ending 31 March 2026, 20 SEPD and SHEPD projects were funded by the Strategic Innovation Fund, of which 17 were led by us. Each project accumulates knowledge and learning which aligns with one or more of our Strategic Objectives. The relevant primary Strategic Objective is denoted via the inclusion of its icon.

In partnership with Innovate UK, SIF funding is awarded in phases, each one supporting projects as they grow and develop. The Discovery phase tests ideas through small, short-term projects to see if they are feasible and worth taking forward. The Alpha phase then helps develop these ideas in more detail, while the Beta phase supports larger, long-term trials to prove solutions in real-world conditions. This process ensures that only the most impactful ideas are developed into everyday business practices.



**DELIVERING A SAFE,
RESILIENT AND
RESPONSIVE NETWORK**



**MAKING A POSITIVE
IMPACT ON SOCIETY**



**ACCELERATING
PROGRESS TOWARDS
A NET ZERO WORLD**



**PROVIDING A VALUED
AND TRUSTED SERVICE
FOR CUSTOMERS
AND COMMUNITIES**



NATURE4NETWORK

10179044 (BETA)



KEY ACTIVITIES

Embedding nature based solutions into utility investment planning alongside engineered approaches, ensuring infrastructure delivery enhances the environment while supporting decarbonisation, climate resilience and electrification goals, enabling collaborative landscape scale action across sectors, and shaping regulatory frameworks to better recognise long term environmental, social and operational value.

EXPECTED BENEFITS

The Nature4Network Project is pioneering real-world demonstrators that prove Nature-based-Solutions (NbS) can meet engineering needs while delivering climate resilience, biodiversity gains, and community benefits. With growing momentum and regulatory support, the next phase will trial scalable NbS on live assets, develop funding models, and embed nature into infrastructure planning. By leveraging utility-owned land and aligning with stakeholders – from regulators to local authorities – this initiative will also explore how coordinated, landscape-scale investments can unlock shared value. Nature4Networks will create a blueprint for how utilities can lead the shift to sustainable, collaborative, and future-ready networks.

PROGRESS

As the project is only two months into its five year duration, progress has been made in site selection for two Work Packages and we are on track for the remaining. The sites have been selected are for, WP3 – Sustainable Drainage Systems (SuDS) for flood resilience, and WP4 – Bioswales as alternatives to concrete bunds for oil containment.

N4N has been nominated or mentioned for the following:

- Nominated for Utility Week **Environmental, Social & Governance (ESG) Initiative of the Year**
- Used as a Case Study by UN Global Compact during their conference on NbS use to provide resilience
- The project has also been listed on the 'Renewable Grid Initiatives' website as an example of good practice, providing links to our deliverables. RGI is a unique collaboration of NGOs and TSOs from across Europe engaging in an 'energy transition ecosystem-of-actors'.

PRIMARY STRATEGIC OBJECTIVE



**DELIVERING A SAFE,
RESILIENT AND
RESPONSIVE NETWORK**

COLLABORATORS



SIF FUNDING
£7,892,388

START/END DATE
February 2026 – February 2031

WEBSITE
<https://ssen-innovation.co.uk/sif/nature4networks>

PROJECT MANAGER
Timothy Watts



PATHWAYS TO 2050

10179044 (BETA)



KEY ACTIVITIES

Pathways will prove and deliver a practical, consumer-centred framework for proactive LV network planning. The project will demonstrate that LV reinforcement and flexibility can be planned dynamically and transparently using existing data and automation. It will show how anticipatory planning and consumer co-design can together cut costs, shorten delivery times, and improve public trust. The lessons learned will form the foundation for a GB-wide rollout. The project will deliver four clear outcomes:

- **Validated Framework:** A proven Pathways methodology integrating data ingestion, scorecards, and automated optioneering.
- **Working Tools:** Working prototypes of the Work Plan Optimiser and a demonstrator library of Asset Scorecards and Local Pathways Plans.
- **Co-design Model:** Tested co-design approaches for engaging consumers – including vulnerable and rural groups.
- **Playbook:** A comprehensive “Pathways Playbook” covering architecture, governance, data standards, and BaU transition.

EXPECTED BENEFITS

Future reductions in network operating costs in: System Planning, Delivery Efficiency, Procurement of Flexibility, Emergency Reinforcement Avoidance, and Consumer-Led Delays.

Environmental benefits include carbon reduction by enabling faster uptake of LCTs and reducing fossil-fuel energy and transport consumption. Greater stakeholder

engagement will build public trust through more transparent, two-way planning with communities.

