

Ofgem Strategic Innovation Fund (SIF)

Project Directory



Innovate UK's work to deliver the Ofgem funded Strategic Innovation Fund (SIF)

Foreword



The Strategic Innovation Fund (SIF) is the UK's largest energy innovation fund, accelerating the country's transition to net zero at the lowest cost to consumers while making the UK the best place for energy businesses to grow and scale. Since 2021, SIF has supported over 234 transformative projects, driving innovation to ensure our energy networks are net zero friendly, and can enable the transition to low carbon heating, transport and new renewable energy generation that delivers a cleaner, more secure and affordable energy system for everyone.

We are committed to ensuring the learning from these projects is shared widely so that every energy network, every innovator, and every consumer, can clearly see what has been funded before, what is being funded now, learn from this, build on it and reap the rewards. We have heard from you that finding information about the projects we fund is not always easy. That is why we are launching this project directory as a clear, categorised overview of every live and completed SIF project to help you explore them easily.

SIF projects progress through three phases:

- **Discovery (up to 5 months and up to £150k)**
Feasibility studies.
- **Alpha (up to 8 months and up to £500k)**
Proof of concept and detailed design.
- **Beta (up to 5 years and £10m +)**
Large-scale demonstrations aimed at commercial deployment.

Some projects go straight to later phases if they are ready. Each project starts off with an overview video and concludes with public 'show and tell' event, ensuring that learnings are shared openly.

We have grouped the SIF portfolio into seven key themes, to help inform the future of our energy system and help you learn more about what's being done now in each thematic area. This directory will be updated three times a year with the latest projects, and for a deeper dive, don't miss our [2024 Annual Report](#).

We hope you find this resource useful. Together we can turn innovation into action and make the UK a global leader in energy system decarbonisation!

Jodie Giles

Deputy Director, Ofgem Strategic Innovation Fund at Innovate UK

About the Strategic Innovation Fund (SIF)

Decarbonising Great Britain's energy networks is an urgent and monumental challenge, central to the government's ambition of achieving net zero greenhouse gas emissions by 2050. This includes a commitment to zero-carbon electricity by 2030, driven by initiatives like Mission Control and the National Energy System Operator's Clean Power 2030 report. With energy networks responsible for large emissions, their transformation is vital to support to net zero ambitions. Innovation is critical to ensuring these networks can meet growing demands efficiently and affordably, while also positioning the UK as a global leader in clean energy technology.

To support this, Ofgem established the Strategic Innovation Fund (SIF) in 2021, offering more than £450m in funding over five years to drive transformative energy network projects. Projects can progress through three funding phases. The Discovery phase supports short (up to 5 months) feasibility projects; the Alpha phase funds longer (up to 8 months) proof-of-concept projects and detailed design; and the Beta phase is for a small number of large, collaborative demonstrators lasting up to five years, focused on scaling solutions for commercial deployment. Each phase offers increasing levels of funding, with fewer projects progressing, ensuring only the most promising innovations receive the support needed to transition into business-as-usual practices. All projects, regardless of phase, contribute valuable insights to the broader goal of decarbonising energy networks.

Facilitating knowledge transfer is a key principle of the SIF. Since projects are ultimately funded by consumers, it is essential that the learning generated is disseminated and utilised effectively, ensuring all licensees—and therefore all consumers—can benefit. This document serves as a central repository for all SIF projects and is updated at least three times per year. We have listed the most recent phase for each project. For example, if a project has been funded at Discovery, Alpha and Beta, only the Beta phase will be listed here. Projects are listed alphabetically and categorised under the following themes:



Accelerating connections for a net zero energy transition



Harnessing flexibility for a resilient energy future



Advancing whole system strategic planning for future networks



Enabling a decentralised and just energy transition



Advancing system resilience, strength and robustness



Supporting the decarbonisation of heat and transport



Enabling digitalisation and repurposing of the gas network



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A Holistic Hydrogen Approach to Heavy Duty Transport (H2H)

Project Lead: SP Transmission

Current phase: Ended

Exploring different options for decarbonising the rail system and assessing network demand based on different scenarios.

Video: <https://youtu.be/9LebdruGGNo?si=FrFL090vzBCImkv0>

SIF funding: £401,864

Project partners

- Network Rail
- Ricardo Energy and Environment
- Ricardo Rail
- Leeds University
- Scottish Power



Advanced Low Carbon Hydrogen and Energy Management (ALCHEM)

Project Lead: Wales & West Utilities

Current phase: Ended

Aiming to reduce the cost of green hydrogen by investigating new technology which uses liquid waste biomass to produce green hydrogen.

Video: https://youtu.be/KqvQxr1QIWY?si=XtZHSULtuv_P_aSz

SIF funding: £87,436

Project partners

- KI Hydrogen Ltd.
- Hynamics UK Ltd.



AI opportunities for consumer centric engagement

Project lead: National Gas

Current phase: Discovery

Aims to develop scalable, AI-driven public engagement tools like multilingual chatbots and gamified education to build trust, reduce opposition, and accelerate net zero energy infrastructure delivery.

Video: <https://youtu.be/8JUhOsOBcFY?si=ko4SrC6wQzaF4TAN>

SIF Funding award: £149,837

Project partners:

- Centre for energy equality
- National Grid
- PA Consulting services



Alt Pipe

Project Lead: National Gas Transmission

Current phase: Ended

Identifying decommissioned elements of redundant pipework on the transmission system which are unlikely to be used for refurbishment or wider repurposing of the core network. Exploring repurposing these for alternative uses including the storage and/or transmission of electrical energy, heat, fuels, water and data.

Video: <https://youtu.be/pRmsebyHUBk?si=UDkvJGp3W06PRcm8>

SIF funding: £149,773

Project partners

- EA Technology
- Ramoll UK
- Lane Clark & Peacock



Artificial Forecasting

Project Lead: Northern Powergrid

Current phase: Beta

Building innovative AI solutions to expand load forecasting capability at primary and secondary substations. This will optimise flexibility procurement and enable Distribution System Operator functions across the sector.

Video: <https://youtu.be/YoPKzveDI9I?si=IfIPoeaQGHv1amYz>

SIF funding: 3,298,086

Project partners

- Faculty Science
- EV Dot Energy
- Oaktree Power



Assessment of Superconducting Technologies for Standards Development

Project Lead: National Grid Electricity Transmission

Current phase: Ended

Investigating and outlining the operational requirements, technical risks, and next steps in overcoming these barriers for use of superconducting technologies on the GB grid.

SIF funding: £443,086

Project partners

- Frazer-Nash Consultancy Ltd.
- The University of Manchester
- SuperNode Ltd.
- University of Strathclyde
- VEIR



Asset Reuse and Recovery Collaboration (ARRC)

Project Lead: SP Transmission

Current phase: Ended

Investigating the applicability of different methodologies and techniques to extend asset life using circular economy principles.

Video: <https://youtu.be/8pCd9ChAiKY?si=Zxk9TEQGgb7jlp2E>

SIF funding: £75,963

Project partners

- SP Distribution PLC
- SP Renewables
- Scottish and Southern Energy Power Distribution Ltd.
- Frazer-Nash Consultancy Ltd.
- Network Rail Ltd.
- BEAMA Ltd.
- Guidehouse Europe
- National Grid Electricity Transmission PLC



B-Linepack+

Project Lead: National Gas Transmission

Current phase: Alpha

Linepack flexibility is key for Gas Transmission to provide system resilience by management of swings within operational limits. Embedded resilience systems, in the form of lined rock shafts, are being investigated to supplement loss in linepack capability.

SIF funding: £498,381

Project partners

- University of Edinburgh
- Premtech
- Guidehouse Europe



Balancer

Project Lead: UK Power Networks

Current phase: Ended

Exploring innovative new business models which utilise front of the meter, integrated community batteries at the grid edge resulting in benefits for both networks and customers.

Video: https://youtu.be/5e2RTGodi3k?si=X5EebCgtjEJTPz_v

SIF funding: £149,557

Project partners

- Centre for Sustainable Energy
- EcoJoule Energy Pty
- Frontier Economics Ltd



CarbonFlex

Project Lead: UK Power Networks

Current phase: Ended

Demonstrating how socially inclusive demand side flexibility can be harnessed using algorithms that are coupled with smart controls in multi occupancy buildings.

Video: <https://www.youtube.com/watch?v=bL1jysNfsCU>

SIF funding: £129,727

Project partners

- Peer Carbon Ltd.
- Connected Response Ltd.
- E Unlocked Ltd.
- Royal Borough of Kensington & Chelsea



BioCapMap

Project lead: Cadent Gas

Current phase: Discovery

Developing a digital, self-service tool that helps developers identify optimal gas network connection points, the first of kind to solve this gap in the connections planning process.

Video: <https://youtu.be/OXnEkko0TTw>

SIF funding: £145,108

Project partners

- Bohr
- Energy Systems Catapult



Calfacto Latent Energy

Project Lead: Southern Gas Networks

Current phase: Ended

Investigating how hybrid heat pumps perform when coupled with thermal stores through an innovative heat exchanger design.

Video: https://www.youtube.com/watch?v=q7hyMbC_nHk

SIF funding: £82,469

Project partners

- SGN Commercial Services Ltd.
- Glasgow City Council
- Imperial College London
- University of Birmingham
- Vital Energi Solutions Ltd.
- West Dunbartonshire Council



Carbon and Hydrogen Transportation to SAF Production Facilities

Project Lead: National Gas Transmission

Current phase: Ended

Strategising effective transport and storage of sustainable aviation fuels through creation of a planning tool that takes into account gas network and hydrogen backbones in development.

Video: <https://www.youtube.com/watch?v=rCcpzs97NZ8>

SIF funding: £118,707

Project partners

• A&G Jefferson Ltd.	• Premtech Ltd.
• Airbus Operations Ltd.	• Rolls-Royce PLC
• Wales & West Utilities Ltd.	
• University of Bath	



Carnot Gas Plant

Project Lead: Southern Gas Networks

Current phase: Ended

Technical design and commercial modelling for large scale energy storage and high efficiency gas use via a Carnot Gas Plant.

Video: https://www.youtube.com/watch?v=Kdi5DX2X2_w

SIF funding: £93,952

Project partners

- SGN Commercial Services Ltd.
- Glasgow City Council
- Imperial College London
- University of Birmingham
- Vital Energi Solutions Ltd.
- West Dunbartonshire Council



Clean Green

Project lead: Cadent Gas

Current phase: Discovery

Identifying alternative green enrichment gases to fossil Propane and considering how improved measurement technology can inform network intelligence to optimise Biomethane injection.

Video: <https://youtu.be/ly6pxdaHWIw>



Collaborate:

Project lead: Cadent Gas

Current Phase: Ended

Analysing data, engaging with stakeholders, and learning from existing schemes to enable utility companies and highway authorities to better coordinate roadworks to reduce disruption, carbon emissions, and costs.

SIF funding: £143,682

Project partners

- National Grid
- EA Technology



CommsConnect

Project Lead: UK Power Networks

Current phase: Ended

Creating a digital tool that aims to reduce the interdependency of communication and power networks through increase information exchange and interoperability between distribution network operators and mobile networks operators.

Video: https://youtu.be/kEJ8jnmFlgk?si=Hmf4_Zg-F0N9k8Y7

SIF funding: £403,382

Project partners

- University of Strathclyde
- Nokia UK Ltd.
- Scottish Hydro Electric Transmission PLC



Community Led Integrated Planning (CLIP)

Project Lead: UK Power Networks

Current phase: Ended

Using community led digital planning to address gaps in local energy planning to align community readiness with DNO asset planning.

SIF funding: £122,833

Project partners

- Buro Happold Ltd.
- Community Energy South Ltd.



