

# 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/9LebdruGG-no?si=AdeUZ7A0YfJeWon5>

**SIF funding: £401,864**

### Project partners

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



## 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/5e2RT-Godi3k?si=8kvRcfGPxJvailUg>

**SIF funding: £149,557**

### Project partners

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



## Alt Pipe

**Project Lead:** National Gas Transmission

**Current phase:** Discovery

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://youtube.com/playlist?list=PL-hp8OOckWOBN4ld0Be5N-bnVaBHPgTc9&si=zd3PLpL6Gk4nhzQ7>

**SIF funding: £149,773**

### Project partners

- EA Technology
- Lane Clark & Peacock
- Ramboll UK



## ALCHEM (Advanced Low Carbon Hydrogen and Energy Management)

**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/KqvQxr1QI-WY?si=XtZHSULtuv\\_P\\_aSz](https://youtu.be/KqvQxr1QI-WY?si=XtZHSULtuv_P_aSz)

**SIF funding: £87,436**

### Project partners

- KI Hydrogen Ltd.
- Hynamics UK Ltd.



## 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=I-FIPoeaQGHv1amYz>

**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:** Alpha

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/8pCd9ChAi-KY?si=Zxk9TEQGgb7jlp2E>

**SIF funding: £75,963**

### Project partners

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



## 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



## 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://youtu.be/q7hyMbC\\_nHk?si=KzetlwhltRKr8lVW](https://youtu.be/q7hyMbC_nHk?si=KzetlwhltRKr8lVW)

**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



## 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.



## 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://youtu.be/rCcphs97N-Z8?si=yYXYhJ6vxTM69YKN>

**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



## 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://youtu.be/bL1jysN-fsCU?si=NTPFIHe9GdN\\_z78](https://youtu.be/bL1jysN-fsCU?si=NTPFIHe9GdN_z78)

**SIF funding: £129,727**

### Project partners

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



## 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://youtu.be/Kdi5DX2X-2\\_w?si=le0E4K2uv9tmsovW](https://youtu.be/Kdi5DX2X-2_w?si=le0E4K2uv9tmsovW)

**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



## CH4RGE (Methane (CH4) Reduction from Gas Equipment)

**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://youtu.be/7DTv-9Hfic4?si=sYqp1ga1PDaWHY3L>

**SIF funding: £144,782**

### Project partners

- Project Environmental Solutions Ltd.
- Mott MacDonald Ltd.



## CLIP: Community Led Integrated Planning

**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.



## 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/kEJ8jnmFlg-k?si=Hmf4\\_Zg-F0N9k8Y7](https://youtu.be/kEJ8jnmFlg-k?si=Hmf4_Zg-F0N9k8Y7)

**SIF funding: £403,382**

### Project partners

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





## Conductor

**Project Lead:** UK Power Networks (Operations)

**Current phase:** Discovery

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



## 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://youtu.be/ddNHZKLx-4AQ?si=WYkVHmf25J5xy\\_7u](https://youtu.be/ddNHZKLx-4AQ?si=WYkVHmf25J5xy_7u)

**SIF funding: £114,547**

### Project partners

- Sia Partners UK PLC



## CoolDown

**Project Lead:** Electricity North West

**Current phase:** Alpha

Observing the network impact of electrified cooling of buildings, and observing the potential opportunities for cooling to provide network flexibility during periods of network stress and potential commercial models.

**Video:** <https://youtu.be/bZj7HgO-q1zl?si=986QCWakIdLG0wit>

**SIF funding: £499,888**

### Project partners

- UCL Consultants Ltd.
- National Grid Electricity Distribution PLC
- Impact Research Ltd.
- Guidehouse Europe Ltd.
- Oaktree Power Ltd.



## 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



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



## Design for Live Line Technology Acceleration (DELLTA)

**Project Lead:** National Grid Electricity Transmission

**Current phase:** Discovery

Electrical infrastructure is currently not built with Live Line working in mind. DELLTA will look at Live Line working as a key asset design parameter to relieve electrical pressure caused by maintenance and repair tasks.

**Video:** <https://youtube.com/playlist?list=PL-hp8OOckWOBNN4Id0Be5N-bnVaBHPgTc9&si=zd3PLpL6Gk4nhzQ7>

**SIF funding: £107,787**

### Project partners

- The University of Manchester
- Fraser Nash Consultancy.