PROGRESS

The Pathways project completed mobilisation at the end of April 2026. The data workstream team are in the process of identifying the data we need to support the business rules that will drive scorecards to identify the right interventions for the network. The Stakeholder engagement team are drafting a plan to identify and engage the stakeholders essential to the success of the project.

PRIMARY STRATEGIC OBJECTIVE



**ACCELERATING
PROGRESS TOWARDS
A NET ZERO WORLD**

COLLABORATORS

FACULTY

CATAPULT
Energy Systems

SIA



IFS Copperleaf



**Hutton
Scientific
Services**



SIF FUNDING

£9,935,676

START/END DATE

February 2026 – May 2029

WEBSITE

<https://ssen-innovation.co.uk/sif/pathways-to-2050>

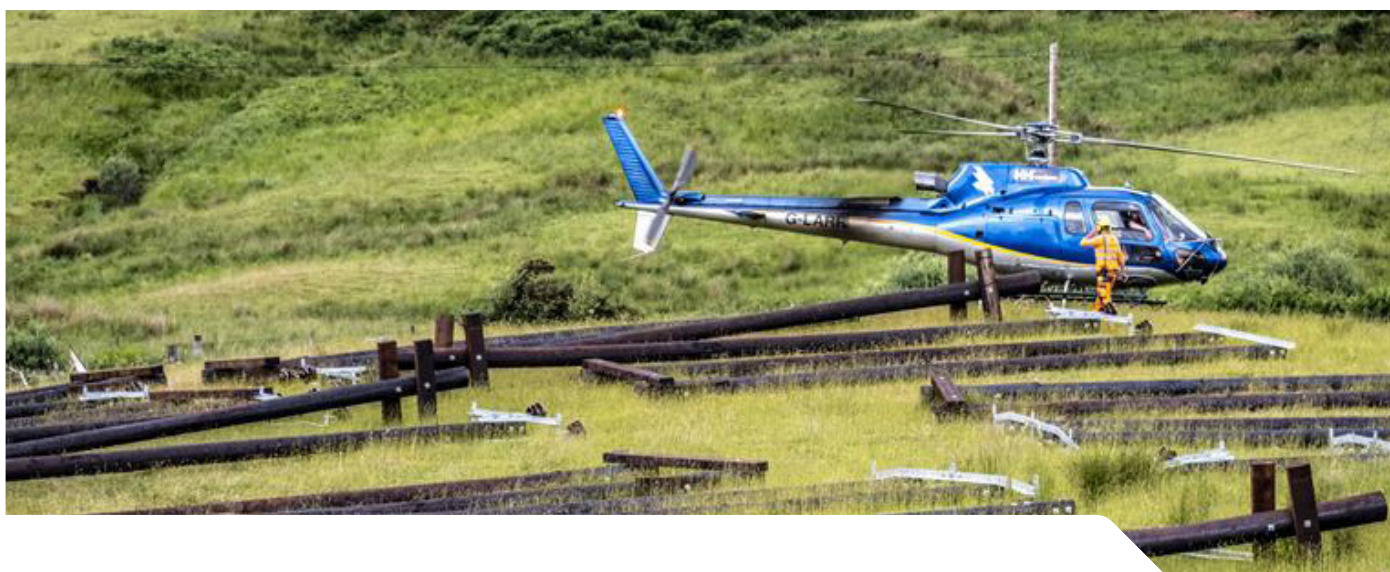
PROJECT MANAGER

Kevin Stewart



CREOS-OUT

10179081 (DISCOVERY)



KEY ACTIVITIES

This project aims to develop a microbial-based biological cleaning solution to break down harmful chemicals present in creosote, a tar-based wood preservative widely used in wooden poles supporting overhead electricity distribution networks. During Discovery phase, the project focuses on identifying, isolating, and purifying enzymes that can degrade harmful creosote chemicals from bacteria and fungi, enabling effective bioremediation of both creosote treated wooden poles and contaminated soils. A literature review will be produced through desktop studies, alongside an assessment of the economic feasibility of the proposed solution and an evaluation of the relevant environmental and safety regulations associated to creosote use.

EXPECTED BENEFITS

This bio detergent solution will reduce risks to the public, operational workforce, and the environment by effectively degrading creosote in wooden poles and contaminated soils. It enables DNOs and public organisations to tackle longstanding creosote related environmental challenges while providing a sustainable alternative to end of life pole incineration. By avoiding the need to incinerate millions of tonnes of wood waste annually through high temperature incineration, the solution can deliver significant cost savings and minimise both the financial and environmental impacts associated with the incineration and transportation of redundant poles.

PROGRESS

The project is progressing as planned with all objectives and deliverables on track. A list of key enzymes involved in degrading creosote contaminants has been examined via

the literature review and preparation of protein expression processes has started by designing and optimising gene sequences. Additionally, engagement with both internal and external stakeholders has been successfully carried out, including other wooden poles related innovation projects across DNOs.