Conductor

Project Lead: UK Power Networks (Operations)

Current phase: Ended

Traction power is typically very peaky, and capacity is not optimally utilised. Installing battery storage facilities and unlocking connection agreements at traction Bulk Supply Points (BSPs) could shift rail energy demand away from peak periods, provide capacity and support regional balancing of supply and demand.

SIF funding: £138,335

Project partners

- Energy systems catapult
- Riding Sunbeams Apollo



Connectrolyser

Project Lead: UK Power Networks

Current phase: Ended

Exploring different flexible operation models for powering electrolyzers with the aim to assist in the production of green hydrogen and optimising the energy system.

Video: <https://www.youtube.com/watch?v=VX1OUV1ULgE>

SIF funding: £498,483

Project partners

- National Gas Transmission PLC
- Hydrogenus Group Ltd.



CoolDown

Project Lead: Electricity North West

Current phase: Beta

Will explore if space cooling can be harnessed for flexibility through trials of space cooling demand response across both commercial and residential archetypes. It will also develop a space cooling forecasting tool for DNOs to feed into network planning, which will reduce reinforcement requirements and optimise value for consumers.

Video: https://youtu.be/bZj7Hg0q1zl?si=0Lmh5_BRIOOpV8ZZ

SIF funding: £4,901,162

Project partners

- Oaktree power
- Ricardo-AEA
- Impact research
- National Grid electricity distribution
- Guidehouse Europe
- Equiwatt
- UCL Consultants
- Computational Modelling Cambridge Ltd.
- Science and Technology Facilities Council
- Connected Places Catapult
- SP Manweb PLC
- National Grid Electricity System Operator Ltd.
- National Gas Transmission PLC



CReDo+ Climate Resilience Demonstrator (Extension to New Climate Risks)

Project Lead: UK Power Networks

Current phase: Beta

Develops a digital twin and data-sharing platform that boosts infrastructure resilience, enhancing planning and reporting against extreme weather risks.

SIF funding: £9,806,929

Project partners

- University of Edinburgh
- Cadent Gas Ltd.
- Computational Modelling Cambridge Ltd.
- Science and Technology Facilities Council
- Connected Places Catapult
- SP Manweb PLC
- National Grid Electricity System Operator Ltd.
- National Gas Transmission PLC



Creos-Out

Project lead: Scottish and Southern Electricity Networks

Current phase: Discovery

Exploring the natural enzymatic capabilities of certain microbes to break down creosote contaminants. Offering an eco-friendly alternative to costly incineration, for safer reuse of infrastructure to support sustainable grid expansion and reduce public and environmental risks.

Video: <https://youtu.be/HLRDNsBdxAQ>

SIF funding: £137,020

Project partners

- University of Strathclyde
- James Hutton



Cross Vector Hub

Project Lead: Northern Powergrid

Current phase: Ended

Helping to coordinate multiple technology areas including renewable generation, battery storage, power to gas and gas to power, gas storage through the implementation of a multi vector (gas and electricity) energy hub that optimises devices to increase network resilience and hosting capacity.

Video: https://youtu.be/b0iFVV1ACMw?si=lecy0iB05B-2kXi_

SIF funding: £380,106

Project partners

- Northern Gas Networks Ltd.
- Smarter Grid Solutions Ltd.



Crowdflex

Project Lead: NESO

Current phase: Beta

Through trials with domestic customers to establish models that will demonstrate domestic flexibility as a reliable grid balancing resource.

Video: <https://youtu.be/lAPi7sdT1Us?si=Wng4APut2j5p1cN>

SIF funding: £18,610,355

Project partners

- Element Energy Ltd.
- National Grid Electricity Distribution PLC
- Ohme Operations UK Ltd.
- Amazon Web Services
- OVO Energy Ltd.
- Southern Electric Power Distribution PLC
- Centre for Net Zero Ltd.



Demand Insights for Metered Enterprises (DIME)

Project lead: Scottish and Southern Electricity Networks

Current phase: Discovery

Using alternative data sources and machine learning to infer business types and create accurate demand profiles to support DSOs in better network planning and cost savings through efficient reinforcement, and faster deployment of low-carbon technologies.

Video: <https://youtu.be/B5u4CDsTV9I>

SIF funding: £146,426

Project partners

- Frontier Economics
- Southampton City Council
- CGI IT UK



Data Mate

Project Lead: UK Power Networks

Current phase: Ended

Using data obtained from customers that have installed low carbon technologies to better understand the impacts of voltage limits on the grid.

Video: <https://www.youtube.com/watch?v=ddNHZKLx4AQ>

SIF funding: £114,547

Project partners

- Sia Partners UK PLC



Data to Insights (D2I)

Project Lead: Scottish Hydro Electric Power Distribution

Current phase: Alpha

Improving the value and insight customers gain from our Open Data. Building and testing use cases to trigger a step change in the engagement with present and future energy data.

SIF funding: £499,820

Project partners

- University of Strathclyde
- CGI IT UK
- Energy Systems Catapult
- Roadnight Taylor



D-Suite

Project Lead: SP Manweb

Current phase: Beta

Demonstrates power electronic hardware that corrects phase imbalances, optimises feeder voltage, and enhances grid stability through a digital tool.

SIF funding: £8,065,746

Project partners

- Newcastle University
- UK Power Networks (operations) Ltd.
- Integrated Powertech Ltd.



Digi-GIFT

Project Lead: SP Transmission

Current phase: Ended

Investigating how standardisation of data sets could enhance cyber security and operability.

Video: https://youtu.be/OcZ05qJViZ0?si=hh5f_a5RIWRXmT2K

SIF funding: £136,236

Project partners

- National Grid TO
- University of Manchester
- SP Distribution PLC



Digital Decommissioning of Large-Scale Equipment

Project Lead: National Gas Transmission

Current phase: Ended

Managing decommissioning through the implementation of an AI tool to increase the accuracy of cost estimation, reduce carbon emissions, identify re-use potential, and lower the overall time taken to decommission.

Video: <https://youtu.be/2fByVCQIDQE?si=eTbqwfy64Thzybcl>

SIF funding: £104,849

Project partners

- Genesis Oil & Gas Consultants



Digital Inspector

Project Lead: Cadent Gas

Current phase: Ended

Creating a digital system for monitoring and managing welding in gas pipes.

Video: https://youtu.be/_OHf0b6ddNY?si=noNUSoWsP9fvq0fz

SIF funding: £309,790

Project partners

- United Living Group Ltd.
- National Gas Transmission PLC
- Triton Electronics Ltd.
- TWI Ltd.



Digital Platform for Leakage Analytics (DPLA)

Project Lead: Cadent Gas

Current phase: Beta

Data analytics and models to identify and locate gas leaks in the gas distribution network.

Video: <https://youtu.be/pRg-C4ltOWE?si=yxxy1JGDBC1chH8k>

SIF funding: £9,496,476

Project partners

- Northern Gas Networks Ltd.
- Wales & West Utilities Ltd.
- National Gas Transmission PLC
- Southern Gas Networks PLC
- Guidehouse Europe Ltd.



Digital Twin - Exploring the societal, operational, and cross industry whole system benefits on the Gas Distribution Network

Project Lead: Southern Gas Networks

Current phase: Ended

Creating a digital twin of the gas distribution system.

Video: https://www.youtube.com/watch?v=XwpFEg_zrkQ

SIF funding: £119,127

Project partners

- Amazon Web Services Ltd.
- National Grid Gas Transmission
- IBM UK Ltd.



Digital Twins - Exploring the commercial, societal and operational benefits on green hydrogen projects

Project Lead: Southern Gas Networks

Current phase: Ended

Will explore the commercial, societal and operational benefits that could be derived from the deployment of a digital twin on a green hydrogen use case.

Video: https://youtu.be/eUUJBVWt0Z8?si=0EsnGAXh2_RAaX36

SIF funding: £124,265

Project partners

- DNV Services UK Ltd.
- Amazon Web Services Ltd.
- National Gas Transmission



Distribution Network Information Modelling (DNIM)

Project Lead: Southern Gas Networks

Current phase: Ended

Investigating an autonomous robotic system known as DNIM that can traverse within SGNs natural gas infrastructure and accurately map the network.

Video: <https://youtu.be/K9VNX0X5joA?si=1bLDpNYbhgw6cJkl>

SIF funding: £2

Project partners

- ULC Technologies LLC



Diversified Flexible Queue Management

Project Lead: Northern Powergrid

Current phase: Ended

Exploring the extent to which diversity and flexibility data on actual network capacity can enable faster connections, including for those with innovative approaches that could be deployed to manage constraints.

Video: <https://youtu.be/fXYm8km9R6c?si=QDy7f64T-IK-q3MV>

SIF funding: £147,151

Project partners

- National Grid Electricity System Operator Ltd.
- WSP UK Ltd.



Dynamic, Data Driven Asset Rating (3DAR)

Project Lead: Scottish Hydro Electric Power

Current phase: Alpha

Developing a digital tool to help electricity networks unlock extra capacity from overhead lines by using weather and data insights, speeding up new connections and reducing the need for costly upgrades.

Video: <https://youtu.be/s1slegj7Puc?si=7Xpl2xKzs1sieADu>

SIF funding: £499,780

Project partners

- Imperial College London
- SIA Partners



Dynamic Networks

Project Lead: Scottish and Southern Energy

Distribution

Current phase: Ended

Developing technical, regulatory and commercial models to enable implementation of connections solutions for dynamically managed demand schemes, that can connect increasing LCT demands in constrained areas within network limits.

Video: <https://youtu.be/82qCWnrXYac?si=ORRjPzMp1dusah0Z>

SIF funding: £139,273

Project partners

- E.ON Energy Solutions Ltd.
- Baringa Partners LLP



Electric Thanes

Project Lead: UK Power Networks

Current phase: Ended

Understanding how the shift to a decarbonised Thames will impact on the network, including exploration of boat to grid technologies and potentially replicable whole system planning for water ways.

Video: <https://youtu.be/LFaPYoaBDIk?si=zCDY0QSW9UWQtKEX>

SIF funding: £499,643

Project partners

- Marine Zero Ltd.
- Lane Clark & Peacock LLP
- Port of London Authority
- EV Dot Energy Ltd.



Electrolyser Improvements Driven by Waste Heat Recovery

Project Lead: National Grid Gas

Current phase: Ended

Looking to improve the efficiency of green hydrogen production utilising waste heat produced by the high-pressure gas network.

Video: <https://youtu.be/H9RX6I3hinw?si=9pRbZ23Wn5D99-6A>

SIF funding: £95,714

Project partners

- Alfa Laval Aalborg OY
- Anglian Water Services Ltd.
- Cardiff University
- Ceres Power Ltd.
- UK Power Networks (Operation) Ltd.
- Hydrogenus Ltd.



EN-twin-e

Project Lead: SP Transmission

Current phase: Ended

Creating a digital twin of the distribution network to provide a service to the system operator that will aid in decision making and balancing the grid.

Video: <https://youtu.be/unCTZLY8WA?si=8RETfyStUpaad8UG>

SIF funding: £143,480

Project partners

- University of Strathclyde
- Digital Catapult
- National Grid Electricity System Operator



EqualLCT

Project Lead: Scottish and Southern Electricity Networks

Current phase: Ended

Accelerating the roll out of heat pumps combined alongside energy efficiency and flexibility products. Ensuring that peak heat demand is reduced thereby reducing the levels of network reinforcement needed.

Video: <https://youtu.be/8dqmTm2xUvo>

SIF funding: £449,687

Project partners

- Baringa Partners
- Smart Metering Systems



Equiflex

Project Lead: SP Distribution

Current phase: Ended

Exploring barriers to vulnerable and disadvantaged consumers participating in flexibility markets to build a tool kit to help enable wider participation.

