

PRESS RELEASE

Powering the Future: Tackling Energy Network Challenges to Achieve Net Zero



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- The Office of Gas and Electricity Markets (Ofgem) and Innovate UK announce the awarding of a further £9.7 million of SIF funding
- The 21 successful round 3 alpha projects will be addressing challenges from network planning and connecting renewable energy sources to the grid, to managing demand and long-term energy storage

- All projects aim to provide consumers with a cost-effective, fair, and flexible low-carbon future, as we transition to net zero by 2030

Through a competitive process, the alpha projects have been awarded funding to address the biggest challenges facing Britain's energy networks.

Marzia Zafar, Deputy Director of Digitalisation & Innovation at Ofgem, said:

"This money will drive innovation in our energy system to decarbonise, reduce bills and protect consumers, and Ofgem is excited to see these projects develop.

"We're at a critical moment when it comes to our energy system, but by supporting fresh ideas and bold thinking, I'm confident we can reach net zero in the most equitable way possible, offering benefits for people all over the country.

"The Strategic Innovation Fund is an important part of reaching net zero, supporting people and organisations with great ideas to solve the major challenge of our time."

Pathways to funding

HeatNet is one of the successful alpha phase projects building on its previous discovery phase findings. The project is looking at how to improve the process of network planning and connecting renewable energy sources to the grid.

The HeatNet project tackles the challenge of managing rising heat pump demand. As the adoption of heat pumps accelerates, the need for smarter solutions to tackle costly voltage drops and network strain is growing.

The project will refine smart coordination tools that will support more heat pumps without the need for expensive network reinforcement and upgrades. This will ensure a reliable network that meets consumer needs and keeps them comfortable.

Straight to Alpha

Most projects follow the SIF three phase process, discovery, alpha and beta, competing for higher levels of funding at each phase, with fewer projects going through each time. But the flexibility-of-funding provided by SIF means that not all projects must follow that same path.

Projects that align with a challenge and meet the necessary requirements, can submit an application straight to alpha or beta. Projects that meet this criterion include those funded by SIF in a previous round or funded from an energy innovation fund such as the Network Innovation Allowance (NIA).

The HyScale Liquid Organic Hydrogen Carrier (LOHC) Phase 2b project is a great example of this, meeting the SIF straight to alpha criterion through NIA funding of HyScale LOHC Phase 2a.

The Hyscale LOHC project aims to demonstrate how an LOHC system can be used for capturing, storing and releasing hydrogen into a gas network to manage long-duration storage requirements.

The use of LOHCs connected to an electrolyser and a hydrogen gas network, will enable it to run flexibly and take advantage of low electricity prices. This will reduce the cost of producing hydrogen for consumers, accelerating the uptake of hydrogen for industrial needs, power generation and domestic heating.

This coordination between different funding mechanisms allows the SIF to support building the right partnerships to share knowledge and nurture the ideas with the highest potential in the drive to decarbonise.

Paul Padaruth, Head of Commercial, Ofgem Strategic Innovation Fund at Innovate UK said,

The Strategic innovation fund continues to find and fund ambitious innovation that can deliver meaningful change in the drive to decarbonise our energy system.

Congratulations to the successful projects. It is great to see the evolution of existing partnerships and the creation of new ones in the projects that have been successful in securing funding.

Through the creativity and ambition of the partners and these projects, I am confident we will see successful innovation that will support our net zero objective.

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Funding decision on Ofgem website - [Strategic Innovation Fund Round 3 Alpha Funding Decision | Ofgem](#)

Ofgem Strategic Innovation Fund: Round 3 Alpha: innovation projects approved for funding

Energy networks with projects approved

Network type	Lead project partner	No. Of approved projects
Electricity	Scottish and Southern Electricity Networks Distribution	1
	National Grid Electricity Distribution	3
	Northern Power Grid	3
	National Grid Electricity Transmission	2
	UK Power Networks	5
	Scottish and Southern Electricity Networks Transmission	1
	National Grid Electricity System Operator	1
	SP Energy Networks	2
	Electricity North West	1
Gas	Cadent gas	1
	Southern Gas Networks	1