## 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/IAPi7sd-T1Us?si=-Wng4APut2j5p1cN>

**SIF funding: £18,610,355**

### Project partners

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



## 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/\\_OHf0b6dd-NY?si=noNUSoWsP9fvq0fz](https://youtu.be/_OHf0b6dd-NY?si=noNUSoWsP9fvq0fz)

**SIF funding: £309,790**

### Project partners

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



## Cross Vector Hub

**Project Lead:** Northern Powergrid

**Current phase:** Alpha

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/b0iFWV1ACM-w?si=lecy0iB05B-2kXi\\_](https://youtu.be/b0iFWV1ACM-w?si=lecy0iB05B-2kXi_)

**SIF funding: £380,106**

### Project partners

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



## Digital Platform for Leakage Analytics

**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-C4l-tOWE?si=T1H5NIAASZJvI9xb>

**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.



## 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.



## 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://youtu.be/XwpFEg\\_zrkQ?si=BCG-yG\\_Y8\\_yL4nM4](https://youtu.be/XwpFEg_zrkQ?si=BCG-yG_Y8_yL4nM4)

**SIF funding: £119,127**

### Project partners

- Amazon Web Services Ltd.
- National Grid Gas Transmission
- IBM UK 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/OcZO5q-JViZ0?si=hh5f\\_a5RIWRXmT2K](https://youtu.be/OcZO5q-JViZ0?si=hh5f_a5RIWRXmT2K)

**SIF funding: £136,236**

### Project partners

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



## 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=-1bLDpNYbhgw6cJkI>

**SIF funding: £2**

### Project partners

- ULC Technologies LLC



## Digital Decommissioning of Large-Scale Equipment

**Project Lead:** National Gas Transmission

**Current phase:** Discovery

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://youtube.com/playlist?list=PL-hp8OOckWOBNN4ld0Be5N-bnVaBHPgTc9&si=zd3PLpL6Gk4nhzQ7>

**SIF funding: £104,849**

### Project partners

- Genesis Oil & Gas Consultants



## Dynamic, Data Driven Asset Rating (3DAR)

**Project Lead:** Scottish Hydro Electric Power Distribution

**Current phase:** Discovery

Deployment of a data-driven solution that optimises capacity through real-time, localised weather data and asset modelling. Enhancing network investment planning, reducing costs and ensuring long-term resilience for faster, more efficient connections.

**Video:** <https://youtube.com/playlist?list=PL-hp8OOckWOBNN4ld0Be5N-bnVaBHPgTc9&si=zd3PLpL6Gk4nhzQ7>

**SIF funding: £108,352**

### Project partners

- 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/82qCWnrXY-ac?si=ORRjPzMp1dusah0Z>

**SIF funding: £139,273**

### Project partners

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



## 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/H9RX6l3hin-w?si=9pRbZ23Wn5D99-6A>

**SIF funding: £95,714**

### Project partners

- Alfa Laval Aalborg OY
- Ceres Power Ltd.
- Anglian Water Services Ltd.
- UK Power Networks (Operation) Ltd.
- Cardiff University
- Hydrogenus 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/eUUJB-VWt0Z8?si=0EsnGAXh2\\_RAaX36](https://youtu.be/eUUJB-VWt0Z8?si=0EsnGAXh2_RAaX36)

**SIF funding: £124,265**

### Project partners

- DNV Services UK Ltd.
- National Gas Transmission
- Amazon Web Services 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/-unCTZLY-8WA?si=8REtfyStUpaad8UG>

**SIF funding: £143,480**

### Project partners

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



## 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/fXYm8km-9R6c?si=QDy7f64T-IK-q3MV>

**SIF funding: £147,151**

### Project partners

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



## EqualCT

**Project Lead:** National Grid Gas

**Current phase:** Alpha

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.

**SIF funding: £449,687**

### Project partners

- Baringa Partners
- Smart Metering Systems



## Electric Thames

**Project Lead:** UK Power Networks

**Current phase:** Alpha

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/LFaPYoAB-DIk?si=zCDY0QSW9UWQtkEX>

**SIF funding: £499,643**

### Project partners

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



## Equiflex

**Project Lead:** SP Distribution

**Current phase:** Alpha

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



## 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/bkO0OfNWW-m8?si=0lYaWvmPNPSGiU\\_X](https://youtu.be/bkO0OfNWW-m8?si=0lYaWvmPNPSGiU_X)

**SIF funding: £395,769**

### Project partners

- Spottitt Ltd.
- DNV Services UK Ltd.