PRIMARY STRATEGIC OBJECTIVE



**MAKING A POSITIVE
IMPACT ON SOCIETY**

COLLABORATORS



University of
Strathclyde
Glasgow



The James
Hutton
Institute

SIF FUNDING

£137,020

START/END DATE

Feb 2026 – May 2026

WEBSITE

<https://ssen-innovation.co.uk/sif/creos-out>

PROJECT MANAGER

Nyi Lin Htet



DIME – DEMAND INSIGHTS FOR METERED ENTERPRISES 10179235 (DISCOVERY)



KEY ACTIVITIES

DIME (Demand Insights for Metered Enterprises) tackles a critical data gap for small and medium-sized enterprises (SMEs) with non-half-hourly metering, particularly in high street areas. These businesses make up 99.8% of the UK's private sector and are vital to achieving decarbonisation goals, yet DSOs lack visibility of their demand profiles. DIME uses alternative data sources and machine learning to infer business types and create accurate demand profiles. This enables better network planning, cost savings through efficient reinforcement, and faster deployment of low-carbon technologies. By preparing for Market-Wide Half-Hourly Settlement (MHHS) rollout, DIME ensures SMEs' full integration into future energy strategies.

EXPECTED BENEFITS

The techniques developed by this project will improve the accuracy of network load models, providing greater certainty of demand on the network in the medium-term. This will allow SSEN (and, in future, other DNOs) to make more efficient reinforcement decisions, saving costs and ultimately reducing bills.

The network models are used to determine when assets are at risk of experiencing a thermal or voltage constraints in future. More accurate data means that less conservatism needs to be built into these decisions – e.g., reinforcement might be delayed, saving costs. If flexibility is procured, these models are used to determine how much needs to be available. Again, a more accurate model may mean that this decision can be less conservative, reducing availability payments.

PROGRESS

DIME is progressing with all deliverables on track. So far, DIME has assessed various alternative data sets to improve the accuracy of SME load profiling, including where these data sets are held and identifying the holders of these data sets. The value case of DIME was evaluated throughout for various benefits and cost saving mechanisms which could be deployed via the project. DIME will then assess what the next steps are after project completion.

PRIMARY STRATEGIC OBJECTIVE



**DELIVERING A SAFE,
RESILIENT AND
RESPONSIVE NETWORK**

COLLABORATORS



SIF FUNDING

£146,426

START/END DATE

Feb 2026 – May 2026

WEBSITE

<https://ssen-innovation.co.uk/sif/dime>

PROJECT MANAGER

Brandon Jones



GROUND S FOR CHANGE

10179005 (DISCOVERY)



KEY ACTIVITIES

Britain’s transition to electric transport and heating is accelerating, but traditional excavation methods increase costs and disrupt communities. By 2035, all new cars will be electric, while heat pump installations could reach 1.5 million per year. Utilities already dig up Britain’s roads four million times annually, creating significant financial and environmental impacts. Grounds for Change will explore precise slot cutting, directional drilling and onsite spoil recycling to reduce waste, speed up reinstatement and deliver quieter, cleaner, less disruptive works for customers and communities.

EXPECTED BENEFITS

Grounds for Change will deliver consumer, environmental and network benefits by reducing reliance on disruptive open-trench streetworks for LV upgrades. By investigating innovative excavation techniques and onsite spoil reuse, the project aims to cut excavation volumes, vehicle movements and carbon emissions, while reducing noise, dust and disruption for residents. Fewer lorry journeys and faster reinstatement will also improve safety and ease congestion. For networks, the project will enable more efficient, publicly acceptable upgrade methods, reducing delays and supporting faster, lower-cost electrification of heat and transport.

PROGRESS

Discovery confirmed that LV excavation challenges are not caused by one single issue and cannot be solved by one single method. The problem spans excavation, cable installation, reinstatement, spoil handling, customer disruption and delivery efficiency.

- Electricity networks remain heavily reliant on traditional open-cut trenching for LV and service-related works.
- Trenchless methods are used in electricity, but adoption is more selective and situational than in sectors such as gas.
- Customer-side works, including gardens, driveways and footways, are often the most sensitive and disruptive.
- The strongest way forward is a toolbox approach, with different methods used for different site conditions and work types.

PRIMARY STRATEGIC OBJECTIVE



COLLABORATORS



SIF FUNDING

£94,125

START/END DATE

January 2026 – April 2026

WEBSITE

<https://ssen-innovation.co.uk/sif/grounds-for-change>

PROJECT MANAGER

Gemma Ennis



VERIFY – VULNERABILITY EVALUATION FOR RESILIENCE INVESTMENT AND FLEXIBILITY 10157283 (BETA)



KEY ACTIVITIES

VERIFY is attempting to improve demographic visibility of all GB households to provide better customer service and inform network investment.