Video: <https://youtu.be/gc7ufd1g1qc?si=J3kuawsN1h9N7V31>

SIF funding: £424,011

Project partners

- Energy Action Scotland
- University of the West of Scotland
- Scottish Power Energy Retail Ltd.
- Frazer-Nash Consultancy Ltd.
- East Ayrshire council



EV: Critical factors for the adoption of smart homes for energy efficiency and implications for consumers and providers

Project Lead: Northern Gas Networks

Current phase: Ended

Study providing a state-of-the art review of the factors related to the use of data and ICTs/digital technologies, when it comes to energy management and reduction at the household level.

Video: <https://youtu.be/pv54t3zQyPQ?si=BTIz8rDTU0hcaXyK>

SIF funding: £55,395

Project partners

- Newcastle University
- National Energy Action (NEA)
- Northern Powergrid



EV Respond

Project Lead: National Grid Electricity Distribution

Current phase: Ended

Investigating an electric vehicle charging solution that takes into account vulnerable consumers.

Video: https://www.youtube.com/watch?v=_eC2AlBYv8U

SIF funding: £121,384

Project partners

- Centre for Energy Equality Ltd.
- Regen SW
- West Midlands Combined Authority



Excess Gas Turbine Energy Generation

Project Lead: Northern Gas Networks

Current phase: Ended

Investigating if the power generated from excess gas can be fed back into the grid or stored, improving the coordination between the gas and electricity network, and assessing the cost of potential energy demand reduction activities.

Video: <https://youtu.be/Eb1oL9yy6Xc?si=F8FsXiCfSOgByylr>

SIF funding: £134,161

Project partners

- Northern Powergrid
- Digital Catapult
- Revolution Turbine Technologies Ltd.
- Stockton & District Advice and Information Service



Exploring Geological Hydrogen Storage Opportunities for the East Midlands (EMStor)

Project Lead: Cadent Gas

Current phase: Ended

Exploring geological storage options for hydrogen in the East Midlands.

Video: <https://youtu.be/X6MQ2DdAGKM?si=PJpC5tSS2Ya1cMCQ>

SIF funding: £499,981

Project partners

- National Gas Transmission PLC
- British Geological Survey
- University of Edinburgh
- Centrica Energy Storage Ltd.
- Uniper Hydrogen UK Ltd.
- Star Energy Group PLC



Eye In The Sky

Project Lead: National Grid Electricity Transmission

Current phase: Ended

Investigating the development of a remote, automated nationwide land and asset motion solution based on the use of SAR satellite imagery and different InSAR analysis techniques.

Video: https://youtu.be/bk00fNWWm8?si=0IYaWvmPNPSGiU_X

SIF funding: £395,769

Project partners

- Spottitt Ltd.
- DNV Services UK Ltd.



Fast Flex

Project Lead: SP Transmission

Current phase: Ended

Developing methodologies to introduce a mechanism whereby distributed energy assets can participate and contribute to the stability services required in a low carbon network.

Video: <https://youtu.be/dguBmbVNHN?si=zswmVs8euPbaDoHF>

SIF funding: £112,221

Project partners

- Imperial Consultants
- GE Digital UK Ltd.
- Scottish Power Renewables
- National Grid Electricity System Operator Ltd.
- SP Distribution PLC
- SP MANWEB PLC



FastTrack

Project Lead: Southern Electric

Current phase: Alpha

An artificial intelligence solution, analysing network capacity, existing load, connection data, and external drivers, it provides a consolidated view of future demand. This supports system planners in making informed decisions on investments, access products, and interventions to accelerate delivery and optimise capacity use.

Video: <https://youtu.be/W9h-7DpjjYA?si=obKEMtBOBdC-2Srb>

SIF Funding: £499,498

Project partners

- Faculty Science



Flex Direct

Project Lead: UK Power Networks

Current phase: Ended

Exploring a new commercial model and market approach that changes the way the DSO procures flexibility, to enable disadvantaged customers participate and benefit from emerging energy markets.

Video: <https://youtu.be/svSPBaX3w6M?si=IfuErKjSjKJzBDo5>

SIF funding: £480,307

Project partners

- The Centre for Sustainable Energy
- LCP Delta
- Utilita Energy
- SIA Partners UK



Flexible Heat

Project Lead: SP Transmission

Current phase: Ended

Demonstrating technologies which may be deployed to achieve maximum flexibility available through domestic heat including domestic thermal storage technologies and smart control solutions.

Video: https://youtu.be/B0M4kMr1d_0?si=pG3jmCd30wL7Nbby

SIF funding: £137,858

Project partners

- Active Building Centre
- Connected Response Ltd.
- University of Glasgow
- Sunamp *University of Edinburgh School of Chemistry spin off
- E.ON
- Delta-EE Energy Solutions
- Energy Optimisation Solutions Ltd.



Flexible Queue Management (Alpha)

Project Lead: Northern Powergrid

Current phase: Ended

Developing a data-driven approach to managing electricity network capacity, helping speed-up integration of renewable energy and storage.

SIF funding: £245,416

Project partners

- National Grid Electricity System Operator Ltd.
- WSP UK Ltd.
- Energy Optimisation Solutions Ltd.



Flexible Railway Energy Hubs

Project Lead: SP Transmission

Current phase: Beta

Transforms Network Rail into a flexible energy consumer with a modular microgrid, batteries, and renewables, to support transport decarbonisation.

SIF funding: £8,256,616

Project partners

- University of Leeds
- Ricardo-AEA Ltd.
- Network Rail Infrastructure Ltd.
- GE Energy Power Conversion UK Ltd.



FLEXible STORE of electrified thermal energy (FLEX-STORE)

Project Lead: Northern Powergrid

Current phase: Ended

Using electrified thermal storage solutions, such as phase change materials and thermochemical storage, to enhance grid stability and provide backup during supply disruptions.

Video: <https://youtu.be/fgQqSDvitlc?si=P65lphcE5QH5uW1I>

SIF funding: £148,816

Project partners

- University of Birmingham
- WSP UK
- Together Housing Association



Flexibility and Optimisation for Resilience in Energy Systems (FORTRESS)

Project Lead: Scottish Hydro Electric Power

Current phase: Ended

The transition of Protected Sites, e.g. hospitals and military sites, to electrified heating will require major infrastructure investment. FORTRESS will analyse innovative heat flexibility strategies and demonstrate a coordinated flexible approach to heat demand, whilst providing additional capacity, offset costs and maintaining the requisite level of resilience.

Video: <https://youtu.be/1D02HKiVR1g?si=l0jomL-uyb2tei8i>

SIF funding: £146,524

Project partners

- Ricardo-AEA.
- Tayside NHS Board.



Fractal Flow

Project Lead: Northern Powergrid

Current phase: Ended

Bridging various communication protocols by developing a digital tool to provide visibility of fractal network power flows to provide clearer status visibility of power flow.

Video: <https://youtu.be/nJj9rI8gwUE?si=hn1ebtzpwCGVWUkX>

SIF funding: £497,885

Project partners

- National Grid Electricity System Operator Ltd.
- Electricity North West Ltd.
- Frazer-Nash Consultancy Ltd.
- Oaktree power Ltd.
- Electricalink Ltd.



Fuel Cell Renewable Energy Equity (FREE)

Project Lead: Northern Powergrid

Current phase: Ended

Exploring how fuel cell technology, micro combined heat and power systems can provide UPS functionality and efficiencies.

Video: https://youtu.be/xSzZLzNa7S4?si=gmcKpEu_Ce-eBHR8

SIF funding: £472,235

Project partners

- LCP Delta
- EA Technology
- University of Strathclyde
- Robert Bosch Ltd.
- fifty5North
- E.ON



Forecasting & Planning Regional Digital Infrastructure (FPRDI)

Project lead: Northern PowerGrid

Current phase: Discovery

Using geospatial analytics, AI, grid connection, and planning data to develop a spatially integrated forecasting tool to help electricity networks anticipate the location, timing, and scale of future medium and large data centre demand.

Video: <https://youtu.be/HLRDNsBdxAQ>

SIF funding: £134,320

Project partners

- Jacobs UK



Foundation Source Model (FoSMo)

Project lead: National Grid

Current phase: Discovery

Proposes a collaborative, deep learning-based computer vision model for network asset management, aiming to reduce costs, improve reliability, and enhance predictive capabilities across all GB electricity networks.

Video: <https://youtu.be/eG0dcb7XccE?si=oqL5BtgLC0nG95j>

SIF Funding award: £125,606

Project partners

- Keen AI



Fractal Flow

Project Lead: Northern Powergrid

Current phase: Ended

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Video: <https://youtu.be/nJj9rI8gwUE?si=hn1ebtzpwCGVWUkX>

SIF funding: £497,885

Project partners

- National Grid Electricity System Operator Ltd.
- Electricity North West Ltd.
- Frazer-Nash Consultancy Ltd.
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- Electricalink Ltd.



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SIF funding: £472,235

Project partners

- LCP Delta
- EA Technology
- University of Strathclyde
- Robert Bosch Ltd.
- fifty5North
- E.ON



Full Circle

Project Lead: UK Power Networks

Current phase: Ended

Exploring potential for utilising waste heat from transformers and developing a framework which will make it easier for heat network developers and property developers to make use of waste heat from transformers.

Video: <https://youtu.be/arOEx5k60?si=SIF-60nVr-aXzEqI>

SIF funding: £416,811

Project partners

- Atelier Ten (Scotland) Ltd.
- SGN Commercial Services Ltd.
- Ove Arup & Partners Ltd.



Future Agriculture Resilience Mapping (FARM)

Project Lead: Scottish Hydro Electric Power

Current phase: Ended

With approximately 209,000 farm holdings in 2023, energy networks must adapt prepared to meet different future rural energy demands driven by reducing greenhouse gas and climate change. To support UK food production and security, FARM will identify clear commercial, policy and planning actions for DNOs, the agricultural sector and policy makers.

Video: https://youtu.be/_VyTpj4dJPU?si=OUIJei-ZQWbfjxk3

SIF funding: £133,092

Project partners

- Energy Systems Catapult .
- Scottish Agricultural Organisation Society
- The James Hutton Institute



Future Fleet

Project lead: UK Power Networks

Current phase: Alpha

Developing a geospatially-informed framework combining fleet archetypes, smart energy schemes, and innovative business models. Providing networks and logistics operators with actionable strategies for scalable, affordable, and grid-friendly freight electrification.

SIF funding: £499,815

Project partners:

- Voltempo Group
- Maritime Transport
- Energy Systems Catapult
- Baringa Partners
- Voltloader



Future Operability of Gas for System Integration (FOGSI)

Project Lead: National Gas Transmission

Current phase: Alpha

Developing an integrated hierarchical network modelling framework for simulating the operation of future GB energy system scenarios with highly interconnected gas and power networks.

SIF funding: £435,610

Project partners

- University of Edinburgh
- National Grid Electricity Transmission
- TNEI Services
- Energy Systems Catapult



FutureGrid CO2

Project Lead: National Gas Transmission

Current phase: Beta

The final phase of a suite of carbon dioxide projects. Using National Grid's FutureGrid facility to look at how National Gas can repurpose parts of its network to transport gaseous-phase carbon dioxide safely.

SIF funding: £3,968,924

Project partners

- NaTran
- Pipeline Integrity Engineers
- GL Industrial Services UK



Gas Analyser Systems for Hydrogen Blends

Project Lead: National Grid Gas Transmission

Current phase: Ended

Investigating demonstration of a fuel cell gas analyser technology that enables the compositional analysis of blends of hydrogen and natural gas up to 100% hydrogen in the transmission system.