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

**Project Lead:** Cadent Gas

**Current phase:** Alpha

Exploring geological storage options for hydrogen in the East Midlands.

**Video:** <https://youtu.be/X6MQ2DdAGK-M?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



## 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/dguBmb-VNHNH?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



## 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=\\_eC2AIBYv8U](https://www.youtube.com/watch?v=_eC2AIBYv8U)

**SIF funding: £121,384**

### Project partners

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



## FastTrack - AI for Connections

**Project Lead:** Southern Electric Power Distribution (Lead)

**Current phase:** Discovery

An AI solution to simulate the impact of both small and large-scale connection requests using data on network capacity, load, and external factors. Providing insights to make faster, more informed decisions on future investments, prioritise interventions and improve delivery times.

**Video:** <https://youtube.com/playlist?list=PL-hp8OOckWOBNN4Id0Be5N-bnVaBHPgTc9&si=zd3PLpL6Gk4nhzQ7>

**SIF funding: £143,033**

### Project partners

- SP MANWEB PLC
- Faculty Science



## 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/Eb1oL9yy6X-c?si=F8FsXiCfSOgByylr>

**SIF funding: £134,161**

### Project partners

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



## Flex Direct

**Project Lead:** UK Power Networks

**Current phase:** Alpha

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/svSPBaX3w-6M?si=IfuErKjSjKJzBD0s>

**SIF funding: £480,307**

### Project partners

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



## FLEX-STORE: FLEXible STORE of electrified thermal energy

**Project Lead:** Northern Powergrid

**Current phase:** Discovery

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://youtube.com/playlist?list=PL-hp8OOckWOBNN4ld0Be5N-bnVaBHPgTc9&si=zd3PLpL6Gk4nhzQ7>

**SIF funding: £148,816**

### Project partners

- University of Birmingham
- WSP UK
- Together Housing Association



## FREE Fuel Cell Renewable Energy Equity

**Project Lead:** Northern Powergrid

**Current phase:** Alpha

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

**Video:** [https://youtu.be/xSz-ZLzNa7S4?si=gmcKpEu\\_Ce-eBHR8](https://youtu.be/xSz-ZLzNa7S4?si=gmcKpEu_Ce-eBHR8)

**SIF funding: £472,235**

### Project partners

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



## 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/B0M4k-Mr1d\\_0?si=pG3jmCd3OwL7Nbby](https://youtu.be/B0M4k-Mr1d_0?si=pG3jmCd3OwL7Nbby)

**SIF funding: £137,858**

### Project partners

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



## 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.



## Fractal Flow

**Project Lead:** Northern Powergrid

**Current phase:** Alpha

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/nJj9rl8gwUE?si=h-1ebtzpwCGVWUkX>

**SIF funding: £497,885**

### Project partners

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



## FORTRESS: Flexibility and Optimisation for Resilience in Energy Systems

**Project Lead:** Scottish Hydro Electric Power Distribution

**Current phase:** Discovery

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://youtube.com/playlist?list=PL-hp8OOckWOBNN4ld0Be5N-bnVaBHPgTc9&si=zd3PLpL6Gk4nhzQ7>

**SIF funding: £146,524**

### Project partners

- Ricardo-AEA.
- Tayside NHS Board.



## 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/T-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 Distribution

**Current phase:** Discovery

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://youtube.com/playlist?list=PL-hp8OOckWOBNN4ld0Be5N-bnVaBHPgTc9&si=zd3PLpL6Gk4nhzQ7>

**SIF funding: £133,092**

### Project partners

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



## 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/FUDJnoPE-6aA?si=0x2xdrEm26qmPRZH>

**SIF funding: £78,779**

### Project partners

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



## 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 Network Evolution Simulator (GNES)

**Project Lead:** Northern Gas Networks

**Current phase:** Discovery

Using advanced Agent Based Modelling (ABM) to analyse economic, social, and environmental impacts of gas network decommissioning and explore new infrastructure opportunities, including simulation of the complex interactions between key stakeholders.

**Video:** <https://youtube.com/playlist?list=PL-hp8OOckWOBNN4ld0Be5N-bnVaBHPgTc9&si=zd3PLpL6Gk4nhzQ7>

**SIF funding: £443,086**

### Project partners

- |                         |                              |
|-------------------------|------------------------------|
| ▪ Southern Gas Networks | ▪ Centre for Energy Equality |
|-------------------------|------------------------------|



## 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



## 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 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=ehmlcFCOJJ5ymxlI](https://youtu.be/WGo15qU_KK8?si=ehmlcFCOJJ5ymxlI)

**SIF funding: £113,414**

### Project partners

- Cadent Gas Ltd.
- Des19ncor Ltd.