Specific use cases include:

- Identify missing vulnerable households to enhance customer service.
- Identify eligibility for grants and/or incentive schemes for customers.
- Highlight priority assets for Network Investment prioritisation based on likely LCT adoption.
- Highlight domestic flexibility potential based on existing LCT locations.
- Provide evidence case for use of non-consented smart meter consumption data.

EXPECTED BENEFITS

VERIFY will use the best available data, combine and refine it into a usable and scalable format to support networks, consumers, and wider stakeholders by:

- Improving decision making on network investments by understanding the needs of consumers connected, e.g. providing additional assistance to increase participation in flexibility schemes and reduce inequalities
- Supporting consumers to adopt LCTs
- Proactively identifying customers in vulnerable situations to provide additional support and include them on the Priority Services Register (PSR)
- Improved digital inclusion and awareness of smart energy benefits

PROGRESS

We are working towards delivering the pilot system in Aberdeen. The pilot system has been set up and tested with available data with early results expected in Summer 2026.

PRIMARY STRATEGIC OBJECTIVE



**MAKING A POSITIVE
IMPACT ON SOCIETY**

COLLABORATORS



SIF FUNDING

£5,331,569

START/END DATE

September 2025 – 2028

WEBSITE

<https://smarter.energynetworks.org/projects/10157283>

PROJECT MANAGER

Rhys Williams



D2I – DATA TO INSIGHTS

10157301 (ALPHA)



KEY ACTIVITIES

The Data to Insights (D2I) project aimed to improve the value and insights customers gained from Open Data by building and testing use cases to drive a step change in engagement with current and future energy data. There were two main innovative aspects:

1. Remove technical barriers to customer insight journeys from DNO data.
2. Employ state of the art models to understand how to collect, analyse and store data efficiently (including Natural Language Processing, Machine Learning, Explainable Artificial Intelligence and Generative Modelling).

Additionally, it aimed to reveal any data governance barriers that might prevent BaU deployment.

EXPECTED BENEFITS

With further development of the D2I framework and platform, benefits when deployed at BaU were defined as:

- Reduced costs for DNOs through improved data quality, fewer errors, and lower data hosting requirements.
- Fewer speculative connection requests, improving planning efficiency and reducing associated operational costs.
- Better visibility of network capacity, cutting engineering time and helping prevent overload-related outages.
- Lower procurement costs for flexibility services through increased market competition and innovation.
- Increased investor confidence and reduced reliance on specialist consultancies, leading to cost savings and accelerated low-carbon investment.

PROGRESS

This Alpha project has now concluded and examined key factors to help shape the future vision of an efficient, consistent and economically sustainable data strategy, that delivers a curated service to the end user regardless of their data skills.

PRIMARY STRATEGIC OBJECTIVE



**PROVIDING A VALUED
AND TRUSTED SERVICE
FOR CUSTOMERS
AND COMMUNITIES**

COLLABORATORS



University of
Strathclyde
Glasgow

CATAPULT
Energy Systems

CGI

Roadnight Taylor
THE INDEPENDENT SPECIALIST GRID CONSULTANCY

SIF FUNDING

£499,820

START/END DATE

June 2025 – December 2025

WEBSITE

<https://smarter.energynetworks.org/projects/10157301>

PROJECT MANAGER

Fraser MacIntyre



FORTRESS – FLEXIBILITY AND OPTIMISATION FOR RESILIENCE IN ENERGY SYSTEMS 10157199 (DISCOVERY)



KEY ACTIVITIES

FORTRESS (Flexibility and Optimisation for Resilience in Energy Systems) addresses the challenge of decarbonising protected sites, initially focusing on NHS hospitals, while safeguarding critical resilience. As hospitals electrify heat, demand on distribution networks will increase significantly; if treated as wholly inflexible, this risks excessive, uncoordinated network reinforcement and higher costs for consumers.

FORTRESS develops a coordinated approach that enables hospitals to participate in demand-side flexibility without compromising clinical safety or operational continuity. By distinguishing resilient and non-resilient loads and improving data visibility between DNOs and protected sites, FORTRESS allows network risk to be understood, managed and mitigated more effectively.

EXPECTED BENEFITS

FORTRESS delivers consumer and system benefits by enabling protected sites, initially NHS hospitals, to decarbonise heat while maintaining critical resilience.

By improving data visibility and enabling flexibility without compromising clinical safety, FORTRESS allows DNOs to better manage network risk from rising electrified demand. This reduces the need for excessive network reinforcement, lowering costs that would otherwise be passed on to consumers.

