Strategic Innovation Fund (SIF)

Cycle 4 Project Applications – Discovery Phase

Funding Decision and Summary of Recommendations from Expert Assessors

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Introduction

Innovation will prepare the regulated energy network companies to deliver net zero greenhouse gas emissions at the lowest cost to consumers, while maintaining world-class levels of system reliability and customer service.

The SIF was introduced as a part of the RIIO-2 price control by Ofgem, the Office of the Gas and Electricity Markets Authority, to support network innovations that contribute to reaching net zero while delivering real benefits to network consumers. The SIF is delivered in partnership with Innovate UK (part of UKRI), which administers the SIF and works to coordinate innovation activities funded by network consumers with other innovation funded programmes.

As the SIF transitions towards RIIO-3, Round 5 Innovation Challenges will span a two-year period. Under the established approach, Innovation Challenges have typically been launched annually to address the strategic issues facing the gas and electricity networks.

Within each Round, the SIF adopts a three Phase approach for Projects to mitigate the risk associated with innovation: Discovery Phase, Alpha Phase and Beta Phase. The Discovery Phase focuses on feasibility, the Alpha Phase on experimental development, and the Beta Phase on deployment and demonstration.

As set out in the SIF Governance Document[1], the SIF is open to the Electricity System Operator, Electricity Transmission and Distribution, Gas Transmission and Distribution licensees.

The Application process has recently been revised to allow for more flexibility depending on Project needs. The Application window now opens every four months, for around four weeks at a time – opening at the end of January, end of May, and end of September. Each of these open periods is termed a cycle. Applicants are able to apply across all three Phases of the SIF (Discovery, Alpha, and Beta) during each Application cycle, where eligible.

[1] The SIF Governance Document can be found here: https://www.ofgem.gov.uk/decision/updates-strategic-innovation-fund-governance-document

This report covers the Discovery Phase Project Applications submitted in Cycle 4, which ran from 22 September 2025 to 22 October 2025. It sets out the Funding Decisions from Ofgem alongside the recommendations from independent Expert Assessors. Each Project Application was scored in accordance with eight Eligibility Criteria in accordance with the relevant Innovation Challenges and the SIF Governance Document.

The Innovation Challenges covered by this Cycle are those launched in March 2025, under Round 5[2] of the SIF. There are seven Round 5 Innovation Challenges:

1. Advanced energy transmission and networks
2. Dynamic modelling
3. High-energy demand point integration
4. Consumer-centric grid expansion
5. Enhanced system visibility and control
6. Green gas
7. Whole system optimisation

These Innovation Challenges were developed through extensive collaboration and consultation with a wide range of stakeholders and interested bodies, including energy network companies, other innovators and entrepreneurs, government and academia. In prioritising these challenges, the key underlying principles established are that they should be:

- Strategic - innovations are required to meet national and devolved net zero targets effectively.
- Network relevant – they involve innovation needs and solutions that can be taken forward or materially supported by energy networks.
- Timely - the challenge should focus on problem areas where solutions can be scaled up to meet the requisite net zero targets and commitments. 2035 was used as a target year for identifying challenges.

[2] Find more information on the Innovation Challenges for Round 5 here: https://www.ofgem.gov.uk/publications/strategic-innovation-fund-round-5-challenges

- Appropriate in scope - the scope of the Innovation Challenge complements and does not duplicate other UK innovation programmes (including other network innovation funding mechanisms).

1 Cycle 4 Summary

Within each of the Innovation Challenges are specific requirements on scope and Project Partner requirements. Projects submitted to the SIF must meet these specific requirements and must follow the SIF Governance Document. For this Discovery Phase, Applications had to be received by 22 October 2025 and each Project's start date had to be no earlier than 1 January 2026. Projects must last up to 5 months, and must not request funding of more than £150,000, exclusive of VAT.

Applications submitted to the Cycle 4 Discovery Phase by the 22 October 2025 deadline, and which met the Innovation Challenge-specific requirements, were assessed by Expert Assessors. The Expert Assessors are independent external appointees whose recommendations inform Ofgem's decision-making on the selection of Projects for SIF Funding. The Expert Assessors have relevant expertise and knowledge on the respective Innovation Challenges and/or the energy sector, including for example policy, regulatory, commercial, financial and technical areas. Consistent with the requirements of the SIF Governance Document, the Expert Assessors have assessed each Application (a) with reference to its compatibility with the Eligibility Criteria in chapter 2, and (b) taking into consideration any additional and relevant information available to the Expert Assessors.

As part of each Application assessment, the Expert Assessors also considered whether Projects should receive all the SIF Funding requested for the Discovery Phase, or no funding at all.

The overall funding recommendation summarised in this report is based upon a balance of considerations taking into account whether a Project has met each of the SIF Eligibility Criteria, suitability of the Project for SIF funding, any Project-specific conditions recommended by Expert Assessors, and wider concerns or opportunities identified by the Expert Assessors. For more information on how Projects are assessed by the Expert Assessors, please see Section 2, Assessment Process, below.

This report is a consolidation of the Applications assessed by the Expert Assessors and sets out recommendations from the Expert Assessors to Ofgem on which

Projects have met the Eligibility Criteria and should be considered for SIF Funding in the Cycle 4 Discovery Phase of the SIF. Ofgem, taking into account the Expert Assessors' assessment and recommendations, performs its own internal review of each Project to reach a decision. Ofgem is the sole decision-maker for the SIF.