## Gas transmission asset resilience through network transitions

**Project Lead:** National Gas Transmission

**Current phase:** Discovery

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



## 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



## 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



## 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/pYbM3Xwp-wiQ?si=hTvG3hQ39qjdBk4N>

**SIF funding: £114,652**

### Project partners

- CNG Services
- Centrica
- SSEN
- 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](https://youtu.be/HZSNkwV3ZhM?-si=_q2cvB7AYHpi9uyr)

**SIF funding: £131,925**

### Project partners

- Kelvatek Ltd.



## 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/uzZonmb4U-OU?si=G9u8Wj9wBJ4HswNk>

**SIF funding: £487,322**

### Project partners

- Sia Partners UK PLC
- Portsmouth City Council
- London Borough of Hackney
- Somerset Council
- University of Southampton
- Centre for Sustainable Energy
- Utilita Energy Ltd.
- Scottish and Southern Energy Power Distribution 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/PsdLCBVbke-U?si=C80fBVJPdzJiwQGH>

**SIF funding: £499,116**

### Project partners

- University of Edinburgh
- University of Glasgow
- Ramboll UK Ltd.
- Delta Energy & Environment Ltd.
- Erda Energy Ltd.
- Vattenfall Heat UK 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](https://youtu.be/k1PLkt7YX-w?si=-JxgY_jMyrd8UZQ9X)

**SIF funding: £489,735**

### Project partners

- DG Cities Ltd.
- Royal Borough of Greenwich
- Passiv UK Ltd.
- Baringa Partners LLP



## HeatNet

**Project Lead:** UK Power Networks

**Current phase:** Alpha

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](https://youtu.be/auePABlgNSQ?-si=_kAVaqadOX1LqCF9)

**SIF funding: £467,057**

### Project partners

- Passiv UK Ltd.
- I C Consultants Ltd.



## Heatopolis

**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.



## 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=L-biycOkTS-tnKvGp](https://youtu.be/slKav6q_Xik?si=L-biycOkTS-tnKvGp)

**SIF funding: £86,377**

### Project partners

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



## Hot Chips

**Project Lead:** UK Power Networks (Operations)

**Current phase:** Discovery

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



## HIRE – Hybrid Network Improvement & Reliability Enhancement

**Project Lead:** National Grid Electricity Transmission

**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/bVn89i-Vtp-w?si=qUJc3uv7T1RjIsoS>

**SIF funding: £135,082**

### Project partners

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



## 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/gJQt-DI2v9Ck?si=xbVQCCHHDcze\\_u4C](https://youtu.be/gJQt-DI2v9Ck?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 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/K6xX37X-6WHY?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](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/3wriAHihl-hM?si=ASe4Fz8sXVVcA21h>

**SIF funding: £499,787**

### Project partners

- Arup
- Offshore Renewable Energy Catapult





## 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.



## 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/m2fC0e-h1ERU?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



## 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-5LIId-fY?si=9NeyS7QqmdAX4jc>

**SIF funding: £33,303,556**

### Project partners

- Cardiff University
- Siemens Industrial Turbomachinery Ltd.
- Northern Gas Networks Ltd.
- Southern Gas Networks PLC
- DNV Services UK Ltd.
- Premtech Ltd.
- Cullum Detuners 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/T313CxxvII-0?si=M-tl7P0TmsuvE\\_IQO](https://youtu.be/T313CxxvII-0?si=M-tl7P0TmsuvE_IQO)

**SIF funding: £9,921,257**

### Project partners

- Element Energy Ltd.
- Cadent Gas Ltd.
- Northern Gas Networks Ltd.
- Wales & West Utilities Ltd.
- Southern Gas Networks PLC
- DNV Industrial Services UK Ltd.
- Element Energy 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://youtu.be/s66NUwvoMx-l?si=ChGZA-pAx5a6rJvJ>

**SIF funding: £150,000**

### Project partners

- Gemserv Ltd.
- Carbon280 Pty Ltd.
- University of Warwick
- WSP UK Ltd.
- Ikigai Capital Ltd.
- Port of London Authority
- 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-oHx-g?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/H9RX6l3hin-w?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



## HyScale LOHC Phase 2b

**Project Lead:** Southern Gas Networks

**Current phase:** Alpha

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.