At a system level, it transforms large resilience-critical sites from inflexible liabilities into manageable, flexible assets, creating a scalable model applicable to other protected sites such as airports, ports and defence estates.

PROGRESS

Discovery demonstrated flexibility can significantly reduce network investment and improve resilience, but practical implementation requires structured agreements and stakeholder trust. Alpha moves from theory to delivery – piloting modular connection agreements, introducing wargaming to validate resilience under stress, and exploring technical solutions e.g. high-temperature thermal storage. This evolution reflects a shift from conceptual modelling to actionable frameworks that DNOs can deploy at scale.

PRIMARY STRATEGIC OBJECTIVE



**DELIVERING A SAFE,
RESILIENT AND
RESPONSIVE NETWORK**

COLLABORATORS



SIF FUNDING

£146,524

START/END DATE

May 2025 – August 2025

WEBSITE

<https://smarter.energynetworks.org/projects/10157199>

PROJECT MANAGER

Gemma Ennis



FARM – FUTURE AGRICULTURE RESILIENCE MAPPING 10157227 (DISCOVERY)



KEY ACTIVITIES

To achieve clean power by 2030 and Net Zero by 2050, UK food production must move away from fossil fuels. With approximately 209,000 farm holdings in 2023, energy networks must prepare to meet different future rural energy demands driven by greenhouse gas reductions and climate change adaptation. The project aimed to:

1. Support UK food production and security by understanding future energy requirements, transition pathways, and the associated network requirements.
2. Identify clear commercial, policy and planning actions for DNOs, the agricultural sector, and policy makers.

EXPECTED BENEFITS

By improving understanding of decarbonisation impacts and pathways for food production, FARM will help DNOs reinforce networks only where needed, reducing the risk and cost of multiple upgrades while enabling more efficient, lower-cost investment. This project will benefit rural communities by enabling DNOs to accurately forecast and reinforce the network at the scale required for decarbonisation. Food production will have suitable electricity supplies to decarbonise and reduce CO₂ emissions supporting the UK's decarbonisation ambitions.

PROGRESS

During discovery:

- Sought to understand data available to estimate energy use for field operations across a wide range of activities and concluded that we may struggle to validate data for Scottish situations

- Tested the modelling methodology showing that significant decarbonisation could be achieved across agriculture in several scenarios. But the cost of decarbonisation was high
- Defined the FARM solution requirements through needs analysis as well as its core capabilities. The solution would integrate within DFES and SDPs.
- Found that policy overlooks farm level energy needs and weak alignment with agriculture incentives. Agriculture is underserved and requires clearer guidance.

PRIMARY STRATEGIC OBJECTIVE



**ACCELERATING
PROGRESS TOWARDS
A NET ZERO WORLD**

COLLABORATORS



SIF FUNDING
£133,092

START/END DATE
May 2025 – August 2025

WEBSITE
<https://smarter.energynetworks.org/projects/10157227>

PROJECT MANAGER
Cori Critchlow-Watton



3DAR (DYNAMIC, DATA DRIVEN ASSET RATING)

10143133 (DISCOVERY) / 10166301 (ALPHA)



KEY ACTIVITIES

3DAR is a strategic network assessment and planning tool for DNOs to provide ranking of assets. It identifies where to install Dynamic Line Rating (DLR) to deliver the highest-value enhanced ratings, allowing DNOs to leverage DLR at a network planning level to unlock capacity as additional DNOA lever. The Alpha phase identified current and future 3DAR use cases, developed a prototype solution using SSEN data, and created a mock-up of the proposed solution design.

EXPECTED BENEFITS

By improving visibility of where DLR can be deployed most effectively, 3DAR can accelerate new connections and improve the efficiency and timing of reinforcement investment.

We modelled three scenarios:

- **Counterfactual:** A 3-year pilot starts in 2033, with DLR delivering only non-firm benefits (e.g. reduced flexibility, ANM). 7% of the network sees sufficient uplift to apply DLR, where uplift is the additional usable capacity gained on a circuit versus its static (seasonal) rating.
- **Option 1 (Conservative):** DLR delivers non-firm benefits from the pilot and firm benefits from BaU operation in 2031. 23% of the network sees sufficient uplift.
- **Option 2 (Optimistic):** DLR delivers non-firm benefits from the pilot and firm benefits from BaU operation in 2031. 50% of the network sees sufficient uplift.
- **Option 3 (GB Wide):** DLR delivers non-firm benefits from the pilot and firm benefits from BaU operation in 2031, with a GB-wide view applied. It is assumed 20% of the GB network sees uplift. Counterfactual spend and proportion of OHLs is scaled to the GB network.