2 Assessment Process

For the Discovery Phase there is a maximum of 5 stages in assessing eligible submitted Applications:

- Initial sift - completed by Innovate UK to confirm whether an Application complies with the Innovation Challenge-specific requirements.
- Expert Assessor evaluation – An Expert Assessor assesses and provides a score for each Application and its accompanying appendices, against the questions stipulated in the SIF Governance. These questions tie directly to the Eligibility Criteria outlined in chapter 2 of the SIF Governance Document. Each Expert Assessor includes their assessment of how and why an Application has met or not met each Eligibility Criterion and an overall comment for each Application assessed.
- Expert Assessors' overall recommendations – As part of their assessment, each Expert Assessor provides an overall recommendation on whether the Project should be considered for SIF Funding in the Discovery Phase. This decision is made based on an assessment of whether the majority of Expert Assessors consider that each of the Eligibility Criteria has been met, and a consideration of any serious risk or opportunity regarding an Application. A Project will be recommended for SIF Funding if it has a majority of Expert Assessors recommending it (two of the three Expert Assessors who assessed the Application); if no significant risks are identified which could prevent the Project from progressing, and if the majority of Expert Assessors on each Project consider it to have met each of the Eligibility Criteria outlined in chapter 2 of the SIF Governance Document.
- Recommended Project-specific conditions – Should an Expert Assessor identify an area for additional consideration or clarity for a Project recommended for SIF Funding during the Discovery Phase, the Expert Assessor may recommend that a Project-specific condition be included. In many cases these have been offered as ways of strengthening the Project outcomes and their inclusion does not necessarily reflect a weakness in the Application. The recommended Project-specific conditions are then considered by Ofgem and finalised with any modifications in the Project Direction for each successful Project.
- Final decision – The consolidated recommendations report is provided to Ofgem for consideration on which of the Projects for which Applications have been made should be considered for SIF Funding. Having taken into account the

Expert Assessors' report, the Authority decides which Projects should receive SIF Funding and provides brief commentary on its reasoning for each decision.

2.1 Meeting the SIF Eligibility Criteria

Projects submitted must meet all the Eligibility Criteria outlined in chapter 2 of the SIF Governance Document in order to be considered for SIF Funding. There are eight Eligibility Criteria which must be evidenced within an application. The following table outlines how the scored questions tie with the Eligibility Criteria outlined in the SIF Governance Document.

Question number	Application question	Eligibility Criteria (chapter 2 of the SIF Governance Document)
5	Problem statement	Eligibility Criterion 1: Projects must address the Innovation Challenge set by Ofgem.
7	Innovation justification	Eligibility Criterion 1: Projects must address the Innovation Challenge set by Ofgem. Eligibility Criterion 3: Projects must involve network innovation. Eligibility Criterion 5: Projects must be innovative, novel or risky.
8	Benefits Part 1	Eligibility Criterion 2: Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers (whomever is paying for the innovation).
9	Benefits Part 2	Eligibility Criterion 2: Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers (whomever is paying for the innovation).
10	Team and resource	Eligibility Criterion 6: Projects must include participation from a range of stakeholders.
11	Project Plan and milestones	Eligibility Criterion 8: Projects must be well thought through and have a robust methodology so that they are capable of progressing in a timely manner.

12	Key outputs and dissemination	Eligibility Criterion 4: Projects must not undermine the development of competitive markets.
15	Value for Money	Eligibility Criterion 7: Projects must provide value for money and be costed competitively.

3 Summary of Discovery Projects submitted in Cycle 4

In the Cycle approach, applicants have multiple opportunities throughout the year to apply to each Phase (Discovery, Alpha and Beta). Therefore, we anticipate times when some Phases and Innovation Challenges will not receive any Applications.

In Cycle 4, the following Discovery Phase Projects Applications were submitted for the Round 5 challenges:

Innovation Challenge	No. of Applications received
Advanced energy transmission and networks	2
Dynamic modelling	1
High-energy demand point integration	1
Consumer-centric grid expansion	4
Enhanced system visibility and control	2
Green gas	3
Whole system optimisation	2

4 Innovation Challenge: Advanced energy transmission and networks

4.1 Overview of Projects

This sub-section covers the assessment of Discovery Phase Applications received into the 'Advanced energy transmission and networks' Innovation Challenge in Cycle 4.

In order to protect intellectual property rights (IPR), unsuccessful Projects have been redacted from the final published version.

Project reference number	Project name	Funding licensee	Total Project costs (£)	Total Project contribution (£)	Total SIF Funding requested (£)	Recommended by Expert Assessors for funding (Yes/No)	Decision by Ofgem for funding (Yes/No)
10179249	WPT for Grid	National Grid Electricity Distribution plc	161,513	16,395	145,118	Yes	Yes
10179100	SPRINT - Superconducting fault current limiters Potential to limit Reactor Implementation within DC Network Topologies	Scottish Hydro Electric Transmission plc	163,652	16,398	147,254	Yes	Yes

4.2 Expert Assessors' recommendations on Projects

4.2.1 Project 10179249 - WPT for Grid

Submitted Project description
This project investigates the use of wireless power transmission (WPT) to enable quicker, more-flexible grid connections and overcome delays associated with installing traditional cabled infrastructure. This offers a rapidly deployable alternative for connecting new generation, demand, and interconnection assets, with applications ranging from generic grid reinforcement to remote communities, offshore renewables, temporary net zero construction, and emergency response. Benefits for consumers include quicker access to clean, affordable electricity, reduced connection delays, and improved reliability. The project will assess technical feasibility, adoption barriers, and cost-benefit implications, building on prior DESNZ-funded research that demonstrated the viability of high-power WPT.