## 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://youtu.be/UdMktLA\\_TcU?si=KPIbDd-GWpunfAHY](https://youtu.be/UdMktLA_TcU?si=KPIbDd-GWpunfAHY)

**SIF funding: £135,169**

### Project partners

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



## 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/RZy8p8LM-MV4?si=sINnDD\\_zKZrYUMqb](https://youtu.be/RZy8p8LM-MV4?si=sINnDD_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/Y08Sso-eY54A?si=0yRQ4y7lpQ2ewQPI>

**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/1yO1u1Lg-jvo?si=QBTxNSkxjLJh13FQ>

**SIF funding: £388,491**

### Project partners

- Renewable Energy Network Ltd.
- Newcastle Hospitals
- EA Technology Ltd.
- Kensa Contracting Ltd.
- City of York Council
- Energy Systems Catapult Ltd.



## INSIGHT

**Project Lead:** Scottish Hydro Electric Transmission

**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/vg8Oz\\_AU-4HA?si=V\\_em815PpGp91wvp](https://youtu.be/vg8Oz_AU-4HA?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 Power Distribution

**Current phase:** Discovery

Modern data techniques to improve automating and modernising losses data collection, identification and modelling and understanding of total losses landscape. Improving cross sector coordination, monitoring and measurement of losses interventions, as well as reduce serious safety incidents and the impact caused by theft.

**Video:** <https://youtube.com/playlist?list=PL-hp8OOckWOBN4ld0Be5N-bnVaBHPgTc9&si=zd3PLpL6Gk4nhzQ7>

**SIF funding: £149,167**

### Project partners

- CGI IT UK
- Scottishpower Energy
- Retail
- Frontier Economics.



## 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/gnQbpZjeHY-o?si=PkmruTm1P2AEaIKg>

**SIF funding: £6,072,524**

### Project partners

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



## 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/\\_zxhwOXpjXc?si=0ce8l3-klZ3gChiu](https://youtu.be/_zxhwOXpjXc?si=0ce8l3-klZ3gChiu)

**SIF funding: £146,266**

### Project partners

- University of Reading
- Baringa Partners LLP



## LV Optimiser (LVOE)

**Project Lead:** SP Manweb

**Current phase:** Alpha

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/2hdTjzCB-Zz0?si=nk6nF8Y3X9Nlu2dl>

**SIF funding: £490,119**

### Project partners

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



## LDSE 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=6dOIVSGXXmA0MaSP>

**SIF funding: £145,953**

### Project partners

- Environmental Resources Management 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/MCGOEZh-JB\\_4?si=H4GM22ybt2jyxxaO](https://youtu.be/MCGOEZh-JB_4?si=H4GM22ybt2jyxxaO)

**SIF funding: £89,445**

### Project partners

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



## 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\\_MUw4Eg0slAtALC](https://youtu.be/6aUlqATm_uE?si=1_MUw4Eg0slAtALC)

**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/bLqm1GL\\_r4?si=\\_Crpu-3D5FJErnee](https://youtu.be/bLqm1GL_r4?si=_Crpu-3D5FJErnee)

**SIF funding: £481,159**

### Project partners

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



## Look NorthH2

**Project Lead:** National Grid Electricity Transmission

**Current phase:** Alpha

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/ZnFmv3j4N-j4?si=MNKmkeaprueUlsZa>

**SIF funding: £425,115**

### Project partners

- National Gas Transmission PLC
- Orsted 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/SrdypBffW-2c?si=3Ua29W4tnxeMwPS5>

**SIF funding: £88,007**

### Project partners

- Deltaflare Ltd.
- UK MOD



## 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/9FleIQcBM-cA?si=RiRWaHgos9m755A7>

**SIF funding: £137,102**

### Project partners

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



## Network Security in a Quantum Future

**Project Lead:** NESO

**Current phase:** Alpha

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

**Video:** [https://youtu.be/GmZTpQgGu-R0?si=U7OH\\_UiIT05NLcrR](https://youtu.be/GmZTpQgGu-R0?si=U7OH_UiIT05NLcrR)

**SIF funding: £498,264**

### Project partners

- University of Edinburgh
- Cambridge Consultants Ltd.



## 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



## 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.



## Nature4Networks

**Project Lead:** Southern Electric Power Distribution

**Current phase:** Alpha

Exploring nature based options and approaches to safeguard electricity networks in the interest of the environment.