PROGRESS

During Alpha:

- Understand where 3DAR fits within planning process as a strategic planning and assessment tool.
- Developed use cases for testing
 - Prioritise lines for DLR as a network intervention
 - Identify where DLR can accelerate connections
- Defined the functional requirements of the tool based on the needs of system planners
- Define the key prioritisation criteria for ranking overhead circuits on their suitability for DLR
- Comment on applicability to other assets

PRIMARY STRATEGIC OBJECTIVE



**ACCELERATING
PROGRESS TOWARDS
A NET ZERO WORLD**

COLLABORATORS

SIAPARTNERS  **IMPERIAL**

SIF FUNDING

£108,352 (Discovery)
£499,780 (Alpha)

START/END DATE

February 2025 – May 2025
October 2025 – May 2026 (Alpha)

WEBSITE

<https://smarter.energynetworks.org/projects/10143133>
<https://smarter.energynetworks.org/projects/10166301>

PROJECT MANAGER

Cori Critchlow-Watton



I-LAD (INNOVATING LOSSES ANALYSIS AND DETECTION) 10143004 (DISCOVERY) / 10166501 (ALPHA)



KEY ACTIVITIES

The Innovating Losses Analysis and Detection (I-LAD) project is investigating how non technical losses (NTLs) are identified and reduced. Traditionally, NTLs have been difficult to detect, relying on manual, time-consuming processes. During its initial phase, I-LAD demonstrated that combining data from electricity networks, energy suppliers and third party sources can significantly enhance the accuracy and reliability of NTL identification.

During Alpha, I LAD has focused on developing smart, data led tools to enable more accurate detection of NTLs, support better targeted interventions, and strengthen collaboration across the energy sector all under a robust, GDPR compliant governance framework.

EXPECTED BENEFITS

I-LAD is expected to deliver more efficient loss reduction, leading to lower system costs, fairer outcomes for consumers, and measurable emissions reductions. The tools and methodologies developed through the project are being designed to be scalable and replicable across GB – including DNOs, energy suppliers, RECCo, and law enforcement – with actionable insights. These stakeholders form part of an active working group we have engaged throughout the Alpha phase, helping to enable more coordinated and effective cross industry action on non technical losses.

PROGRESS

The Alpha phase has demonstrated early feasibility by accurately identifying confirmed cases of energy theft linked to cannabis farms within a defined trial area. Collaboration with our active working group has been

central to shaping a scalable, replicable service that delivers actionable insights, and we intend to continue this engagement as the project progresses.

Looking ahead, we plan to apply for a Beta phase to expand geographic coverage, enhance datasets, and further validate our analytical approaches. We intend to explore how these insights can enable more effective, coordinated interventions to protect consumers and reduce non technical losses, while incorporating relevant learnings from the DIME Discovery project where methodologies align.

PRIMARY STRATEGIC OBJECTIVE



DELIVERING A SAFE, RESILIENT AND RESPONSIVE NETWORK

COLLABORATORS



SIF FUNDING

£149,167 (Discovery)
£499,312 (Alpha)

START/END DATE

February 2025 – August 2025
November 2025 – May 2026

WEBSITE

<https://smarter.energynetworks.org/projects/10143004>
<https://smarter.energynetworks.org/projects/10166501>

PROJECT MANAGER

Divante Malcolm



FASTTRACK

10142974 (DISCOVERY) / 10166254 (ALPHA)



KEY ACTIVITIES

FastTrack is designed to improve how DNOs assess and manage the cumulative impact of connection requests on the network.

With rapidly growing connection queues, existing static and manual planning approaches are no longer sufficient to understand evolving demand, headroom and investment needs. FastTrack simulates how individual and grouped connection requests aggregate from primary substations through to the Grid Supply Point, using probabilistic forecasting and simulation techniques.

EXPECTED BENEFITS

By providing a probabilistic, system level view of how connection requests aggregate from substations to the Grid Supply Point, FastTrack supports faster acceptance of viable connections.

Improved visibility of the evolving connection queue allows network interventions to be better targeted and reprioritised as circumstances change, reducing over or under investment and making more efficient use of existing network capacity. This in turn lowers long term network operating costs, delivering value for consumers through reduced reinforcement spend.

More timely connection of demand side assets enables earlier access to LCTs, supporting net zero targets and wider economic growth through accelerated electrification.

PROGRESS

The Alpha phase validated the technical feasibility of the FastTrack solution, delivering a probabilistic load model with attrition achieving 75.6% classification accuracy,

user-tested wireframes, and a demo tool. A Bicester North BSP case study demonstrated the tool's potential in identifying available headroom beyond conservative worst-case scenarios. The Beta phase will focus on live data integration, expanding geographic scope, extending forecast timelines, and developing additional features for deployment into SSEN's environment.