Eligibility Criteria met or not met – Expert Assessors' evaluation	
1. Projects must address the Innovation Challenge set by Ofgem.	Met
2. Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers	Met
3. Projects must involve network innovation.	Met
4. Projects must not undermine the development of competitive markets.	Met
5. Projects must be innovative, novel and/or risky.	Met
6. Projects must include participation from a range of stakeholders.	Met
7. Projects must provide value for money and be costed competitively.	Met
8. Projects must be well thought through and have a robust methodology so that they are capable of progressing in a timely manner.	Met

Recommendation to the Office of Gas and Electricity Markets (Ofgem)
FUND
The Project clearly addresses the Innovation Challenge by exploring the use of Wireless Power Transmission (WPT) to support faster, more flexible grid access. The Project sets out a strong case for how WPT could reduce connection delays, enable temporary and remote connections, and provide an alternative to conventional grid reinforcement. The Project presents a strong alignment with the challenge aim of accelerating clean electricity access and improving grid flexibility. The Project clearly identifies potential to deliver net benefits to electricity consumers. The Project identifies specific bottlenecks in current connection processes and outlines how WPT could speed up access, and create long-term value, particularly in areas where traditional expansion is not feasible or cost-effective. The involvement of NGED and other network operators adds confidence in the applicability and consumer value of the proposed use cases. The Project involves network innovation because it proposes a modular, relocatable WPT solution that challenges current infrastructure models and has the potential to change both the approach and timescales for grid connections. If successful, the technology could offer a transformative alternative to traditional reinforcement, especially in constrained or remote areas. The Project does not undermine the development of competitive markets. The Project reflects an understanding of market dynamics, includes appropriate commercial considerations, and commits to SIF IPR principles. The involvement of multiple Project Partners, transparent licensing intentions, and engagement with international experts further supports future competitive market development. The Project is innovative and risky because it explores a technology that is not yet widely adopted at the scales considered and requires a departure from standard grid practices. The technical, regulatory, and social uncertainties are recognised, and the proposal shows how the consortium will investigate feasibility, safety, and performance at MW-scale power densities. The challenge is ambitious, but the scale of potential impact justifies the level of risk.

The Project has brought together a sufficient and well-balanced range of stakeholders. The consortium includes network operators, technical specialists, and independent assessment expertise. The breadth and relevance of participation strengthens the credibility of the investigation and ensures appropriate pathways for assessment, challenge, and learning.

The Project represents value for money because costs are proportionate to the scope of exploration, and resources are distributed appropriately across Project Partners. The proposal outlines a clear commercialisation pathway, with strong early engagement from end users and technical experts. While high-risk, the potential return and wider system benefit justify the investment at Discovery Phase.

The Project presents a robust and credible methodology because it includes well-defined deliverables, a clear timeline, and appropriate risk management. The consortium demonstrates suitable expertise and experience, and the Application shows evidence of careful consideration of the technical, regulatory, and operational dimensions of the work.

Decision from the Office of Gas and Electricity Markets (Ofgem)
FUND
Ofgem agrees with the Expert Assessors and approves this Project for funding.

Recommended Project-specific conditions
Prior to the End of Phase meeting, the Funding Party must provide to the Monitoring Officer a summary of the safety credentials and public perception associated with wireless power transmission.

4.2.2 Project 10179100 - SPRINT - Superconducting fault current limiters Potential to limit Reactor Implementation within DC Network Topologies

Submitted Project description

The SPRINT Project aims to enhance the protection and efficiency of high voltage direct current (HVDC) networks by integrating superconducting fault current limiters (SFCLs). This innovative approach seeks to address the limitations of existing fault current management techniques, which rely on costly and space-consuming DC reactors. By leveraging SFCL technology, the Project aims to reduce fault current peaks, lower energy dissipation, and improve system stability. The collaboration between Scottish Hydro Electric Transmission Plc, SuperGrid Institute, and the National HVDC Centre ensures a blend of cutting-edge research and practical implementation, fostering advancements in HVDC grid protection.

Eligibility Criteria met or not met – Expert Assessors' evaluation	
1. Projects must address the Innovation Challenge set by Ofgem.	Met
2. Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers	Met
3. Projects must involve network innovation.	Met
4. Projects must not undermine the development of competitive markets.	Met
5. Projects must be innovative, novel and/or risky.	Met
6. Projects must include participation from a range of stakeholders.	Met
7. Projects must provide value for money and be costed competitively.	Met
8. Projects must be well thought through and have a robust methodology so that they are capable of progressing in a timely manner.	Met

Recommendation to the Office of Gas and Electricity Markets (Ofgem)
FUND
The Project addresses the Innovation Challenge because it aligns with superconducting technologies for high-efficiency transmission. The Project

presents a clear problem statement and sets out how superconducting fault current limiters could support protection and optimisation of future HVDC networks.

The Project has identified potential to deliver a net benefit to electricity consumers. The majority of Expert Assessors noted that improving the efficiency of HVDC network design could reduce overall system development costs, helping avoid unnecessary reinforcement and lower long-term expenditure across the transmission network. However, one Expert Assessor noted that the Project has not yet clearly articulated or quantified this benefit and intends to undertake this analysis during Discovery. Overall, the Project shows credible potential, but the consumer value case requires further development.

The Project involves network innovation because it explores the use of superconducting technologies to improve DC network protection and operation, which represents a novel departure from existing solutions. Although one Expert Assessor questioned the maturity of the underlying justification, the majority view is that the concept introduces new approaches for HVDC system design that constitute network innovation.