**Video:** <https://youtu.be/8VcN1Bb0MO-Q?si=KqsGAHyfqtKUTfCo>

**SIF funding: £499,148**

### Project partners

- Gutteridge Haskins & Davey Ltd.
- SP Transmission PLC
- Frontier Economics Ltd.



## 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/eyvSVhxYD-m4?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/EvTN4MUb-z6Y?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/p4UGeuRWa-Zs?si=ZMqibZinxhBSBNt>

**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-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/ObDWXznW-9fA?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



## Park & Flex

**Project Lead:** UK Power Networks

**Current phase:** Ended

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

**Video:** <https://youtu.be/l5PsKUFLfal?si=k-CWyYBTIWvVg9ezn>

**SIF funding: £467,470**

### Project partners

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



## 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://youtu.be/NfkZyzPV-2V8?si=Z1YzGUccJoxk5Vs3>

**SIF funding: £499,873**

### Project partners

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



## 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.



## 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://youtu.be/MaQ1XhkwBp-g?si=vG6cdovfsiA-YOE0>

**SIF funding: £107,494**

### Project partners

- National Grid Electricity Transmission PLC
- National Grid Electricity System Operator Ltd.
- Norther Gas Networks Ltd.
- Rolls-Royce UK SMR
- URENCO Ltd.
- Frazer-Nash Consulting 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



## ODIN: Optimisation and Diagnostics for Innovative Networks

**Project Lead:** Scottish Hydro Electric Transmission

**Current phase:** Discovery

Through the application of artificial intelligence and machine learning, ODIN will uncover novel insights into high-voltage direct current asset behaviour to improve operational efficiency, reliability and resilience.

**Video:** <https://youtube.com/playlist?list=PL-hp8OOckWOBN4ld0Be5N-bnVaBHPgTc9&si=zd3PLpL6Gk4nhzQ7>

**SIF funding: £149,612**

### Project partners

- Ross Robotics.



## Power Block

**Project Lead:** UK Power Networks

**Current phase:** Ended

Developing new flexibility products tailored for commercial buildings.

**Video:** [https://youtu.be/tiP7DG\\_yqo?si=kQqozBKltgVGcZSe](https://youtu.be/tiP7DG_yqo?si=kQqozBKltgVGcZSe)

**SIF funding: £42,355**

### Project partners

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





## 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
- Cenin Renewables Ltd.
- SP Manweb PLC



## 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://youtu.be/jj-z\\_zF\\_4mA?si=d-DeD\\_dnx\\_csdBh1G](https://youtu.be/jj-z_zF_4mA?si=d-DeD_dnx_csdBh1G)

**SIF funding: £147,528**

### Project partners

- Frazer-Nash Consultancy Ltd.
- Teesside University



## Predict4Resilience

**Project Lead:** SP Transmission

**Current phase:** Beta

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

**Video:** <https://youtu.be/neeuhQCrgw-g?si=iV69KsXKYf4NgQHi>

**SIF funding: £4,518,605**

### Project partners

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



## Proportional Investment Of Networks in Energy Efficient Retrofit (PIONEER)

**Project Lead:** National Grid Electricity Distribution

**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
- Frontier Economics Ltd.
- Devon County Council
- West of England Combined Authority



## Predictive Safety Interventions

**Project Lead:** Southern Gas Networks

**Current phase:** Beta

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

**Video:** <https://youtu.be/UI2UUREKc-No?si=PBDiG2TaKGwq7TaC>

**SIF funding: £1,078,258**

### Project partners

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



## RAPID - Automated Routing Infrastructure

**Project Lead:** Scottish Hydro Electric Transmission

**Current phase:** Discovery

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

**Video:** <https://youtube.com/playlist?list=PL-hp8OOckWOBNN4ld0Be5N-bnVaBHPgTc9&si=zd3PLpL6Gk4nhzQ7>

**SIF funding: £139,663**

### Project partners

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



## 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://youtu.be/WYmIFM8WZw-c?si=xVOVuUY15NuXrd56>

**SIF funding: £149,544**

### Project partners

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



## REACT

**Project Lead:** Scottish Hydro Electric Transmission

**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/m2OQly1k4b-M?si=3xkyzx7QZq2-VDuN>

**SIF funding: £496,625**

### Project partners

- Southern Gas Networks PLC
- National Grid Electricity Transmission PLC
- Icebreaker One Ltd.
- Mapstand Ltd.
- Olsights 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://youtu.be/l3gvqAe2Z-9M?si=IWWtIS1bKCr7oV3v>

**SIF funding: £110,526**

### Project partners

- Durham University
- Northumbrian Water Ltd.
- DNV Services UK Ltd.
- Northern Powergrid Ltd.