Video: https://youtu.be/WGo15qU_KK8?si=ehmlcFC0JJ5ymxl1

SIF funding: £113,414

Project partners

- Cadent Gas Ltd.
- Des19ncor Ltd.



Gas Network Evolution Simulator (GNES)

Project Lead: Northern Gas Networks

Current phase: Alpha

A web-based tool that uses Agent Based Modelling to simulate and test scenarios on how people, policies, and infrastructure interact in the gas transition. Helping networks and policymakers explore fair, cost-effective decarbonisation paths and understand regional and household impacts of a policy decision.

Video: https://youtu.be/Vzzf0ReTarM?si=FWag2dg_WjnOJxzN

SIF Funding award: £438,726

Project partners

- Southern Gas Networks
- Cadent Gas
- National Grid Electricity System Operator
- Centre for energy equality
- Lane Clark & Peacock



Gas Networks Interoperable Digital Twin

Project Lead: National Grid Gas Transmission

Current phase: Ended

Developing a strategy to utilise gas network digital twins.

Video: <https://youtu.be/FUDJnoPE6aA?si=0x2xdrEm26qmPRZH>

SIF funding: £78,779

Project partners

- RAVMAC Ltd.
- Southern Gas Networks
- Northern Gas Networks
- National Grid Electricity System Operator Ltd.



Gas System of the Future Digital Twin

Project Lead: Southern Gas Networks

Current phase: Ended

Exploring the development of a digital twin of the gas system to support strategic decision making to optimise operations under different scenarios.

SIF funding: £494,925

Project partners

- IBM United Kingdom Ltd.
- National Grid Gas PLC
- National Grid Electricity System Operator Ltd.
- DNV Services UK Ltd.
- Amazon Web Services
- EMEA Sarl, UK Branch



Gas transmission asset resilience through network transitions

Project Lead: National Gas Transmission

Current phase: Ended

Investigating the benefits of moving from expensive, low frequency, manual network inspections to innovative AI assisted surveillance technologies in combination with satellite imagery and drones.

SIF funding: £97,650

Project partners

- Digital Catapult Services



Gas Volume for Embedded Electrical Generation Modelling

Project Lead: Southern Gas Network

Current phase: Ended

Designing a notification platform for embedded generators to inform gas distribution networks of upcoming demands thereby strengthening system resilience.

SIF funding: £123,830

Project partners

- Cadent Gas Ltd.
- Northern Gas Networks Ltd.
- Lane Clark & Peacock LLP



GeoGrid

Project Lead: Northern Powergrid

Current phase: Alpha

Exploring the use of Geothermal Long Duration Energy Storage (LDES) to store renewable electricity as heat with Leeds University as a trial site. By storing off-peak electricity and discharging it during peak demand periods, LDES can lower curtailment costs, reduce network congestion, and enhance grid resilience and security.

SIF funding: £432,935

Project partners

- University of Leeds.
- E.ON UK
- Star Refrigeration.
- Lane Clark & Peacock
- Leeds City Council



Green Gas Access

Project lead: Southern Gas Networks

Current phase: Discovery

Enhancing the management (injection control, asset utilisation, supplier onboarding) of green gas across UK distribution networks by enabling real-time operations, dynamic modelling, and coordinated technology deployment.

Video: https://youtu.be/I7e00_NHBXU?si=qGs6TnFskmDIEICT

SIF Funding award: £147,705

Project partners:

- DNV Services UK



Green Hydrogen Injection into the NTS

Project Lead: National Grid Gas Transmission

Current phase: Ended

Developing a strategic regime for injection of green hydrogen into the National Transmission System.

Video: <https://youtu.be/pYBm3XwpwiQ?si=hTvG3hQ39qjdBk4N>

SIF funding: £114,652

Project partners

- CNG Services
- Centrica
- SSE Networks
- Element Energy Ltd.



GridLink

Project Lead: Northern Powergrid

Current phase: Ended

Developing a digital support system to optimise placement and network running arrangements of the LV network based on network scenarios.

Video: https://youtu.be/HZSNkwV3ZhM?si=_q2cvB7AYHpi9uyr

SIF funding: £131,925

Project partners

- Kelvatek Ltd.



Grounds for Change

Project lead: Scottish and Southern Electricity Networks

Current phase: Discovery

Investigating precise slot cutting, directional drilling, and innovative onsite spoil recycling to reduce waste and restore open trench sites faster. This will result in quieter, cleaner, and more affordable works, with less disruption for everyone.

Video: <https://youtu.be/caBoL50NjhQ>

SIF funding: £94,125

Project partners:

- Energy Innovation Centre
- Southampton City Council



Guidelight

Project Lead: UK Power Networks

Current phase: Ended

Virtual tool kit that supports local authorities in assisting vulnerable consumers participate in both retrofit initiatives and smart energy practice schemes.

Video: <https://youtu.be/uzZonmb4UOU?si=G9u8Wj9wBJ4HswNk>

SIF funding: £487,322

Project partners

- Sia Partners UK PLC
- Portsmouth City Council
- University of Southampton
- Scottish and Southern Energy Power Distribution Ltd
- Somerset Council
- London Borough of Hackney
- Centre for Sustainable Energy
- Utilita Energy Ltd.



Heat Balance

Project Lead: SP Transmission

Current phase: Ended

Exploring the commercial and technical feasibility of network flexibility from large-scale thermal energy storage to reduce peak demand on the transmission and distribution networks.

Video: <https://youtu.be/PsdLCBVbKEU?si=C80fBVJPdzJiwQGH>

SIF funding: £499,116

Project partners

• University of Edinburgh	• University of Glasgow
• Ramboll UK Ltd.	• Erda Energy Ltd.
• Delta Energy & Environment Ltd.	
• Vattenfall Heat UK Ltd.	



HeatNet

Project Lead: UK Power Networks

Current phase: Ended

Developing novel tools that assist the LV network through managing power loads from heat pumps thereby coordinating smart home heating management.

Video: https://youtu.be/auePABlgNSQ?si=_kAVaqadOX1LqCF9

SIF funding: £467,057

Project partners

- Passiv UK Ltd.
- IC Consultants Ltd.



Heat Risers

Project Lead: UK Power Networks

Current phase: Ended

Exploring potential for development of a support tool that factors in the constraints of the network and barriers to connection while assisting building owners explore decarbonisation options for multi occupancy buildings.

Video: https://youtu.be/k1PLkt7YX-w?si=JxgY_jMyrd8UZQ9X



Heatropolis

Project Lead: UK Power Networks

Current phase: Beta

Bridges the gap between DNO planning and heat network design, unlocking smarter, decarbonised solutions that enhance flexibility and reduce load through a novel commercial framework.

SIF funding: £9,743,620

Project partners

- Metropolitan Infrastructure Ltd.
- Passiv UK Ltd.
- Guidehouse Europe Ltd.



Hot Chips

Project Lead: UK Power Networks (Operations)

Current phase: Ended

Will demonstrate how DNOs and data centres can work collaboratively to use surplus heat to decarbonise district heat (DH) networks. Using water-sourced heat pumps in an ambient loop array to reduce electrical demand and increase system efficiency.

SIF funding: £133,079

Project partners

- University of Sheffield
- Northern Powergrid (Northeast)
- EDF Energy R&D UK Centre
- Dalkia Energy Services



HVDC Wind Connect

Project lead: Scottish and Southern Electricity Networks

Current phase: Alpha

Integrating offshore wind into the energy system by developing and demonstrating novel "rigid" and "hybrid" meshed HVDC systems. Addressing key technical challenges including system control and protection strategies, modular offshore platform designs, and dynamic rating approaches for cables.

SIF funding: £499,961

Project partners

- Carbon Trust Advisory
- WindGrid



Hy-Fair (Alpha)

Project Lead: Southern Gas Networks

Current phase: Ended

Creating a network of drop-in centres with adjacent online services to provide decarbonisation and energy advice to consumers with a focus on disadvantaged and vulnerable consumers.

Video: https://youtu.be/gJQtDI2v9Ck?si=xbVQCCHHDcze_u4C

SIF funding: £463,201

Project partners

- Wales & West Utilities Ltd.
- National Gas Transmission PLC
- Centre for Energy Equality Ltd.
- Fife Council
- SP Distribution PLC
- Lane Clark & Peacock LLP
- British Gas New Heating Ltd.
- Energy Systems Catapult Ltd.
- Cadent Gas Ltd.



Hybrid Network Improvement & Reliability Enhancement (HIRE)

Project Lead: National Grid Electricity

Current phase: Ended

Investigating new monitoring techniques to improve the commissioning and operation of offshore cables to aid in operational efficiency.

Video: <https://youtu.be/Vtpw?si=qUJc3uv7T1RjlsoS>

SIF funding: £135,082

Project partners

- Scottish Hydro Electric Transmission PLC
- DNV Services UK Ltd.
- The University of Manchester
- High Voltage Partial Discharge Ltd.



Hybrid Storage Systems for Site Safety and Efficiency

Project Lead: National Grid Gas

Current phase: Ended

Investigating solid and gaseous storage to resolve the limitations of the different hydrogen storage systems.

Video: <https://youtu.be/K6xX37X6WHY?si=JJAQ0ahykkPHzyiu>

SIF funding: £133,656

Project partners

- Manufacturing Technology Centre
- University of Nottingham
- UK Power Networks (Operations) Ltd.
- Wales and West Utilities Ltd.
- H2GO Power Ltd.



Hydrogen Barrier Coatings for Gas Network Assets

Project Lead: National Grid Gas Transmission
Current phase: Ended

Exploring pipe coating technologies to enable the existing gas transmission network to supply hydrogen as a low carbon energy source.

Video: https://youtu.be/Jj0ko_KmlEs?si=JDgrbXXG3cFuJW57

SIF funding: £74,706

Project partners

- Warwick Manufacturing Group (WMG)
- Ultima Forma Ltd.



Hydrogen Cost Reduction (HyCoRe)

Project Lead: Northern Gas Networks
Current phase: Ended

Using advanced modelling to identify UK regions with strong potential for off-shore wind to gas network integration.

Video: <https://youtu.be/3wriAHihlhM?si=ASe4Fz8sXVVcA21h>

SIF funding: £499,787

Project partners

- Arup
- Offshore Renewable Energy Catapult



Hydrogen-Enhanced Biomethane for Energy System Resilience:

Project lead: Wales and West Utilities
Current phase: Alpha

Using biomethanisation, injecting hydrogen to convert additional CO₂ within digesters, to boost biomethane output dynamically and support network balancing. Operational and regulatory frameworks will also be assessed to enable wider adoption.

SIF funding: £371,186

Project partners:

- Hydrostar Europe
- Dwr Cymru Cyfngedig



Hydrogen Metering

Project Lead: National Grid Gas Transmission
Current phase: Ended

Investigating feasibility, design and ultimately build metering installations attached to the hydrogen test facilities at Spadeadam.

Video: https://youtu.be/slkav6q_Xik?si=LbiycOkTS-tnKvGp

SIF funding: £86,377

Project partners

- DNV Services UK Ltd.
- IGEM House Ltd.
- Northern Gas Networks Ltd.



Hydrogen Storage in Aquifers

Project Lead: Wales & West Utilities
Current phase: Ended

Investigating opportunities for hydrogen storage in aquifers.

Video: <https://youtu.be/eqBoKqggGxE?si=0kKoolG6xXXVgRFN>

SIF funding: £111,580

Project partners

- Progressive Energy Ltd.
- Northern Gas Networks Ltd.



HyNTS Compression

Project Lead: National gas transmission
Current phase: Beta

Demonstrating the repurposing potential for gas transmission system compression equipment to transport and store hydrogen.