The Project does not undermine the development of competitive markets because it intends to make outputs and learning available to all network operators and the wider innovation community. While one Expert Assessor flagged that the proposal could have better acknowledged competing technologies and other market activity, the overall approach aligns with SIF principles and supports fair access.

The Project is innovative, novel, and risky because it seeks to assess the feasibility of superconducting fault current limiters in grid-level HVDC applications, an area which has so far only been explored mainly in academic settings. Although one Expert Assessor raised concerns that the work may remain literature-based, the wider assessment is that the technical uncertainty and potential impact justify classification as innovative and risky at the Discovery Phase.

The Project includes participation from a sufficient range of stakeholders. SSEN-T and SuperGrid form a consortium with strong technical capability, access to

relevant facilities, and experience needed to carry out the work. The combination of end-user involvement and specialist R&D expertise gives confidence in the Project's delivery.

The Project represents value for money because the costs are well defined, proportional to the scope, and balanced appropriately between the Project Partners. Two Expert Assessors found the budget reasonable and aligned with the level of innovation. One Expert Assessor questioned whether some information may already exist in the public domain, but overall the Project offers suitable value for money for the Discovery Phase.

The Project presents a methodology that is capable of progressing in a timely manner. The plan includes clear work packages, ownership, milestones, and deliverables, and most Expert Assessors considered it realistic and well structured. One Expert Assessor felt the risk assessment could be more comprehensive, but overall the methodology is sufficiently robust to give confidence at this stage.

Decision from the Office of Gas and Electricity Markets (Ofgem)
FUND
Ofgem agrees with the Expert Assessors and approves this Project for funding.

Recommended Project-specific conditions
Prior to the End of Phase meeting, the Funding Party must provide to the Monitoring Officer a written assessment demonstrating how the Project does not undermine the development of competitive markets, including consideration of alternative markets, competitors, and relevant GB cross-sector R&D activity. Prior to the Kick-off meeting, the Funding Party must provide to the Monitoring Officer an expanded risk management plan that sets out key technical, delivery, and external risks, including mitigations and dependencies. Prior to the End of Phase meeting, the Funding Party must provide a summary of relevant international case studies and learning, in Germany, South Korea, United

States and Japan, and demonstrate how these have informed the Project's Discovery Phase work.

5 Innovation Challenge: Dynamic modelling

5.1 Overview of Projects

This sub-section covers the assessment of Discovery Phase Applications received into the 'Dynamic modelling' Innovation Challenge in Cycle 4.

In order to protect intellectual property rights (IPR), unsuccessful Projects have been redacted from the final published version.

Project reference number	Project name	Funding licensee	Total Project costs (£)	Total Project contribution (£)	Total SIF Funding requested (£)	Recommended by Expert Assessors for funding (Yes/No)	Decision by Ofgem for funding (Yes/No)
10179485	Foundation	Scottish Hydro Electric Power Distribution plc	168,128	19,023	149,105	No	No

5.2 Expert Assessors' recommendations on Projects

5.2.1 Project 10179485 - Foundation

Submitted Project description
Understanding network power flows is becoming of increasingly significant importance to DNOs, especially at low voltage, as we transition to a decarbonised society. Missing asset data, such as underground cable information, means that conservative assumptions about capacity need to be made, limiting the effective use of the network, increasing modelling time and leading to inefficient investment decisions. The Foundation project will use cutting edge probabilistic modelling techniques to help fill in gaps, providing levels of confidence about accuracy and will ultimately scale this for use nationally in order to deliver better service to consumers at lower cost.

Eligibility Criteria met or not met – Expert Assessors' evaluation	
1. Projects must address the Innovation Challenge set by Ofgem.	Met
2. Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers	Met
3. Projects must involve network innovation.	Met
4. Projects must not undermine the development of competitive markets.	Met
5. Projects must be innovative, novel and/or risky.	Not met
6. Projects must include participation from a range of stakeholders.	Met
7. Projects must provide value for money and be costed competitively.	Met
8. Projects must be well thought through and have a robust methodology so that they are capable of progressing in a timely manner.	Met

Recommendation to the Office of Gas and Electricity Markets (Ofgem)
DO NOT FUND
The majority of Expert Assessors do not agree that this Project has fully met the Eligibility Criteria and do not recommend this Application for funding. The Project addresses the Innovation Challenge because it proposes to use advanced data science techniques to improve the quality of underground asset data, which supports more accurate network simulation, optimisation, and planning. Expert Assessors noted the use of advanced data-science techniques would enhance visibility, reliability, and usability of underground assets. The Project has identified potential to deliver a net benefit to electricity consumers. The majority of Expert Assessors stated the higher-quality inputs to load-flow and power-system models could lower long-term system costs, and improve operational efficiency. However, one Expert Assessor noted that the Project does not clearly specify or quantify these benefits and intends to undertake this work during Discovery. The Project is considered to involve network innovation because it proposes the application of data science approaches such as knowledge graphs, Bayesian statistics, and active learning to address data quality challenges. This approach represents a significant step forward from traditional methods and has the potential to transform how network data is managed and utilised. The Project is not considered to undermine the development of competitive markets because it intends to make outputs freely available to all Network Licensees and follow standard SIF intellectual property arrangements. The Project is not considered innovative, novel, and/or risky. While one Expert Assessor viewed the data science approach as innovative, the majority of Expert Assessors highlighted that the underlying techniques are well established, the risks are low or related only to process, and the proposal does not demonstrate technical feasibility or plausibility. One Expert Assessor stated that the Project replicates existing LV digitalisation work and could be carried out through a simple

contracting exercise at much lower cost. The majority view is that the Project does not demonstrate sufficient innovation or risk.