## 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://youtu.be/Df4rbAQB-D5w?si=pU8pR17aMpfgylQ1>

**SIF funding: £483,934**

### Project partners

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



## 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://youtu.be/rC\\_hSg-pV7l8?si=GUKvFVmKtwPZIk5P](https://youtu.be/rC_hSg-pV7l8?si=GUKvFVmKtwPZIk5P)

**SIF funding: £113,594**

### Project partners

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



## REWIRE

**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.



## 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://youtu.be/rHpbFM-DV-LA?si=u6egCf96NE8mls7i>

**SIF funding: £128,475**

### Project partners

- University of Edinburgh
- TNEI Services Ltd.



## REACH Rural Energy and Community Heat

**Project Lead:** National Grid Electricity Distribution  
**Current phase:** Alpha

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

**SIF funding: £490,017**

### Project partners

- Cranfield University
- Regen SW
- Smart Grid Consultancy Ltd.
- Kensa Utilities Ltd.
- Vepod Ltd.
- Frontier Economics 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://youtu.be/Hoy6mX3iQK-w?si=hyhaolh20SUILHN->

**SIF funding: £117,889**

### Project partners

- Lane Clark & Peacock LLP
- University of Southampton



## RIDES: Rural Industrial DEcarbonisation Support

**Project Lead:** Scottish Hydro Electric Power Distribution  
**Current phase:** Discovery

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://youtube.com/playlist?list=PL-hp8OOckWOBNN4ld0Be5N-bnVaBHPgTc9&si=zd3PLpL6Gk4nhzQ7>

**SIF funding: £110,655**

### Project partners

- The Association for Decentralised Energy
- Guidehouse Europe



## REVISE

**Project Lead:** Scottish Hydro Electric Transmission

**Current phase:** Alpha

Using latest generation high-resolution weather topographic data, combined with the latest techniques for system modelling, to improve understanding and methodology of line ratings and meet demand for connection of new renewables.

**Video:** <https://youtu.be/OeRCv1G-fj-4?si=UCHV5QVjBr8Bqy2N>

**SIF funding: £389,725**

### Project partners

- National Grid Electricity System Operator Ltd.
- National Grid Electricity Transmission PLC
- Met Office
- University of Strathclyde
- Energyline 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://youtu.be/hK-p580h\\_a\\_w?si=srzsiCHUeAlfp\\_LI](https://youtu.be/hK-p580h_a_w?si=srzsiCHUeAlfp_LI)

**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



## Road to Power

**Project Lead:** National Grid Electricity Distribution

**Current phase:** Alpha

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.



## SCOHL - SuperConductor OverHead Lines

**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



## SANND (Scenario Analysis for Non-Domestic Network Decarbonisation)

**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.



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

**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://youtu.be/J2FtPZsf-3Hs?si=RHZjCc737ZP8apzT>

**SIF funding: £147,909**

### Project partners

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



## SCADENT – SuperConductor Applications for Dense Energy Transmission

**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://youtu.be/1vTMCHNd\\_M4?si=4GKfvlO1GzCB\\_psZ](https://youtu.be/1vTMCHNd_M4?si=4GKfvlO1GzCB_psZ)

**SIF funding: £449,000**

### Project partners

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



## SHARED: Smart Hydrogen and Resilient Energy Decarbonisation

**Project Lead:** UK Power Networks (Operations)

**Current phase:** Discovery

Exploring the potential of low-cost hydrogen production and storage as an alternative solution to improve the resilience of rural communities.

**SIF funding: £149,060**

### Project partners

- Frazer-Nash Consultancy
- Centre for Sustainable Energy
- The First Element Group



## SHIELD - Smart Heat and Intelligent Energy in Low-Income Districts

**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

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



## 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=L7qoZRaiBbQ>

**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



## Sea Change

**Project Lead:** Southern Electric Power Distribution

**Current phase:** Alpha

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

**Video:** <https://youtu.be/rwj-6nRB-C0A?si=QWXrm9Fye68n1eyk>

**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



## 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://youtu.be/IDPeLiLVzIU?si=-CAUgiA5BBllf4doE>

**SIF funding: £145,937**

### Project partners

- Baringa Partners LLP
- I C Consultants Ltd.