Video: <https://youtu.be/AGC-5LIdfY?si=9NeyS7QqmddAX4jc>

SIF funding: £33,303,556

Project partners

- Cardiff University
- Siemens Industrial Turbomachinery Ltd.
- Northern Gas Networks Ltd.
- Cullum Detuners Ltd.
- DNV Services UK Ltd.
- Southern Gas Networks PLC
- Premtech Ltd



HyNTS Deblending for Transport Applications

Project Lead: National Gas Transmission
Current phase: Beta

Design and development of a hydrogen deblending and refuelling system to support direct integration to the National Gas Transmission System.

Video: https://youtu.be/T313CxvII-0?si=Mtl7P0TmsuvE_IQ0

SIF funding: £9,921,257

Project partners

- Element Energy Ltd.
- Northern Gas Networks Ltd.
- Southern Gas Networks PLC
- Element Energy Ltd.
- Cadent Gas Ltd.
- Wales & West Utilities Ltd.
- DNV Industrial Services UK Ltd.
- HyET Hydrogen B.V.



HyNTS Maritime

Project Lead: National Gas Transmission
Current phase: Ended

Investigating how the national gas transmission system could support UK maritime ports through providing links to large scale hydrogen.

Video: <https://www.youtube.com/watch?v=s66NUwvoMxI>

SIF funding: £150,000

Project partners

- Genserv Ltd.
- University of Warwick
- Ikgai Capital Ltd.
- Port of London Authority
- Carbon280 Pty Ltd.
- WSP UK Ltd.
- H2Site



HyNTS Pipeline Dataset

Project Lead: National Grid Gas
Current phase: Ended

Investigating datasets needed and developing processes to determine the state and capability of gas transmission pipelines to carry hydrogen.

Video: <https://youtu.be/QFkFQX-oHxg?si=O5XPmFC85QGeeJvD>

SIF funding: £454,090

Project partners

- Cadent Gas Ltd.
- Rosen (UK) Ltd.
- XOSERVE Ltd.



HyNTS Protection

Project Lead: National Grid Gas
Current phase: Ended

Investigating internal coatings for gas pipes to assist with the deployment of hydrogen to the existing network.

SIF funding: £443,195

Project partners

- Ultima Forma Ltd.
- Rosen (UK) Ltd.



HyNTS Waste Heat Recovery for Electrolysis

Project Lead: National Gas Transmission
Current phase: Ended

Looking at more efficient ways to generate hydrogen to run gas compressors, using waste heat.

Video: <https://youtu.be/H9RX6I3hinw?si=wj0BLemqZe-THwD2>

SIF funding: £386,732

Project partners

- Anglian Water Services Ltd.
- Alfa Laval Aalborg OY
- Hydrogenus Group Ltd.
- Cardiff University
- Southern Gas Networks PLC



HyPark

Project Lead: Wales and West Utilities
Current phase: Ended

Investigating potential gas grid integration for hydrogen fuel cell powered vehicles.

Video: <https://youtu.be/m2fC0eh1ERU?si=JsvTatbUTds0KfXx>

SIF funding: £150,000

Project partners

- Western Power Distribution PLC
- Scottish and Southern Energy Networks
- SP Transmission PLC
- Passiv UK Ltd.
- Easee UK



HyScale LOHC Phase 2b

Project Lead: Southern Gas Networks
Current phase: Ended

Investigating how a liquid organic hydrogen carrier can be used for capturing, storing and releasing hydrogen into a gas network and to manage long-duration storage requirements.

SIF funding: £451,849

Project partners

- Framatome gmbh
- Blue Abundance Ltd.
- Cadent Gas Ltd.
- Environmental Resources Management Ltd.
- Forschungszentrum Jülich GmbH (FZJ)
- Northern Gas Networks Ltd.
- National Gas Transmission PLC
- Wales & West Utilities Ltd.



Incentive

Project Lead: Scottish and southern electricity networks

Current phase: Ended

Analyse solutions and models for offshore wind farms to efficiently build in inertia services for the electricity grid at the time of construction.

Video: https://youtu.be/Rzy8p8LMMV4?si=slNnDD_zKZrYUMqb

SIF funding: £922,333

Project partners

- Scottish Hydro Electric Transmission PLC
- University of Strathclyde
- National Grid Electricity System Operator Ltd.
- The Carbon Trust



Indus

Project Lead: UK Power Networks
Current phase: Ended

Developing a network integrated novel approach to clustering industrial sites to enable co-location of renewables and improved network planning.

Video: <https://youtu.be/Y08SsoeY54A?si=0yRQ4y7IpQ2ewQPI>

SIF funding: £496,757

Project partners

- Guidehouse Europe Ltd.
- Peterborough City Council
- New Anglia Local Enterprise Partnership Ltd.
- Cadent Gas Ltd.
- M3mas Ltd.
- Camirus Ltd.
- Ameresco Ltd.



Inform

Project Lead: Northern Powergrid
Current phase: Ended

Developing a self-serve online connections tool that factors in energy efficiency measures, flexible connections and onsite storage within its optioneering functionality for the use of HV sites that wish to decarbonise heating.

Video: <https://youtu.be/1y01u1Lgjvo?si=QBTxNSkjLJh13FQ>

SIF funding: £388,491

Project partners

- Renewable Energy Network Ltd.
- Newcastle Hospitals
- EA Technology Ltd.



INSIGHT

Project Lead: Scottish Hydro Electric
Current phase: Ended

Seeking to understand, predict and manage new forms of instability that may occur on a future net zero electricity network.

Video: https://youtu.be/vg80z_AU4HA?si=V_em815PpGp91wvp

SIF funding: £227,093

Project partners

- National Grid Electricity System Operator Ltd.
- University of Strathclyde



Innovating Losses Analysis and Detection (I-LAD)

Project Lead: Southern Electric
Current phase: Alpha

Addressing Non-Technical Losses (NTLs) in electricity distribution, such as those arising from theft, unknown unmetered supplies or metering inaccuracies. Using an AI-driven platform for smart detection and identification of the NTLs and developing a trusted decision making and governance structure to take effective interventions to reduce them.

Video: <https://youtu.be/jxAmAi16igE?si=gufHCOifxVS3pkXO>

SIF funding award: £499,312

Project partners

- Frontier economics
- ScottishPower Energy Retail
- Electricity North West
- CGI IT UK



Integrated Hydrogen Transport Hubs

Project Lead: Wales and West Utilities
Current phase: Ended

Investigating colocation of hydrogen fuel production with district heating and production of hydrogen for re-fuelling, at 'hydrogen hubs' on parts of the electricity grid.

Video: https://www.youtube.com/watch?v=UdMktLA_TcU

SIF funding: £135,169

Project partners

- National Grid Electricity Distribution PLC
- Guidehouse Europe Ltd.
- Pembrokeshire County Council
- RWE Generation UK PLC



Intelligent Gas Grid

Project Lead: Southern Gas Networks
Current phase: Beta

Autonomous and intelligent monitoring and control for pressure management and operational planning & maintenance of gas networks.

Video: <https://youtu.be/gnQbpZjeHYo?si=PkMruTm1P2AEalKg>

SIF funding: £6,072,524

Project partners

• Cadent Gas Ltd.	• Utonomy Ltd.
• National Grid Gas PLC	• DNV Services UK Ltd.
• Northern Gas Networks Ltd.	• Wales & West Utilities Ltd.



Knapton H2 Storage for H2P

Project lead: Northern Gas Networks
Current phase: Discovery

Exploring medium and large-scale hydrogen storage options to support Centrica's H2P project at Knapton and support repurposing energy assets, enabling flexible hydrogen use for industrial decarbonisation, and scaling infrastructure to enhance resilience for the proposed East Coast Hydrogen network in North Yorkshire.

Video: <https://youtu.be/FTz1cHfnS7k?si=LdEtw7K0mUckEpt1>

SIF funding award: £149,701

Project partners

- University of Edinburgh
- Centrica storage
- Third energy onshore
- Gravitricity
- British Geological Survey



KnowMyFlex

Project Lead: UK Power Networks
Current phase: Ended

Investigating the potential for energy flexibility certificates to provide a centralised view of the existing and future flexibility potential of homes and buildings.

Video: https://youtu.be/_zwhwOXpjXc?si=0ce8l3-klZ3gChiu

SIF funding: £146,266

Project partners

- University of Reading
- Baringa Partners LLP



LDES NODE

Project Lead: Electricity North West
Current phase: Ended

Developing a methodology to inform the optimal locations of long duration energy storage technologies when deployed on electricity distribution networks, with the aim to maximise the output of renewable generation and performing valuable stability and resilience grid services.

Video: <https://youtu.be/KgpX-JXFxY0?si=6d0IVSGXXmA0MaSP>

SIF funding: £145,953

Project partners

- Environmental Resources Management Ltd.



Lightspeed

Project Lead: UK Power Networks
Current phase: Ended

Developing a bidirectional lamppost-based EV charging solution for new and existing lampposts.

Video: https://youtu.be/6aUlqATm_uE?si=1_MUw4Eg0sIAtALC

SIF funding: £497,928

Project partners

- EV Dot Energy Ltd.
- SP Manweb PLC
- Brighton & Hove City Council
- Otaski Energy Solutions Ltd.



Local Energy Oxfordshire - Neighbourhoods (LEO-N)

Project Lead: Scottish and Southern Energy Power Distribution

Current phase: Ended

Exploring coordination and establishment of a new, 'system of systems' approach to decarbonising homes and businesses, combined with local energy planning, to accelerate net zero.

Video: https://youtu.be/bLqm1IGL_r4?si=_Crpu-3D5FJErnee

SIF funding: £481,159

Project partners

- University of Oxford
- Baringa partners LLP
- Oxford City Council
- Retrofit Works Ltd.
- Oxfordshire County Council
- The Low Carbon Hub IPS Ltd.



MaxFlex

Project Lead: Southern Electric Power Distribution

Current phase: Ended

Exploring the use of energy flexibility certificates for industrial, commercial and local authority buildings.

Video: <https://youtu.be/9FlelQcBMcA?si=RIRWaHgos9m755A7>

SIF funding: £137,102

Project partners

- Greater London Authority Holdings Ltd.
- University of Reading
- Baringa Partners LLP



Look North2

Project Lead: National Grid Electricity Transmission

Current phase: Ended

Exploring the potential benefits and economic feasibility of developing offshore energy hubs that would integrate hydrogen/electricity production in an integrated energy system.

Video: <https://youtu.be/ZnFmv3j4Nj4?si=MNKmkeapruelIsZa>

SIF funding: £425,115

Project partners

- National Gas Transmission PLC
- Ørsted Power (UK) Ltd.
- Guidehouse Europe Ltd.
- Copenhagen Energy Islands ApS



Looking-Glass

Project Lead: Southern Gas Networks

Current phase: Ended

Creating formal methodologies to derive a quantitative score of active cyber security controls' effectiveness.

Video: <https://youtu.be/SrdypBffW2c?si=3Ua29W4tnxeMwPS5>

SIF funding: £88,007

Project partners

- Deltaflare Ltd.
- UK MOD



LV Optimiser (LVOE)

Project Lead: SP Manweb

Current phase: Ended

Explores innovative use of existing topologies (the LV optimiser tool) but advocating new control solutions to better address issues on the LV network.

Video: <https://youtu.be/2hdTjzCBZz0?si=nk6nF8Y3X9Nlu2dl>

SIF funding: £490,119

Project partners

- University of Glasgow
- Batterycare S.L.
- Scottish Power Energy Retail Ltd.



MaxFlex

Project Lead: Southern Electric Power Distribution

Current phase: Ended

Exploring the use of energy flexibility certificates for industrial, commercial and local authority buildings.