The Project includes participation from a sufficient range of stakeholders because the Project Partners bring relevant capabilities in network operations and data science, and there is intent to engage wider stakeholders.

The Project does represent value for money. The majority of Expert Assessors considered that the Project provides a detailed breakdown of costs, demonstrates competitive Project Partner selection, and benchmarks rates against market standards. One Expert Assessor identified concerns, including excessive data science day rates, an overstatement of the effort required, and a lack of quantified benefits to justify costs. Overall, the Project was considered to have met this Eligibility Criterion.

The Project has a robust methodology that gives confidence it will be capable of progressing in a timely manner because it sets out clear work packages, deliverables, responsibilities, and a Project management approach that supports effective oversight. One Expert Assessor noted that the technical methodology lacks detail on the development and application of the proposed Bayesian framework, which should be strengthened. However, the overall planning and management framework are sufficient for this Criterion to be considered met.

Decision from the Office of Gas and Electricity Markets (Ofgem)

DO NOT FUND

Ofgem agrees with the Expert Assessors that the Project is not innovative, novel and/or risky to meet Eligibility Criterion 5. Additionally, that the Project does not demonstrate sufficient value for money, as required under Eligibility Criterion 7.

The Project does not meet Eligibility Criterion 5. While the Application references advanced data science techniques, it is considered that these methods are well established and insufficiently novel in the context of electricity network innovation. The Project does not provide technical justification for how the proposed approach would materially advance the state of the art or address unresolved barriers in low-voltage digitalisation. Ofgem also notes that other SIF

Projects are already undertaking similar work to address LV cable data gaps, reducing the distinctiveness and innovative value of this proposal.

Furthermore, the Project has not met Eligibility Criterion 7 as a substantial proportion of the Project's budget, roughly 30%, is allocated to project management activities, which is disproportionate for a Discovery Phase Project and undermines confidence that the proposed work represents an efficient use of public funding.

Recommended Project-specific conditions
N/A

6 Innovation Challenge: High-energy demand point integration

6.1 Overview of Projects

This sub-section covers the assessment of Discovery Phase Applications received into the 'High-energy demand point integration' Innovation Challenge in Cycle 4.

In order to protect intellectual property rights (IPR), unsuccessful Projects have been redacted from the final published version.

Project reference number	Project name	Funding licensee	Total Project costs (£)	Total Project contribution (£)	Total SIF Funding requested (£)	Recommended by Expert Assessors for funding (Yes/No)	Decision by Ofgem for funding (Yes/No)
10179152	Forecasting & Planning Regional Digital Infrastructure - FPRDI	Northern Powergrid (Northeast) Limited	149,246	14,926	134,320	Yes	Yes

6.2 Expert Assessors' recommendations on Projects

6.2.1 Project 10179152 - Forecasting & Planning Regional Digital Infrastructure – FPRDI

Submitted Project description
This project will develop a spatially integrated forecasting tool to help electricity networks anticipate the location, timing, and scale of future medium and large data centre demand. With the Northeast and Yorkshire emerging as digital infrastructure hubs, traditional load models are no longer sufficient. The tool will integrate geospatial analytics, AI, grid connection, and planning data to support proactive investment and anticipatory reinforcement and will align with planning workflows and open data platforms. Designed for scalability and sector-wide benefit, the project supports Ofgem's Innovation Challenge 3 and contributes to grid flexibility, decarbonisation, and inclusive growth.

Eligibility Criteria met or not met – Expert Assessors' evaluation	
1. Projects must address the Innovation Challenge set by Ofgem.	Met
2. Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers	Met
3. Projects must involve network innovation.	Met
4. Projects must not undermine the development of competitive markets.	Met
5. Projects must be innovative, novel and/or risky.	Met
6. Projects must include participation from a range of stakeholders.	Met
7. Projects must provide value for money and be costed competitively.	Met
8. Projects must be well thought through and have a robust methodology so that they are capable of progressing in a timely manner.	Met

Recommendation to the Office of Gas and Electricity Markets (Ofgem)
FUND
The Expert Assessors agree that this Project has met the Eligibility Criteria and recommend this Application for funding. The Project addresses the Innovation Challenge because it proposes a novel approach to forecasting electricity demand from data centres, directly aligned with Innovation Challenge 3 on improving demand centre energy forecasting and understanding load growth. The Expert Assessors agreed that the Project introduces more sophisticated forecasting capabilities than those currently used by Distribution Network Operators and will support improved network planning. The Project has clearly identified potential to deliver a net benefit to electricity consumers. Expert Assessors noted that better demand forecasting reduces uncertainty for networks, which helps to avoid unnecessary reinforcement and manage investment more efficiently. That lowers system costs and supports quicker, better-targeted data centre connections, reducing delays and easing local network pressures. The Project also supports more efficient use of existing capacity, which can defer carbon-intensive reinforcement and improve how high-demand loads are managed. The Project involves network innovation because it proposes the development of a tool that integrates multiple data sources, differentiates between data centre types, and considers factors such as backup arrangements and build timelines. While some Expert Assessors noted that similar initiatives may emerge as sector demand grows, the overall consensus is that the Project presents sufficient innovation in the context of DNO planning processes. The Project is not considered to undermine the development of competitive markets. Outputs will be made available under default SIF intellectual property terms, supporting transparency and replication across network licensees. Improved demand forecasts could also accelerate connections and facilitate competition in related markets. The Project is considered innovative and risky because it introduces new data sources and modelling approaches into the forecasting process while addressing uncertainties around stakeholder engagement and access to non-network data.