## SEGIL - Sustainable Electrical Gas Insulated Lines

**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://youtu.be/dHE-BOU6CSus?si=ON0WB4TzicqQpkLs>

**SIF funding: £133,814**

### Project partners

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



## Super DuPPR: Dual Purpose Power Reserves

**Project Lead:** UK Power Networks (Operations)

**Current phase:** Discovery

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



## 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://youtu.be/olyil3QmJt-k?si=nC16fE2MWvL4A8xn>

**SIF funding: £77,893**

### Project partners

- Insider Pro 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
- SSE Utilities Solutions Ltd.
- Equans Services Ltd.
- Pinnacle Power Ltd.
- University of Birmingham
- Tyseley Energy Park Ltd.



## SYSMET – SYstem Strength Measurement and EvaluaTion

**Project Lead:** Scottish Hydro Electric Transmission

**Current phase:** Alpha

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 widescale customer disconnection.

**Video:** <https://youtu.be/lxntWcR-rQ-U?si=hGq1Ulu48dh65aMU>

**SIF funding: £478,612**

### Project partners

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



## UN:LOCK – Unblocking Networks: Local Optimisation, Consumers and Knowledge

**Project Lead:** Southern Electric Power Distribution

**Current phase:** Ended

Exploring novel market-based solutions to create capacity in areas of high penetration of distribution connected generation, to allow the connection of additional generation while long-term reinforcements are being delivered.

**Video:** <https://youtu.be/qXaM983an-F0?si=PGVGyX6gwg84rQhP>

**SIF funding: £101,373**

### Project partners

- Regen SW
- Environmental Project Support 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://youtu.be/yRJo-9J4dy50?si=OnFgQ8gnko3JQWvI>

**SIF funding: £499,545**

### Project partners

- University of Strathclyde
- Digital Catapult Services Ltd.
- Scottish Hydro Electric Power Distribution PLC
- GE Digital UK 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/sEfTQ-fuTra8?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.



## 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-IDvTk-JI?si=oaxLcX4-CWlleDjs>

**SIF funding: £469,356**

### Project partners

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



## VERIFY: Vulnerability Evaluation for Resilience Investment and Flexibility

**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
- Southern Gas Networks
- Centre for Sustainable Energy
- E.ON Next Energy
- CGI IT UK
- Aberdeen NHT 2014 LLP
- Smart DCC





## 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://youtu.be/WzjjBqU\\_nw?si=vKEOS5Xjd-kt\\_5j](https://youtu.be/WzjjBqU_nw?si=vKEOS5Xjd-kt_5j)

**SIF funding: £149,921**

### Project partners

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



## WASH (Wastewater Sourced Heat)

**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.



## VIVID - Vulnerability Identification Via Informative Data

**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://youtu.be/XENXblevEr-l?si=7ectZqhJ5TxLpW59>

**SIF funding: £448,525**

### Project partners

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



## 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://youtu.be/UNgJpKAvHn-w?si=H26Ww6pm9TSWu1XO>

**SIF funding: £486,444**

### Project partners

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



## VOLT

**Project Lead:** Northern Powergrid (Northeast)

**Current phase:** Discovery

Focusing on integrating renewable energy, storage, hydrogen, and smart technologies to optimise flexibility and reliability in high-emission zones like ports, airports, and manufacturing hubs.

**SIF funding: £147,200**

### Project partners

- Newcastle University
- Northern Gas Networks
- Lane Clark & Peacock
- Port of Tyne Authority



## Wayl-Ease

**Project Lead:** UK Power Networks  
**Current phase:** Alpha

Creating an external facing record of consents, linking network operators with landowners in an online digital platform to streamline the wayleave process.

**Video:** <https://youtu.be/481vNav-sA0?si=x-ODR0-LVVvNx4xdB>

**SIF funding: £485,499**

### Project partners

- SP Transmission PLC
- Tata Consultancy Services Ltd.
- Digital Catapult Services Ltd.



## WARN (Weather Alerts and Risk analysis for Network operators)

**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://youtu.be/06CfJY9JP-w4?si=llbHrDJBj4boRnHT>

**SIF funding: £109,647**

### Project partners

- University of Reading



## Whole Energy System Resilience Vulnerability Assessment (WELLNESS)

**Project Lead:** National Grid Electricity Transmission

**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/RFUXDgmR-wd0?si=Yp0-HTUdh4ZHuf8C>

**SIF funding: £471,725**

### Project partners

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