Summary of projects approved

Lead network type	Project title, description and partners	SIF Funding award (£)
Challenge area: Whole system network planning and utilisation to facilitate faster and cheaper network transformation and asset rollout		
Electricity	<p>Sea Change: Developing a replicable, port-level investment model to explore transition scenarios to achieve zero emissions shipping by 20250, across the notably complex and diverse maritime sector. The model will also inform and enable ports and their users to plot their most viable decarbonisation paths.</p> <p>Project partners: Scottish and Southern Electricity Networks Distribution (Lead) Associated British Ports British Ports Association Ricardo- AEA Limited The European Marine Energy Centre PNDC, University of Strathclyde National Gas Transmission</p>	445,189
Electricity	Nature 4 Networks: Exploring the use of nature-based solutions to protect assets from problems such as flood risk and extreme heat. Reducing carbon intensive construction of	499,148

	<p>hard engineering solutions, with effective natural options that provide climate, biodiversity, social and wellbeing benefits.</p> <p>Project partners: Scottish and Southern Electricity Networks Distribution (Lead) GHD Frontier Economics SP Energy Networks Transmission</p>	
Electricity	<p>Revisiting and Evaluating Environmental Inputs on Line Ratings (REVISE): 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.</p> <p>Project partners: Scottish and Southern Electricity Networks Transmission National Grid National Grid ESO EnergyLine Met Office University of Strathclyde</p>	389,725
Electricity	<p>Cross Vector Energy Hub: Design and implementation of a multi-vector (gas + electricity) Energy Hub to optimise devices across a whole system, to increase resilience, operating efficiency, and hosting coordination.</p> <p>Project partners: Northern Powergrid (Lead) Smarter Grid Solutions Northern Gas Networks</p>	380,106
Electricity	<p>Look NorthH2: Exploring potential benefits and associated costs of developing offshore energy hubs (OEHs) in the UK. developing scenarios that quantify benefits such as curtailment reduction, grid losses reduction, and infrastructure optimisation. OEHs could stimulate integration of offshore electricity/hydrogen production between the UK and European countries.</p> <p>Project partners: National Grid Electricity Transmission (Lead) Guidehouse Orsted</p>	425,115

	National Gas Transmission Copenhagen Infrastructure Partner	
Electricity	<p>Wayl-Ease: Creating a transparent, but secure, external-facing record of consent by public and private landowners to dig up their ground and install network equipment. Automation of manual process and giving customers visibility will improve planning, speed up network transformation and inform customers.</p> <p>Project partners: UK Power Networks (Lead) Digital Catapult Tata Consulting Services SP Energy Networks Transmission</p>	485,499
Electricity	<p>Road to Power: Developing specific tools to forecast future energy consumption and infrastructural impact of works, to support the street and road works sector as it decarbonises 7.8TWh of energy demand across 700,000 major works in the sector's pivotal transition to net zero by 2030.</p> <p>Project partners: National Grid Electricity Distribution (Lead) EA Technology Kier Transportation</p>	437,404
Electricity	<p>HeatNet: Developing novel machine learning tools to manage power loads from heat pumps and help regulate voltage-drops at the grid edge, to accelerate the electrification of heat, improve voltage quality and network reliability, and keep our customers warm</p> <p>Project partners: UK Power Networks (Lead) Passiv UK I C Consultants</p>	467,057
Electricity	<p>Electric Thames: Mapping the future of the electricity system around the Thames. Exploring new technologies such as Boat-to-Grid services, to shape whole system planning and offer insights for decarbonisation and electrification that can be replicated across GB waterways.</p> <p>Project partners: UK Power Networks (Lead) Lane Clark & Peacock</p>	499,643