Video: <https://youtu.be/9FlelQcBMcA?si=RIRWaHgos9m755A7>

SIF funding: £137,102

Project partners

- Greater London Authority Holdings Ltd.
- University of Reading
- Baringa Partners LLP



Methane (CH4) Reduction from Gas Equipment (CH4RGE)

Project Lead: National Grid Gas Transmission

Current phase: Ended

Investigating potential technical solutions for venting methane in a more climate friendly way and reducing emissions.

Video: <https://www.youtube.com/watch?v=7DTv-9Hfic4>

SIF funding: £144,782

Project partners

- Project Environmental & Mott MacDonald Ltd.
- Solutions Ltd.



Multimodal Hydrogen Transport Refuelling Study

Project Lead: Northern Gas Networks

Current phase: Ended

Investigating the potential for hydrogen usage in heavy duty transport across England.

Video: https://youtu.be/MCGOEZhJB_4?si=H4GM22ybt2jyxxa0

SIF funding: £89,445

Project partners

- Transport for the North (TfN)
- Eversholt Rail Ltd.
- Element Energy
- Durham University
- Heriot Watt University



MultiResilience

Project Lead: Northern Powergrid

Current phase: Beta

Enhances energy resilience in rural areas by coordinating low carbon technology across LV and HV systems, delivering cost- effective solutions to maintain electricity supply during outages.

SIF funding: £6,255,384

Project partners

- TNEI Services Ltd.
- Smarter Grid Solutions Ltd.
- Scottish Hydro Electric Power Distribution PLC
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Nature4Networks

Project Lead: Scottish and Southern Electricity Networks

Current phase: Beta

Next phase trials of scalable nature-based-solutions (NbS) on live assets, to develop funding models, and embed nature into infrastructure planning. Unlocking shared value, delivering climate resilience, biodiversity gains, and community benefits.

SIF funding: £7,892,388

Project partners

- Frontier Economics
- Gutteridge Haskins & Davey
- Great Yellow
- Guidehouse Europe
- James Hutton



NAVIGATION

Project Lead: Southern Gas Networks

Current phase: Ended

Identifying high-demand sites for ultra-rapid EV charging that currently cannot be served by the electricity grid but are in proximity of a gas network connection.

Video: <https://youtu.be/eyvSVhxYDm4?si=zcEWJHtUnSxePbt3>

SIF funding: £149,724

Project partners

- Farad.ai
- Intelligent Power Generation Ltd.
- Smart Power Networks Ltd.



Net Zero Community Energy Hubs

Project Lead: Southern Gas Networks

Current phase: Ended

Exploring how heating and storage equipment interact and how variation in this impacts consumer costs, as well as wider energy infrastructure investment.

Video: <https://youtu.be/EvTN4MUbz6Y?si=unX50ukSks6UzBCS>

SIF funding: £81,315

Project partners

- SGN Commercial Services Ltd.
- Glasgow City Council
- Imperial College London
- Vital Energi Solutions Ltd.
- West Dunbartonshire Council



Net Zero Terrace

Project Lead: Electricity North West

Current phase: Ended

Producing a replicable technical and financial model for decarbonising mixed tenure housing.

Video: <https://youtu.be/p4UGeuRWaZs?si=ZMqibZinxhBSBNsT>

SIF funding: £494,502

Project partners

- Buro Happold
- Rossendale Valley Energy
- Rossendale Borough Council
- The Kensa Group
- Urban Chain
- University of Salford
- Centre for Energy Equality



Network Security in a Quantum Future

Project Lead: NESO

Current phase: Ended

Creating a risk management tool to assess the threat of quantum computing to the energy network.

Video: https://youtu.be/GmZTpQgGuR0?si=U7OH_UlIT05NLcrR

SIF funding: £498,264

Project partners

- University of Edinburgh
- Cambridge Consultants Ltd.



Network-DC

Project Lead: Scottish and southern electricity networks

Current phase: Beta

High Voltage DC circuit breakers enable an efficient and advanced HVDC network design to reduce the impact on coastal communities, reduce system costs and has the potential to lower costs to consumers.

Video: <https://youtu.be/ObDWXznW9fA?si=ZuTZreogrM46dEUT>

SIF funding: £5,486,794

Project partners

- Scottish Hydro Electric Transmission PLC
- University of Edinburgh
- Carbon Trust Advisory Ltd.
- National Grid Electricity System Operator Ltd.
- SuperGrid Institute



NextGen Electrolysis – Wastewater to Green Hydrogen

Project Lead: Wales and West Utilities

Current phase: Beta

Develops cost-effective electrolyzers using impure water sources to produce green hydrogen, ensuring resilient, affordable hydrogen supply across the UK.

Video: https://youtu.be/NeKRtgsgltc?si=_UYFXORSj2siGUXB

SIF funding: £5,866,292

Project partners

- National Grid Electricity Distribution PLC
- Dwr Cymru Cyfyngedig
- Hydrostar Europe Ltd.



Non-Data Centres Large Demand Mapping

Project lead: Southern Gas Networks

Current phase: Discovery

Developing a tool to forecast non-data centre large demand locations and timing and proposes using gas-to-power solutions to address long grid connection delays for high energy demand sites in the UK, enabling faster access to power.

Video: <https://youtu.be/BhXANj8HClQ?si=KBA15xqI0zb20HG2>

SIF funding award: £148,462

Project partners:

- White space strategy



NIMBUS

Project Lead: Scottish Hydro Electric

Transmission

Current phase: Ended

Developing a digital tool that will make meteorological data e.g., rainfall, wind speeds and temperature, available and usable by energy networks.

Video: <https://www.youtube.com/watch?v=NfkZyzPV2V8>

SIF funding: £499,873

Project partners

- Palantir Technologies UK, Ltd.
- Icebreaker One Ltd.
- Scottish Hydro Electric Power Distribution PLC
- IBM United Kingdom Ltd.



Nuclear Net Zero Opportunities (N-NZO)

Project Lead: National Grid Gas Transmission

Current phase: Ended

Investigating how future deployments of Advanced Nuclear Technologies (ANTS) for hydrogen and electricity generation can best be integrated into Gas and Electricity Transmission Systems.

Video: <https://www.youtube.com/watch?v=MaQ1XhkwBpg>

SIF funding: £107,494

Project partners

- National Grid Electricity Transmission PLC
- National Grid Electricity System Operator Ltd.
- Northern Gas Networks Ltd.
- Rolls-Royce UK SMR
- Frazer-Nash Consulting Ltd.
- URENCO Ltd.
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Optimisation and Diagnostics for Innovative Networks (ODIN)

Project lead: Scottish and Southern Electricity Networks (lead)

Current phase: Alpha

Capturing and analysing live operational data to detect early signs of wear, thermal imbalance, and performance loss. Enabling predictive, data-driven maintenance to minimise outages, extend asset life, and enhance overall network reliability

SIF funding: £455,450

Project partners

- Ross Robotics.



Pathways to 2050

Project lead: Scottish and Southern Electricity Networks

Current phase: Beta

Creating a new consumer-centric approach to planning and delivering low-voltage network upgrades. Using existing datasets, digital models and automated "scorecards" for every substation, to forecast demand growth, prioritise investment and cluster works for efficiency

SIF funding: £9,935,676

Project partners

- Faculty Science
- Low Carbon Hub IPS
- James Hutton
- Energy Systems Catapult
- SIA Partners UK
- Industrial and Financial Systems, IFS UK
- NFU Scotland



Park & Flex

Project Lead: UK Power Networks

Current phase: Ended

Investigating the potential for public carparks to harness V2X capability developing trial ready customer propositions for demonstration.

Video: <https://www.youtube.com/watch?v=l5PsKUFLfal>

SIF funding: £467,470

Project partners

- Fermata Energy LLC
- UK Power Networks Services (Commercial) Ltd.
- Greater London Authority Holdings Ltd.
- Baringa partners LLP



Phased Switch System

Project Lead: National Grid Electricity Distribution

Current phase: Beta

Trialling the phase switch system prototype which will allow for phase reconfiguration to reduce phase imbalance with the aim to improve the function and performance of the LV network.

SIF funding: £3,123,350

Project partners

- University of Strathclyde
- Nortech Management Ltd.
- UK Power Networks (Operations) Ltd.
- Low Carbon Electric Ltd.



Planning Regional Infrastructure in a Digital Environment (PRIDE)

Project Lead: National Grid Electricity Distribution

Current phase: Beta

Design and development of a digital tool empowering local authorities, networks and other regional stakeholders to collaborate on cost-effective, informed regional decarbonisation planning.

SIF funding: £3,733,400

Project partners

- Regen SW
- National Grid Electricity System Operator
- Advanced Infrastructure Technology Ltd.
- West Midlands Combined Authority



Power Block

Project Lead: UK Power Networks

Current phase: Ended

Developing new flexibility products tailored for commercial buildings.

Video: https://www.youtube.com/watch?v=tiP7DG_qyo

SIF funding: £42,355

Project partners

- Grid Edge Ltd.
- Northern Powergrid (Northeast) Ltd.



Power wheels

Project lead: Northern Powergrid

Current phase: Alpha

Looking at harnessing over 10 GW of flexibility from Motability's growing electric vehicle fleet. Exploring smart charging and bidirectional charging to create a virtual power plant and safeguard households reliant on medical equipment during outages.

SIF funding: £490,330

Project partners:

- Motability Operations
- Centre For Energy Equality
- Energy Systems Catapult
- Energy Innovation Centre



Powering Wales Renewably

Project Lead: NESO

Current phase: Beta

Unites Welsh Government, energy users, and operators to fast-track Wales's decarbonisation with a digital twin of energy systems and enhancing renewable integration.

SIF funding: £10,353,633

Project partners

- National Grid Electricity Distribution PLC
- National Grid Electricity Transmission PLC
- CGI IT UK Ltd.
- Wales & West Utilities Ltd.
- National Gas Transmission PLC
- Centin Renewables Ltd.
- SP Manweb PLC



Predict4Resilience

Project Lead: SP Transmission

Current phase: Beta

Extreme weather distribution network fault prediction tool to support decision making and resilience.

Video: <https://www.youtube.com/watch?v=neehuQCrwgg>

SIF funding: £4,518,605

Project partners

- University of Glasgow
- SP Distribution PLC
- Sia Partners UK PLC
- Scottish Hydro Electric Power Distribution PLC



Predictive Safety Interventions

Project Lead: Southern Gas Networks

Current phase: Ended

AI model which utilises live safety data and historical near-miss and injury occurrences to accurately predict the probability of future injuries.

Video: <https://www.youtube.com/watch?v=UI2UUREKcN0>

SIF funding: £1,078,258

Project partners

- Cadent Gas Ltd.
- Northern Gas Networks Ltd.
- National Grid Gas PLC
- FYLD Ltd.



Probabilistic Pathways for Energy System Planning

Project Lead: NESO

Current phase: Ended

Exploring computational technologies to develop an end-to-end methodology for network planning.

Video: <https://www.youtube.com/watch?v=WYmlFM8WZwc>

SIF funding: £149,544

Project partners

- National Grid Electricity Transmission PLC
- Frazer-Nash Consultancy Ltd.



Production and Long-Term Containment of Hydrides (PATCH)

Project Lead: Northern Gas Networks

Current phase: Ended

Investigating potential for novel applications of chemical hydrides including production, storage, regeneration and network injection.

Video: https://www.youtube.com/watch?v=jj-z_zF_4mA

SIF funding: £147,528

Project partners

- Frazer-Nash Consultancy Ltd.
- Teesside University



Proportional Investment Of Networks in Energy Efficient Retrofit (PIONEER)

Project Lead: National Grid Electricity

Current phase: Ended

Investigating commercial models which could be used to bring forward thermal efficiency measures as a cost-effective alternative to reinforcement.