Expert Assessors noted that while some similar work may be happening outside the SIF, the challenges associated with data access, demand ramp-ups, and integration with existing planning tools justify the innovation case.

The Project includes participation from a sufficient range of stakeholders because it brings together a network licensee and a specialist consultancy with relevant forecasting and analytical expertise. Expert Assessors noted that participation from local authorities or developers would strengthen the Project, and this should be considered if the Project progresses to the Alpha Phase.

The Project represents value for money as the total costs are competitive for a Discovery Phase initiative, the budget is lower than typical SIF proposals, and the Project Partners do not charge high commercial rates. Expert Assessors flagged that most of the cost is allocated to consultancy support, but overall agreed that the expected insights and benefits justify the expenditure.

The Project has a methodology that gives confidence it will be capable of progressing in a timely manner because it includes clearly defined work packages, roles, and governance structures. Expert Assessors observed that while the work package descriptions are detailed, the Gantt chart does not reflect interdependencies and requires improvement.

Decision from the Office of Gas and Electricity Markets (Ofgem)
FUND
Ofgem agrees with the Expert Assessors and approves this Project for funding.

Recommended Project-specific conditions
Prior to the start of Discovery Phase, the Funding Party must provide to the Monitoring Officer a Gantt chart and revised Project plan that clearly sets out task dependencies, sequencing, and critical path activities. Prior to the End of Phase meeting, the Funding Party must provide to the Monitoring Officer an updated stakeholder engagement plan that identifies the relevant external stakeholders, including local authorities and data centre

developers, and sets out how the Project will secure the necessary data and insight from them.

Prior to the End of Phase meeting, the Funding Party must provide the Monitoring Officer with a summary of how the Project has addressed data-sharing challenges and engaged with other data-centre load-forecasting Projects or similar initiatives. This must include evidence of how insights were exchanged, how relevant learning from SIF and non-SIF Projects informed its approach, and how these factors shaped the integration of data from multiple sources within and beyond the energy sector.

7 Innovation Challenge: Consumer-centric grid expansion

7.1 Overview of Projects

This section covers the assessment of Cycle 4 Discovery Phase Applications received into the 'Consumer-centric grid expansion' Innovation Challenge.

In order to protect intellectual property rights (IPR), unsuccessful Projects have been redacted from the final published version.

Project reference number	Project name	Funding licensee	Total Project costs (£)	Total Project contribution (£)	Total SIF Funding requested (£)	Recommended by Expert Assessors for funding (Yes/No)	Decision by Ofgem for funding (Yes/No)
10179235	DIME - Demand Insights for Metered Enterprises	Southern Electric Power Distribution plc	170,659	24,233	146,426	Yes	Yes
10179081	CREOS-OUT	Scottish Hydro Electric Power Distribution plc	152,245	15,225	137,020	Yes	Yes
10179073	Social VPP	Northern Powergrid (Northeast) Limited	169,338	19,414	149,924	Yes	Yes
10179005	Grounds for Change	Southern Electric Power Distribution plc	104,583	10,458	94,125	Yes	Yes

7.2 Expert Assessors' recommendations on Projects

7.2.1 Project 10179235 - DIME - Demand Insights for Metered Enterprises

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

Eligibility Criteria met or not met – Expert Assessors' evaluation	
1. Projects must address the Innovation Challenge set by Ofgem.	Met
2. Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers	Met
3. Projects must involve network innovation.	Met
4. Projects must not undermine the development of competitive markets.	Met
5. Projects must be innovative, novel and/or risky.	Met
6. Projects must include participation from a range of stakeholders.	Met
7. Projects must provide value for money and be costed competitively.	Met

8. Projects must be well thought through and have a robust methodology so that they are capable of progressing in a timely manner.	Met

Recommendation to the Office of Gas and Electricity Markets (Ofgem)
FUND
The Expert Assessors agree that this Project has met the Eligibility Criteria and recommend this Application for funding. The Project addresses the Innovation Challenge because it focuses on improving visibility of SME and commercial electricity consumption using novel data techniques and machine learning. This approach aligns with Challenge 4, Consumer-centric grid expansion, by supporting more informed and community-aligned infrastructure planning. The Project has clearly identified potential to deliver a net benefit to electricity consumers. By improving the accuracy of demand estimation and reducing uncertainty in load modelling, the Project could enable more efficient reinforcement decisions, reduce costs for Distribution Network Operators, and ultimately benefit consumers. One Expert Assessor noted that the benefits could be modest or insufficiently quantified at this stage, but all agreed that the Project presents a credible route to consumer benefit. The Project involves network innovation because it proposes new methods for inferring business types and consumption profiles using alternative datasets, economic indicators, and machine learning approaches not previously used for this segment of the market. Although Expert Assessors noted potential overlap with work being carried out by third-party data providers, they agreed that the Project offers novel analytical approaches in the context of DNO use cases. The Project is not considered to undermine the development of competitive markets because the outputs will be available to all network licensees and the innovation lies primarily in methodology rather than procurement of proprietary platforms. The approach supports improved planning without restricting market access or disadvantaging specific commercial providers.

The Project is considered innovative and risky because it proposes approaches not currently available to DNOs, including demand estimation and load forecasting methods that incorporate alternative datasets and low-carbon technology uptake by business type. Expert Assessors highlighted uncertainties around data availability and how modelling will compare to private-sector solutions, but agreed that the Project presents sufficient novelty and technical risk to meet this Criterion.

The Project includes participation from a sufficient range of stakeholders because the consortium brings together a licensed DNO, a local authority, and external consultancies providing applied economics, data modelling, and machine-learning expertise. This ensures the Project can explore a wide range of use cases and stakeholder needs.