	<p>Marine Zero Port of London Authority EV Dot Energy</p>	
Electricity	<p>Rural Energy And Community Heat (REACH): Working with rural community energy groups to develop a modular rural energy centre that will help communities make cost effective decarbonisation plans. The solution will offer shared low carbon heating, rapid EV charging, and renewable generation in areas not served by commercial markets, and where there is limited electricity network capacity.</p> <p>Project partners: UK Power Networks (Lead) Cranfield University Regen SW Smart Grid Consultancy Frontier Economics Kensa Utilities Vepod</p>	490,017
<p>Challenge area: Novel technical, process and market approaches to deliver an equitable and secure net zero power system</p>		
Electricity	<p>LV Optimiser (LVOE): Focusing on an innovative low voltage (LV) power electronic device, (LV Optimiser), with its novel control algorithm to address LV voltage quality and imbalance, to support the growing demand and adoption of low carbon technologies (LCTs) such as solar panels, electric vehicles, and heat pumps.</p> <p>Project partners: SP Energy Networks (Manweb) (Lead) The University of Glasgow BCARE SP Energy Networks Retail</p>	£490,119
Electricity	<p>Fractal Flow: Developing a tool which provides clear visibility of fractal flow, to unlock capacity, provide clearer status visibility and explore integration of powerful machine learning analysis and targeted data exchange across grid supply points.</p> <p>Project partners: Northern Powergrid (Lead) Frazer-Nash Consultancy National Grid ESO ElectraLink</p>	£497,885

	Electricity North West Oak Tree Power Limited	
Electricity	<p>Assessment of Superconducting Technologies for Standards Development: Superconducting systems have five to ten times higher power density than the equivalent voltage conductor, meaning they deliver higher capacity at lower voltage levels and via a lower number of routes. This will allow faster network capacity increase, delivering time, cost, and carbon savings. Superconducting systems can also deliver a reduction in energy losses to virtually zero and ultimately realise greater environmental and health benefits.</p> <p>Project partners: National Grid Electricity Transmission (Lead) Frazer-Nash Consultancy University of Manchester University of Strathclyde VEIR Supernode</p>	443,086
Electricity	<p>System Strength Measurement and Evaluation (SYSMET): Bringing together leading experts to create 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 disconnections.</p> <p>Project partners: SSEN-T National Physical Laboratory (Lead) UK Power Networks National Grid Imperial College London SSER</p>	478,612
Electricity	<p>Network Security in a Quantum Future: Investigating the quantum threat to the energy system's cybersecurity, helping the industry to understand the actual threat from state actors, organised crime, and other threats, and enabling mitigation strategies to be developed.</p> <p>Project partners: National Grid ESO (Lead) Cambridge Consultants University of Edinburgh</p>	498,264

Electricity	<p>Fuel Cell Renewable Energy Equity (FREE): Exploring how fuel cell micro combined heat and power (CHP) systems can provide uninterruptable power supply (UPS) functionality for individual homes, as well as support other nearby homes which depend on direct electrification to provide heat, power, and mobility.</p> <p>Project partners: Northern Powergrid (Lead) LCP Delta E.ON fifty5north Bosch PNDC Northern Gas Network EA Technology</p>	472,235
Electricity	<p>Equiflex: Focussing on equal access to financial and environmental benefits for hard to engage and vulnerable customers, ensuring no consumers are unfairly left behind and enabling a just transition to net zero.</p> <p>Project partners: SP Energy Networks (Lead) Frazer-Nash Consultancy East Ayrshire Council Energy Action Scotland SP Energy Retail University of the West of Scotland</p>	424,011
Electricity	<p>Flex Direct: Transforming the roll out of energy efficiency upgrades, by developing novel commercial models and coordinated market approaches that enable local authorities and social housing providers to work with DSOs to incentivise and facilitate participation for hard-to-reach customers.</p> <p>Project partners: UK Power Networks (Lead) Sia Partners Centre for Sustainable Energy LCP Delta Utilita Energy</p>	480,307
Challenge area: Unlocking energy system flexibility to accelerate electrification of heat		
Electricity	<p>CoolDown: Despite modelling suggesting increasing cooling demand in office, retail and domestic spaces as the UK warms,</p>	499,888