Video: <https://www.youtube.com/watch?v=3DUUcJifrNg>

SIF funding: £126,663

Project partners

- Carbon Trust Advisory Ltd.
- Devon County Council
- Frontier Economics Ltd.
- West of England Combined Authority



Quantum Optimisation for Future Gas Network Design

Project lead: National Gas

Current phase: Discovery

This project is a first of its kind exploration into the applicability of quantum-inspired optimisation to improve and accelerate modelling of future gas transmission configurations and whole-systems planning.

Video: <https://youtu.be/w7oPn39rPcw>

SIF funding: £148,434

Project partners:

- NESO
- PA Consulting Services



Rail Decarbonisation Planning

Project Lead: Northern Gas Networks

Current phase: Ended

Developing a strategy and a methodology to enable the ongoing deployment of the most effective, efficient, and appropriate technological solutions to decarbonise rail transport.

Video: https://www.youtube.com/watch?v=rC_hSgpV7i8

SIF funding: £113,594

Project partners

- UK Power Networks
- Network Rail Ltd.
- EA Technology Ltd.
- Frazer-Nash Consulting Ltd.
- Eversholt Rail Ltd.



RAPID - Automated Routing Infrastructure

Project Lead: Scottish Hydro Electric

Current phase: Ended

Examining the problems that need to be solved to address recommendations from the Winser report concerning faster delivery of new transmission infrastructure. Including standardisation and automation of route design for new transmission lines.

Video: https://youtu.be/Ouv_SxtMf1Q?si=N4VMCYmOfYSVPFpU

SIF funding: £139,663

Project partners

- Ove Arup & Partners
- SP Transmission
- National Grid Electricity Transmission
- National Grid Electricity System Operator
- Volquant



Rapid Evaluation Areal Connection Tool (REACT)

Project Lead: Scottish Hydro Electric

Current phase: Ended

Creating a geographical planning tool to help in connecting low-carbon energy technologies to the grid in the right places, while maintaining resilience.

Video: <https://youtu.be/m20Qly1k4bM?si=3xkzx7QZq2-VDuN>

SIF funding: £496,625

Project partners

- Southern Gas Networks PLC
- National Grid Electricity Transmission PLC
- Icebreaker One Ltd.
- Mapstand Ltd.
- Olsights Ltd



Realistic Modelling of Power-To-Gas Operability

Project Lead: National Gas Transmission

Current phase: Ended

Developing overarching model which integrates existing established statistical and optimisation models to support decision-making and power to gas and storage operability.

Video: <https://www.youtube.com/watch?v=rHpbFMDV-LA>

SIF funding: £128,475

Project partners

- University of Edinburgh
- TNEI Services Ltd.



Regional Energy Strategic Modelling (RESM)

Project Lead: Northern Gas Networks

Current phase: Ended

Whole systems modelling study exploring how all gas, water and power networks can work better together through strategic planning to support regional decision-making for low carbon infrastructure, and support constraint management of the electricity system.

Video: <https://www.youtube.com/watch?v=l3gvqAe2Z9M>

SIF funding: £110,526

Project partners

- Durham University
- Northumbrian Water Ltd.



RemO2val

Project lead: National Gas

Current phase: Discovery

Evaluating the technical and economic feasibility of using advanced catalytic and adsorption technologies, alongside corrosion inhibitors, to reduce oxygen levels in biomethane.

Video: <https://youtu.be/itSeu8ci2sE?si=TcsaOJUH1XeQanj>

SIF funding award: £132,309

Project partners:

- HyGear BV
- Premtech
- Frontline integrity
- Underground energy storage operators



Renewable Energy Harvest

Project lead: Northern Gas Networks (lead)

Current phase: Discovery

By combining biomethane and syngas production with advanced mapping and forecasting tools, the project will identify where rural resources can best connect into the gas network.

Video: <https://youtu.be/AwGcbijhK9o>

SIF Funding award: £149,267

Project partners:

- Centre For Energy Equality
- Lane Clark & Peacock
- Foodchains



Residential Whole System Integrated REsilience (REWIRES)

Project Lead: Electricity North West

Current phase: Ended

Exploring the technical viability and economic benefit of integrating vector conversion and energy storage technology at a domestic level to increase whole system resilience.

Video: <https://www.youtube.com/watch?v=C-yhPHTwIQg>

SIF funding: £149,947

Project partners

- Frazer-Nash Consultancy Ltd.



Resilient Customer Response

Project Lead: Northern Powergrid
Current phase: Ended

Exploring whether behind-the-meter assets can provide local resilience to other consumers (including vulnerable), enabling the maintenance of essential services.

Video: <https://www.youtube.com/watch?v=Hoy6mX3iQKw>

SIF funding: £117,889

Project partners

- Lane Clark & Peacock LLP
- University of Southampton



RetroMeter

Project Lead: Electricity North West
Current phase: Ended

Creating a consistent methodology to accurately meter the energy and cost savings of retrofit energy efficiency measures.

Video: <https://www.youtube.com/watch?v=Df4rbAQbD5w>

SIF funding: £483,934

Project partners

- The Society for the Reduction of Carbon Ltd.
- Energipro Ltd.
- Energy Systems Catapult Ltd.
- Manchester City Council



Revisiting and Evaluating Environmental Inputs on Line Ratings (REVISE)

Project Lead: Scottish Hydro Electric
Current phase: Beta

Combining high-resolution weather topographic data with advanced system-modelling techniques and physical validation, to deliver a new Energy Networks Association Technical Recommendation. Ensuring a more accurate, future-ready approach to overhead line rating.

SIF funding: £5,892,440

Project partners

• National Grid Electricity System Operator Ltd.	• National Grid Electricity Transmission PLC
• SP Transmission	• Met Office
• University of Strathclyde	• Energyline Ltd.



Road to Power

Project Lead: National Grid Electricity Distribution
Current phase: Ended

Investigating the impact of plant machinery in the construction industry, specifying tools to facilitate obtaining temporary grid connections and predicting the system impact of such works.

SIF funding: £437,404

Project partners

- EA Technology Ltd.
- KIER Highways Ltd.



Rural Energy and Community Heat (REACH)

Project Lead: National Grid Electricity Distribution
Current phase: Ended

Looking at novel and innovative solutions for how rural areas can achieve their decarbonisation objectives.

SIF funding: £490,017

Project partners

- Cranfield University
- Smart Grid Consultancy Ltd.
- Kensa Utilities Ltd.
- Regen SW
- Frontier Economics Ltd.
- Vepod Ltd.



Rural Industrial DEcarbonisation Support (RIDES)

Project Lead: Scottish Hydro Electric Power Distribution
Current phase: Ended

Developing a tool to show rural industries their potential decarbonisation pathways and help network companies to understand what their future investments needs will be.

Video: https://youtu.be/pi42Ci8Vyl?si=c_gx3HYhFI_LXeVG

SIF funding: £110,655

Project partners

- The Association for Decentralised Energy
- Guidehouse Europe



Scenario Analysis for Non-domestic Network Decarbonisation (SANND)

Project Lead: Northern Powergrid
Current phase: Ended

Investigating the feasibility of developing a platform to forecast industrial and commercial decarbonisation scenarios for electricity distribution network demand.

SIF funding: £144,831

Project partners

- Energy Systems Catapult Ltd.
- EA Technology Ltd.



Scenarios for Extreme Events

Project Lead: NESO
Current phase: Ended

Developing a tool which can analyse how weather events will impact on the grid, helping to identify vulnerabilities in the system and building resilience.

Video: https://www.youtube.com/watch?v=hKp580h_a_w

SIF funding: £457,899

Project partners

- Scottish Hydro Electric Transmission PLC
- University of Strathclyde
- Met Office
- Frazer-Nash Consultancy Ltd.
- Cadent Gas Ltd.
- National Gas Transmission PLC



Sea Change

Project Lead: Southern Electric Power
Current phase: Ended

Building a 'Navigating Energy Transitions' (NET) tool, which will help ports to plot their most viable pathways for decarbonisation.

Video: <https://www.youtube.com/watch?v=rwj-6nRBC0A>

SIF funding: £455,189

Project partners

- Ricardo-AEA Ltd.
- British Ports Association
- The European Marine Energy Centre Ltd.
- National Gas Transmission PLC
- Associated British Ports
- University of Strathclyde



Securing the future delivery of all HVDC projects by de-risking the HVDC cable supply chain (SECURE)

Project Lead: Scottish Hydro Electric

Transmission

Current phase: Ended

Exploring digital supply chains and novel digital solutions to help de-risk the HVDC cable supply chain.

Video: <https://www.youtube.com/watch?v=J2FtPZsf3Hs>

SIF funding: £147,909

Project partners

- Carbon Trust Advisory Ltd.
- Digital Catapult Services Ltd.



SF6 Whole Life Strategy

Project Lead: National Grid Electricity Transmission

Current phase: Beta

Focuses on greener disposal, leakage modelling, and alternatives to SF6.

SIF funding: £8,500,724

Project partners

- The University of Manchester
- SP Transmission PLC
- Scottish Hydro Electric Transmission PLC
- DNV Services UK Ltd.
- DILO Armaturen und Anlagen GmbH
- Wika Instruments Ltd.



Shifting Currents

Project Lead: Western Power Distribution
Current phase: Ended

Investigating interoperability between electricity and water networks to embed whole systems thinking and flexibility in the connections of water network sites to the distribution network.

Video: <https://www.youtube.com/watch?v=L7qoZRa1BbQ>

SIF funding: £99,092

Project partners

- Anglian Water Services Ltd.
- Smart Grid Consultancy Ltd.
- UK Power Networks (operation) Ltd.
- Severn Trent PLC
- Pennon Group PLC



SIF Black start Demonstrator from offshore wind (SIF BLADE)

Project Lead: SP Transmission
Current phase: Beta

Explores how technology can enable offshore wind farms to restore the onshore grid after blackouts, driving the commercial rollout of this technology by developing optimal market requirements and standards.

SIF funding: £4,850,905

Project partners

- University of Strathclyde
- TNEI Services Ltd.
- Scottish Hydro Electric Transmission PLC
- The Carbon Trust



SizeWise

Project Lead: UK Power Networks
Current phase: Ended

Developing tools to help customers determine the right size/mix of low-carbon technologies for their house to make it easier and more affordable for the customer to engage.

Video: <https://www.youtube.com/watch?v=IDPeLlVzIU>

SIF funding: £145,937

Project partners

- Baringa Partners LLP
- I C Consultants Ltd.



Smart Heat and Intelligent Energy in Low-income Districts (SHIELD)

Project Lead: UK Power Networks
Current phase: Beta

Exploring and trialling an innovative heat as a service business model for social housing households to benefit from low carbon technology while intelligently balancing supply and demand with aim to drastically reduce both the upfront and running costs of consumers' heating.

SIF funding: £5,401,332

Project partners

- Electricity North West Ltd.
- Urbanchain Ltd.
- Citizens Advice Essex Ltd.
- Essex County Council
- UK Community Works CIC
- Eastlight Community Homes Ltd
- Power Circle Projects Ltd.
- Essex Community Energy CIC
- Thermify Holdings Ltd.



Smart Hydrogen and Resilient Energy Decarbonisation (SHARED)

Project Lead: UK Power Networks
Current phase: Alpha

Exploring the potential of low-cost hydrogen production and storage as a solution to improve the resilience of worst served customer communities. The project will assess how effective this approach could be and identify the specific needs of rural communities.

SIF funding: £499,526

Project partners

- Frazer-Nash Consultancy
- The First Element Group



Smart Open Load Visibility Exchange (SOLVE)

Project lead: Northern Powergrid
Current phase: Discovery

Using open standards and smart meter data to provide real-time visibility of low-voltage networks. Combining this with real-time, appliance-level forecasting, to enable networks to predict local demand and flexibility, plan ahead, and make better use of existing assets.