The Project represents value for money because the requested funding is competitive for a Discovery Phase, the budget is well balanced across Project Partners, and most costs relate directly to development of outputs. One Expert Assessor noted that Frontier Economics' day rates are high; however, because their involvement is limited in scope, this does not materially affect overall value for money.

The Project has a robust methodology that gives confidence it will be capable of progressing in a timely manner. The work packages are clearly defined, the delivery responsibilities are well allocated, and the consortium has provided professionally drafted project documentation. Expert Assessors noted that the Project has appropriately considered data availability risks and set out reasonable mitigation strategies, which supports confidence in delivery.

Decision from the Office of Gas and Electricity Markets (Ofgem)
FUND
Ofgem agrees with the Expert Assessors and approves this Project for funding.

Recommended Project-specific conditions

Prior to the Kick-off Phase meeting, the Funding Party must provide the Monitoring Officer with a document explaining how the Project's outputs align with, support, and complement the 2027 Market-Wide Half-Hourly Settlement (MHHS) reform

Prior to the End of Phase meeting, the Funding Party must outline to the Monitoring Officer how the Project's modelling approaches differ from or complement existing commercial solutions (e.g., QuantEnergy, Arbnco), and how duplication will be avoided.

Prior to the End of Phase meeting, the Funding Party must provide to the Monitoring Officer an updated stakeholder engagement plan that identifies key external stakeholders, including additional local authorities and relevant commercial property developers, and sets out how the Project will secure the data and insight required for effective model development.

7.2.2 Project 10179081 - CREOS-OUT

Submitted Project description
Creosote is a tar-based wood preservative used to protect utility poles, but it is also an environmental contaminant that can leach into soil and water, posing serious health and ecological risks. The UK energy network utilises creosote-treated poles for overhead-line distribution due to their long service life, with SSEN operating over 1 million and replacing around 20,000 annually. This project explores the natural enzymatic capabilities of certain microbes to break down creosote contaminants. CREOS-OUT's bioremediation approach offers an eco-friendly alternative to costly incineration, enabling safer reuse of infrastructure while supporting sustainable grid expansion, and reducing public and environmental risks.

Eligibility Criteria met or not met – Expert Assessors' evaluation

1. Projects must address the Innovation Challenge set by Ofgem.	Met
2. Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers	Met
3. Projects must involve network innovation.	Met
4. Projects must not undermine the development of competitive markets.	Met
5. Projects must be innovative, novel and/or risky.	Met
6. Projects must include participation from a range of stakeholders.	Met
7. Projects must provide value for money and be costed competitively.	Met
8. Projects must be well thought through and have a robust methodology so that they are capable of progressing in a timely manner.	Met

Recommendation to the Office of Gas and Electricity Markets (Ofgem)
FUND
The Expert Assessors agree that this Project has met the Eligibility Criteria and recommend this Application for funding. The Project addresses the Innovation Challenge because it focuses on the environmental sustainability and future viability of creosote-treated wooden poles, which are critical to the operation of the distribution network. The Expert Assessors agreed that the Project aligns with Challenge 4, Consumer-centric grid expansion, by targeting the environmental acceptability, end-of-life treatment, and future legislative pressures associated with these poles, directly addressing a key barrier to consumer-centric grid expansion. The Project has clearly identified potential to deliver a net benefit to electricity consumers because it proposes a bioremediation approach that could reduce hazardous waste disposal costs, extend the life of existing poles, and avoid the need for more expensive replacements. Expert Assessors noted that these improvements could lower system-wide costs, reduce carbon impacts, and

support faster, more sustainable reinforcement activity, thereby delivering meaningful financial and environmental benefits.

The Project involves network innovation because it investigates a novel biotechnology route for reducing creosote contamination in wooden poles. The development of an enzyme-based bioremediation method represents a departure from the existing disposal and incineration approach and could enable safer, lower-carbon, and more cost-effective handling of a critical network asset.

The Project is not considered to undermine the development of competitive markets because its outputs will be openly disseminated and shared across GB distribution network operators and the wider industry. The Project Partners have committed to sharing findings through reports, events, and knowledge-sharing activities, supporting broad market participation rather than creating a proprietary advantage.

The Project is considered innovative, novel, and risky because the application of PAH-degrading microorganisms and enzymes to creosote-treated wooden poles is unproven at operational scale. Expert Assessors highlighted that the scientific feasibility, optimisation, and transition from laboratory research to a deployable solution all carry genuine technical uncertainty, which is appropriate for the SIF Discovery Phase.

The Project includes participation from a sufficient range of stakeholders because the consortium brings together a network operator, academic specialists in biochemical and microbiological research, and environmental and regulatory expertise. This combination provides the technical depth, sector insight, and regulatory awareness needed to assess the feasibility of this bioremediation approach.

The Project represents value for money because the total cost is proportionate to the scope of work, transparently allocated across Project Partners, and justified by the potential for significant operational and environmental savings—up to £3 million annually across the GB electricity system. Expert Assessors noted that the Project addresses a high-cost issue, targets a scalable solution, and makes appropriate use of specialist expertise.

The Project has a robust methodology that gives confidence it will be capable of progressing in a timely manner because it provides a detailed work-package structure with clear deliverables, milestones, dependencies, and a comprehensive risk register. Expert Assessors agreed that the planning is thorough and coherent, demonstrating strong project management discipline for the Discovery Phase.

Decision from the Office of Gas and Electricity Markets (Ofgem)
FUND
Ofgem agrees with the Expert Assessors and approves this Project for funding.