	<p>cooling demand is currently poorly accounted for in distribution network planning. Additionally, its potential to offer flexibility during periods of network stress has not been considered. Cool Down will be the first project to consider cooling's potential as a flexible load.</p> <p>Project partners: Electricity North West (Lead) Guidehouse Europe UCL Consultants Impact Research Oaktree Power National Grid Electricity Distribution</p>	
Challenge area: Enabling power-to-gas (P2G) to provide system flexibility and energy network optimisation		
Gas	<p>Exploring Geological Hydrogen Storage Opportunities for the East Midlands (EMStor): Investigating options for storage of excess renewable energy for use during periods of peak demand.</p> <p>Project partners: Cadent Gas (Lead) British Geological Survey University of Edinburgh Star Energy Uniper Centrica National Gas</p>	499,981
Gas	<p>HyScale LOHC Phase 2b: The HyScale Liquid Organic Hydrogen Carrier (LOHC) project aims to demonstrate how an LOHC system can be used for capturing, storing and releasing hydrogen into a gas network, to manage long-duration storage requirements. The use of LOHCs connected to an electrolyser and a hydrogen gas network, will enable it to run flexibly and take advantage of low electricity prices. This will reduce the cost of producing hydrogen for consumers, accelerating the uptake of hydrogen for industrial offtakers, power generation and domestic heating. LOHC systems may play an important role in providing storage flexibility where geological storage is not available.</p> <p>Project partners: Southern Gas Networks (Lead)</p>	451,849

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Notes to editors

Ofgem, the Office of Gas and Electricity Markets - is Britain's independent energy regulator. Its role is to protect consumers now and in the future by working to deliver a greener, fairer energy system. It does this by:

- Working with Government, industry, and consumer groups to deliver a net zero economy at the lowest cost to consumers.
- Stamping out sharp and bad practice, ensuring fair treatment for all consumers, especially the vulnerable.
- Enabling competition and innovation, which drives down prices and results in new products and services for consumers.

Innovate UK, part of UK Research and Innovation, is the UK's innovation agency. It works to create a better future by inspiring, involving and investing in businesses developing life-changing innovations. Its mission is to help companies to grow through their development and commercialisation of new products, processes and services, supported by an outstanding innovation ecosystem that is agile, inclusive and easy to navigate.

The Strategic Innovation Fund (SIF), the purpose of the SIF is to support network innovation that contributes to the achievement of Net Zero, while delivering real net benefits to network companies and consumers; and to work with other public funders of innovation so that activities appropriately funded by network consumers are coordinated with activities funded by Government.

Ofgem is working with Innovate UK to deliver the Strategic Innovation Fund. The partnership brings together the complementary roles of both organisations. Ofgem regulates network and system operators to enable net zero at lowest cost to consumers. Innovate UK focuses on business growth and is delivering the SIF using its expertise in engaging with innovators on funding programmes across multiple sectors such as offshore wind, energy storage, defence, transport, aerospace, healthcare, and space.

Ofgem has determined that the value of the Strategic Innovation Fund will be £450m over the next network price control period ('RIIO-2'). The level of funding available can be increased

upwards if there is a need for greater funding. It will issue regular challenge competitions focused on areas of strategic importance to the future of the gas and electricity networks.

Under the Strategic Innovation Fund, gas and electricity network and system operators are able to form consortia with businesses and academics to propose innovative solutions to the challenges facing the networks. They can then apply for funding through the competitive process.

The Strategic Innovation Fund is drawn from energy consumer bills, all projects funded are required to bring a net benefit to consumers.

Projects are funded across three 'agile' stages – discovery, alpha and beta – to ensure focus on the right areas and minimise risk. Discovery projects are short feasibility studies, alpha are longer proof-of-concept projects, and beta projects are largescale demonstrators. This approach supports projects to develop rapidly, react to change and maximise their potential to transform Britain's gas and electricity networks.

For more information about the SIF see www.ofgem.gov.uk