PRIMARY STRATEGIC OBJECTIVE



**ACCELERATING
PROGRESS TOWARDS
A NET ZERO WORLD**

COLLABORATOR

FACULTY

SIF FUNDING

£143,033 (Discovery)
£499,498 (Alpha)

START/END DATE

February 2025 – May 2025
October 2025 – April 2026

WEBSITE

<https://smarter.energynetworks.org/projects/10142974>
<https://smarter.energynetworks.org/projects/10166254>

PROJECT MANAGER

Gemma Ennis



EQUAL LCT

10145484 (ALPHA)



KEY ACTIVITIES

EqualLCT Phase 2 focussed on two innovative areas:

1. Determining the network impact and value, of an enduring peak demand reduction from Energy Efficiency (EE) and Heat Pumps (HPs). By valuing this long-term benefit (beyond a single price control) and sharing it with the LCT supply chain, the investment case for HPs would be more attractive and accelerate a roll out across a broader consumer base.
2. Demonstrating the use case of enhancing existing mapping tools to better share network data with the LCT/EE supply chain. We will overlay additional data on customer segmentation, housing stock and the long-term network value of permanent peak reduction (identified in 1). These new data sources would help energy suppliers and the LCT supply chain to more efficiently target their propositions.

EXPECTED BENEFITS

The project estimated that the overall benefits in the SSEN area could be over £200m, including £35 million of network savings between 2028 and 2050.

PROGRESS

This project was completed in August 2025. It demonstrated that the proposal to improve the energy efficiency of homes in order to install smaller heat pumps could have a material impact in deferring network reinforcement. This is relevant for areas where it is forecast that heat demand growth would be the main cause of constraints developing. The project developed a strong proposal, an end to end consumer journey including coordination of multiple parties and after care for

consumers. It also created a governance structure for how consumers providing such a service to the network could receive flexibility payments. It also built a proof of concept of how a mapping tool could be developed for installers to see which homes are most likely to uptake heat pumps to help with accelerating the roll out of these LCTs.

PRIMARY STRATEGIC OBJECTIVE



**MAKING A POSITIVE
IMPACT ON SOCIETY**

COLLABORATORS



SIF FUNDING

£449,687

START/END DATE

February 2025 – August 2025

WEBSITE

<https://smarter.energynetworks.org/projects/10145484>

PROJECT MANAGER

Ross Bibby



RIDES (RURAL INDUSTRIAL DECARBONISATION SUPPORT.) 10143030 (DISCOVERY)



KEY ACTIVITIES

As rural industries decarbonise, they may find this transition challenging. This is where Network operators can provide valuable support to help them make the right decisions. Rural networks are often characterised by radial circuits with limited capacity. These circuits are harder and more expensive to reinforce. RIDES will develop a tool to show rural industries their potential decarbonisation pathways. It will also help network companies to understand what their future investment needs will be, allowing efficient, coordinated investment by network companies and their customers. RIDES will smooth and accelerate the path to net zero for rural industry.

EXPECTED BENEFITS

More accurate and timely forecasts of future load on networks depend on a range of variables from economics, technology and societal trends, legislation and international markets. RIDES will reduce the uncertainty associated with the decarbonisation choices that industrial customers will make. Accurate forecasting translates into driving benefits through:

- Informed deferment of capital investments
- Right sizing of reinforcements making "build once" a more realistic option
- Greater certainty of forecast use of flexibility services
- Longer deferment because of greater certainty

PROGRESS

RIDES successfully delivered all Discovery phase objectives. The project identified, mapped, and categorised 137 key industrial sites across northern Scotland, and engaged 26 individuals through in-depth interviews with 15 key

stakeholders. It reviewed 18 relevant policy and regulatory papers, outlining a strategy to support safe progress. Eight major barriers to rural industrial decarbonisation were documented for future action, alongside the creation of five rural industrial archetypes and their associated challenges. A conceptual design of the RIDES tool was developed, with its core functionality defined. A cost-benefit analysis indicated that RIDES could unlock up to £470 million in benefits by enabling strategic network reinforcement.

PRIMARY STRATEGIC OBJECTIVE



COLLABORATORS



SIF FUNDING

£110,655

START/END DATE

February 2025 – May 2025

WEBSITE

<https://smarter.energynetworks.org/projects/10143030>

PROJECT MANAGER

Simon O'Loughlin



SIF COLLABORATION PROJECTS LED BY OTHER LICENCEES

Below is a list of other SIF projects that SSEN is participating in. The projects are led by our collaboration partners; further details of those projects can be found via the listed project links or in the relevant annual reports from each Lead Party.