Video: <https://youtu.be/OEBxuEsoL7U>

SIF Funding award: £148,911

Project partners:

- EDF Energy R&D UK Centre
- Green Energy Options



Smarter Network UpGrades (SNUG)

Project lead: UK Power Networks
Current phase: Beta

Developing novel commercial models and coordinated market approaches to enable Social Landlords to participate in flexibility markets through bespoke contractual frameworks.

SIF funding: £4,435,203

Project partners:

- University of Strathclyde
- Northern Powergrid (Northeast)
- Centre for Sustainable Energy
- SIA Partners UK



Social Virtual Power Plant (Social VPP)

Project lead: Northern Powergrid
Current phase: Discovery

Combining community-led investment with smart flexibility software, the project aggregates household batteries and demand response to lower bills, reduce carbon emissions, and strengthen grid resilience.

Video: <https://youtu.be/tjp-71xo1dl>

SIF Funding award: £149,924

Project partners:

- Northern Powergrid (lead)
- Centre for Energy Equality
- Lane, Clark & Peacock



Super DuPPR: Dual Purpose Power Reserves

Project Lead: UK Power Networks (Operations)
Current phase: Ended

Super DuPPR will explore unlocking the potential capacity of over 2GWh of backup power for other purposes. This will accelerate the decarbonisation of reserve power systems and reduce the net load increase on the electricity network.

SIF funding: £119,010

Project partners

- Met Office



SuperConductor Applications for Dense Energy Transmission (SCADENT)

Project Lead: National Grid Electricity Transmission
Current phase: Ended

Investigating the potential for the use of high temperature superconductor technology to help meet the anticipated increased demand for electricity and understanding barriers and benefits to implementation of such technology.

Video: https://www.youtube.com/watch?v=1vTMCHNd_M4

SIF funding: £449,000

Project partners

- University of Strathclyde
- Nexans France
- AMSC United Kingdom Ltd.
- SP Transmission PLC
- The University of Manchester
- Frazer-Nash Consultancy Ltd.
- Western Power Distribution PLC
- UK Power Networks Operations) Ltd.



SuperConductor OverHead Lines (SCOHL)

Project Lead: National Grid Electricity Transmission

Current phase: Ended

Assessing the potential for implementing novel high-temperature superconductor (HTS) technology on National Grid's overhead line (OHL) assets.

Video: <https://www.youtube.com/watch?v=FQ47o8i4txE>

SIF funding: £132,507

Project partners

- University of Strathclyde
- VEIR



Superconducting fault current limiters potential to limit reactor implementation within DC network topologies (SPRINT)

Project lead: Scottish and Southern Electricity Networks

Current phase: Discovery

Enhancing the protection and efficiency of high voltage direct current (HVDC) networks by integrating superconducting fault current limiters (SFCLs). By leveraging SFCL technology, the project aims to: reduce fault current peaks, lower energy dissipation, improve system stability.

Video: <https://youtu.be/66f2CLCArE0>

SIF funding: £147,254

Project partners

- SuperGrid institute



Supply Chain Resilience in the Transition

Project Lead: National Grid Gas
Current phase: Ended

Investigating gas supply chain and procurement strategies in light of the net zero transition.

Video: <https://www.youtube.com/watch?v=olylil3QmJtk>

SIF funding: £77,893

Project partners

- Insider Pro Ltd.



Sustainable Electrical Gas Insulated Lines (SEGIL)

Project Lead: National Grid Transmission
Current phase: Ended

Investigating new transmission line technology, Gas Insulated Line (GIL), which can transmit more power than a conventional OHL, and with less construction works than a cable system for the same power rating, hence reducing the cost and time to deliver capacity.

Video: <https://www.youtube.com/watch?v=dHEBOU6CSus>

SIF funding: £133,814

Project partners

- Ørsted Onshore UK Ltd.
- Scottish Power Transmission PLC
- J. Murphy & Sons Ltd.
- Frazer-Nash Consultancy Ltd.
- General Electric
- National Grid Electricity System Operator
- University of Manchester



SwitchTwin

Project lead: National Grid (lead)
Current phase: Discovery

By combining advanced sensing technologies with AI/ML-driven digital twin analytics, operators can enhance inverter-based resource (IBRs) asset management strategies. Providing better insights on the condition of these assets and saving costs for networks and consumers.

Video: <https://youtu.be/cMI0mPjbFh4>

SIF Funding award: £149,234

Project partners

- National Grid (lead)
- The University of Manchester
- Frazer-Nash Consultancy



SYstem Strength Measurement and Evaluation (SYSMET)

Project Lead: Scottish Hydro Electric
Current phase: Ended

Creating a pathway to confident implementation of measurement-based tools that provide comprehensive visibility of system strength status, avoiding uncontrolled voltage change, instability, and the risk of widespread customer disconnection.

Video: <https://www.youtube.com/watch?v=lxtWcRrQ-U>

SIF funding: £478,612

Project partners

- SSE Renewables Developments (UK) Ltd.
- Imperial College London
- NPL Management Ltd.
- National Grid Electricity Transmission PLC
- UK Power Networks (operations) Ltd.



Trinity

Project Lead: UK Power Networks
Current phase: Ended

Addressing challenges associated with the training of control room staff by developing and deploying a control room simulator which will improve network control, provide improved training programmes and a safe 'sandbox' environment to test changes before they are applied to the live network.

Video: <https://www.youtube.com/watch?v=yRJo9J4dy50>

SIF funding: £499,545

Project partners

- University of Strathclyde
- Digital Catapult Services Ltd.
- Scottish Hydro Electric Power Distribution PLC
- GE Digital UK Ltd.



Tyseley Environmental Enterprise District

Project Lead: National Grid Electricity Distribution
Current phase: Ended

Investigation of how a multi-vector energy system with local generation and storage can be developed to be optimally resilient and deliver best value to a mixed local community of industry.

Video: <https://www.youtube.com/watch?v=26gjQoo-i88>

SIF funding: £145,216

Project partners

- National Grid Electricity System Operator
- Pinnacle Power Ltd.
- SSE Utilities Solutions Ltd.
- Equans Services Ltd.
- University of Birmingham
- Tyseley Energy Park Ltd.



Thermal Imagery Analysis

Project Lead: Northern Gas Networks
Current phase: Ended

Using thermal imagery/ sensing technologies to ascertain gas losses in hydrogen networks.

Video: <https://youtu.be/IE5-IDvTkJl?si=oaxLcX4-CWlleDjs>

SIF funding: £469,356

Project partners

- National Grid Gas PLC
- Synovate Ltd.
- Digital Catapult Services Ltd.



Velocity Design with Hydrogen

Project Lead: Southern Gas Networks
Current phase: Beta

Testing and validation of hydrogen velocity models for erosion, vibration, noise, and particle transportation, to enable safe design velocity limits for gas networks.

Video: <https://youtu.be/sEfTqfUra8?si=zeiJpX3s0OpKZpAz>

SIF funding: £5,912,144

Project partners

- Cadent Gas Ltd.
- Northern Gas Networks Ltd.
- Wales & West Utilities Ltd.
- National Grid Gas PLC
- Institution of Gas Engineers and Managers
- DNV Services UK Ltd.



Virtual Energy System

Project Lead: NESO

Current phase: Ended

Developing an industry wide initiative to develop a digital twin of the entire GB energy system.

Video: https://www.youtube.com/watch?v=WzjjjBqU_nw

SIF funding: £149,921

Project partners

- Arup Ltd.
- National Gas Transmission
- National Grid Electricity Transmission
- Western Power Distribution



VOLT

Project Lead: Northern Powergrid

Current phase: Alpha

Working to develop and validate how multi-vector microgrids can help industrial and commercial sites decarbonise, improve resilience, and provide flexibility. Delivering scalable microgrid blueprints and operational processes aligned with national and regional strategies.

SIF funding: £496,123

Project partners

- EDF Energy R&D UK Centre
- Wales & West Utilities
- Lane Clark & Peacock
- Pulsant
- Newcastle University
- Northern Gas Networks



Vulnerability Evaluation for Resilience Investment and Flexibility (VERIFY)

Project Lead: Scottish Hydro Electric Power Distribution

Current phase: Beta

Combining data on networks, properties, consumer demographics and smart meters to ensure DNOs are able to better tailor network investments to match the needs of local consumers.

SIF funding: £5,331,569

Project partners

• Quarriers	• Smith Institute
• E.ON Next Energy	• CGI IT UK
• Southern Gas Networks	• Smart DCC
• Centre for Sustainable Energy	
• Aberdeen NHT 2014 LLP	



Vulnerability Identification Via Informative Data (VIVID)

Project Lead: Scottish and Southern Energy Power Distribution

Current phase: Ended

Creating a system to help identify consumers who would most benefit from offers of support from their local authority, charities and responsible energy company.

Video: <https://www.youtube.com/watch?v=XENXblevErl>

SIF funding: £448,525

Project partners

• Smart DCC Ltd.	• CGI IT UK Ltd.
• E.ON Energy Solutions Ltd.	• Aberdeen NHT 2014 LLP
• UK Power Networks (Operations) Ltd.	
• Quarriers	



WAstewater Sourced Heat (WASH)

Project Lead: UK Power Networks

Current phase: Ended

Investigating feasibility of wastewater heat as a source for heat pumps that supply heat networks.

SIF funding: £125,264

Project partners

- Guidehouse Europe Ltd.



Watt Heat

Project Lead: UK Power Networks

Current phase: Ended

Investigating the potential for thermal storage via low carbon technologies by stimulating the market and incentivising customers to participate and respond to market signals.

Video: <https://www.youtube.com/watch?v=UNgJpKAvHnw>

SIF funding: £486,444

Project partners

- Baringa partners LLP
- Passiv UK Ltd.
- Tepeo Ltd.
- Greater London Authority Holdings Ltd.



Wayl-Ease

Project Lead: UK Power Networks

Current phase: Beta

Gaining consent from landowners to install, maintain, and upgrade the network is essential for network operators. Wayl-Ease proposes to create a digital platform that simplifies wayleave agreements using AI and geospatial mapping.

SIF funding: £3,481,350

Project partners

- Digital Catapult Services
- Community Energy South
- Tata Consultancy Services



Weather Alerts and Risk analysis for Network operators (WARN)

Project Lead: UK Power Networks

Current phase: Ended

Developing a digital tool that will identify weather related vulnerabilities and monitor those conditions that contribute to vulnerabilities in addition to assessing how weathering risks may evolve in the era of climate change.

Video: <https://www.youtube.com/watch?v=06CfJY9JPw4>

SIF funding: £109,647

Project partners

- University of Reading



Whole Energy System Resilience Vulnerability Assessment (WELLNESS)

Project Lead: National Grid Electricity

Current phase: Ended

Developing a standardised approach to embed resilience into decision-making across the whole energy network, as it becomes more complex and varied.

Video: <https://youtu.be/RFUXDgmRwd0?si=Yp0-HTUdh4ZHuf8C>

SIF funding: £471,725

Project partners

- University of Cyprus
- Ove Arup & Partners Ltd.
- Electricity North West Ltd.
- Imperial college London
- The University of Manchester



WPT for Grid

Project lead: National Grid

Current phase: Discovery

Investigating the technical feasibility, adoption barriers, and cost-benefit implications in the use of wireless power transmission (WPT) to enable quicker, more-flexible grid connections and overcome delays associated with installing traditional cabled infrastructure.

Video: <https://youtu.be/yAzC0u14K40>

SIF Funding: £145,118

Project partners:

- National Grid Electricity Transmission
- Space Solar Engineering
- National Grid Partners