Project number	Project title	Lead party
10070764	Crowdflex - Beta	NESO
10061710	Predict4Resilience (P4R) – Beta	SPEN-T
NPG_SIF_013	MultiResilience Project – Enhancing Energy Network Resilience	NPG – Northern Powergrid (Northeast) Limited



FURTHER INFORMATION

The Innovation Strategy for SEPD and SHEPD can be found at the link below:

SSEN Distribution Innovation Strategy

<https://ssen-innovation.co.uk/innovation-strategy>

For the most up to date information on each project, 'search projects' on the:

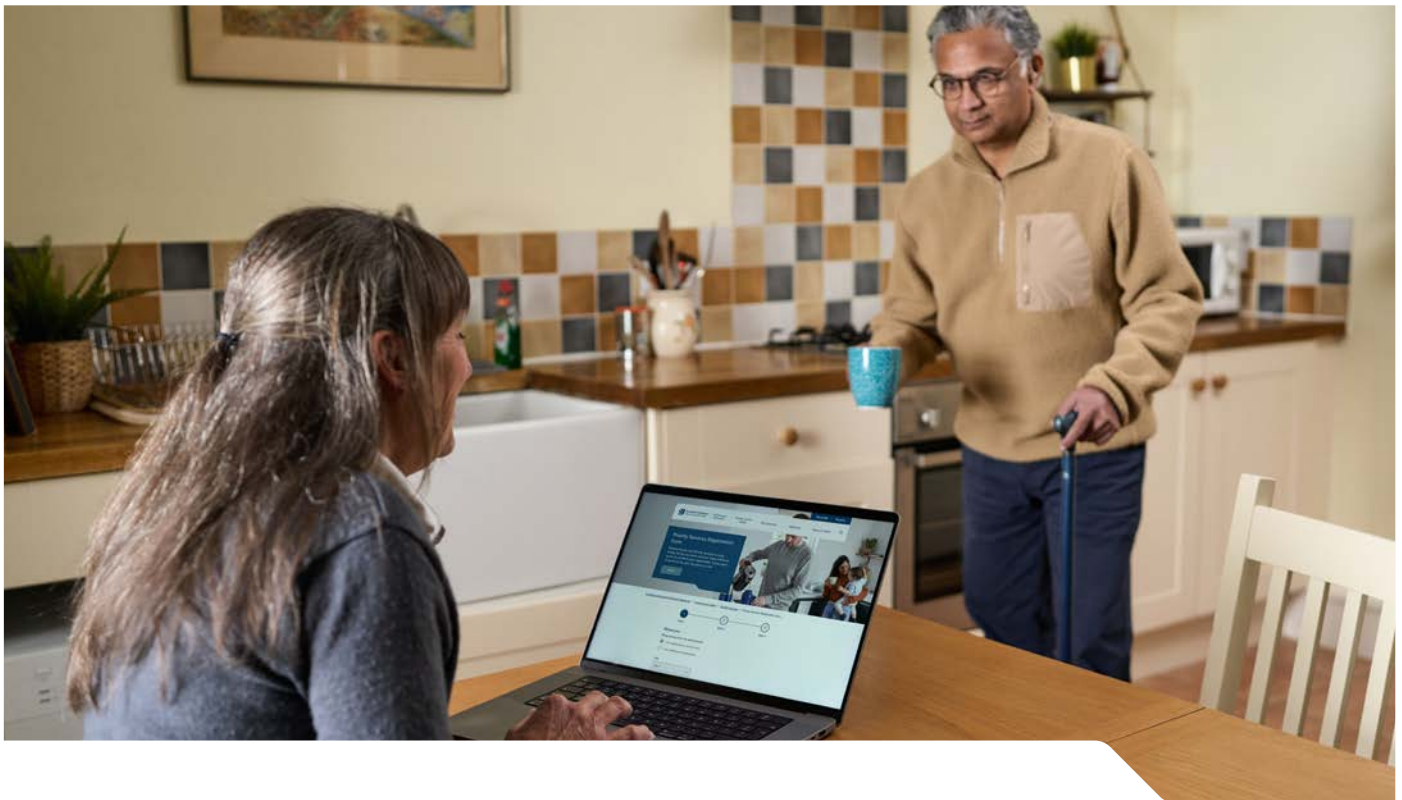
Smarter Networks Portal – SSEN Projects

<https://smarter.energynetworks.org>

Further details of all the NIA projects summarised above can be found in the:

2026 Electricity Networks Innovation Strategy report

<https://smarter.energynetworks.org/ena-electricity-networks-innovation-strategy-2026>





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