Recommended Project-specific conditions
Prior to the End of Phase meeting, the Funding Party must provide to the Monitoring Officer a summary of the potential cost savings and environmental benefits of the bioremediation approaches investigated during the Discovery Phase. Prior to the End of Phase meeting, the Funding Party must provide to the Monitoring Officer a plan outlining how the Project has engaged with, and drawn on insights from, the following related initiatives: Active Creosote Extraction (ACE), Environmentally Acceptable Wood Pole Pre-treatment Alternatives to Creosote (APPEAL), and Pollywood II.

7.2.3 Project 10179073 - Social VPP

Submitted Project description
The Social Virtual Power Plant (Social VPP) empowers vulnerable and fuel-poor households to actively participate in the energy transition. By combining community-led investment with smart flexibility software, the project aggregates household batteries and demand response to lower bills, reduce carbon emissions, and strengthen grid resilience. Unlike traditional models, the Social VPP ensures inclusive access to low-carbon technologies and returns revenues to communities. This Discovery Phase will assess technical, financial, and social

feasibility, creating a replicable pathway for consumer-centric grid expansion that delivers both operational benefits for electricity networks and fairer outcomes for households.

Eligibility Criteria met or not met – Expert Assessors' evaluation	
1. Projects must address the Innovation Challenge set by Ofgem.	Met
2. Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers	Met
3. Projects must involve network innovation.	Met
4. Projects must not undermine the development of competitive markets.	Met
5. Projects must be innovative, novel and/or risky.	Met
6. Projects must include participation from a range of stakeholders.	Met
7. Projects must provide value for money and be costed competitively.	Met
8. Projects must be well thought through and have a robust methodology so that they are capable of progressing in a timely manner.	Met

Recommendation to the Office of Gas and Electricity Markets (Ofgem)
FUND
The Expert Assessors agree that this Project has met the Eligibility Criteria and recommend this Application for funding. The Project addresses the Innovation Challenge because it aims to advance community-centric approaches to grid expansion by enabling meaningful participation from vulnerable and underserved consumers. Expert Assessors agreed that the Project aligns with Challenge 4, Consumer-centric grid expansion, by supporting new engagement models, strengthening consumer trust, and

integrating local priorities into grid planning, particularly in constrained areas with high proportions of vulnerable consumers.

The Project has clearly identified potential to deliver a net benefit to electricity consumers because it proposes installing battery storage in residential properties to alleviate local network congestion and provide access to flexibility markets. Expert Assessors noted that the Project could generate new revenue streams through participation in local and national flexibility services, and support system resilience. These benefits, if realised, would represent meaningful financial and social value for electricity consumers.

The Project is considered to involve network innovation because it seeks to create scalable, community-led models for residential demand-side flexibility that target households traditionally excluded from participation. Expert Assessors highlighted that the Project aims to aggregate up to 1 MW of domestic flexibility, potentially contributing to deferred reinforcement and reduced operational expenditure. While some Expert Assessors noted that similar initiatives exist, the majority concluded that the Project's socially inclusive business model, focus on vulnerable consumers, and integration of low carbon technologies represent a novel contribution to network innovation.

The Project is not considered to undermine the development of competitive markets because it aims to create replicable, non-profit business models that broaden market access rather than restrict it. Expert Assessors noted that the Project's approach, which includes transparent IP arrangements and open knowledge sharing, supports wider participation in domestic flexibility services and enhances future competition.

The Project is considered innovative and risky because it proposes a new category of community-owned aggregation services and a socially inclusive flexibility model that reinvests value at the local level. Expert Assessors agreed that while residential demand-side response is not technically new, the Project's proposed non-profit model, integration of community-led organisations, and focus on enabling vulnerable households to participate introduce genuine commercial, behavioural, and delivery risks appropriate for the Discovery Phase.

The Project includes participation from a sufficient range of stakeholders because the consortium brings together a distribution network operator, technical delivery specialists, community-energy platform developers, and Project Partners with expertise in economic modelling and consumer engagement. Expert Assessors agreed that the Project Partners collectively provide the technical, commercial, and social capabilities required for effective DiscoveryPhase learning.

The Project represents value for money because the proposed activities and costs are proportionate to the intended outcomes and most of the budget supports technical development and creation of replicable business models. One Expert Assessor raised concerns about the use of high-day-rate consultancy resources for Poject management; however, these concerns were not judged material enough to undermine the Project's overall value-for-money case.

The Project has a robust methodology that gives confidence it will be capable of progressing in a timely manner because it includes a professional Gantt chart, clear work-package descriptions, defined milestones and dependencies, and a detailed risk register. Expert Assessors noted that the Project demonstrates a strong understanding of delivery risks and appropriate mitigation strategies.

Decision from the Office of Gas and Electricity Markets (Ofgem)
FUND
Ofgem agrees with the Expert Assessors and approves this Project for funding.

Recommended Project-specific conditions
Prior to the Kick-off meeting, the Funding Party must provide to the Monitoring Officer a short statement setting out how the Project's proposed business model and approach differ from, or build upon, existing community-energy flexibility projects (e.g. Energise Barnsley, ECO flexibility schemes, LEO-N, and Equinox), and how the Project will ensure meaningful additionality. Prior to the End of Phase meeting, the Funding Party must provide to the Monitoring Officer a summary of how the Project has aligned with Virtual Power

Plant–related Projects, including Net Zero Terrace, Power Wheels (NIA), and any relevant learning that should inform future phases.

7.2.4 Project 10179005 – Grounds for Change

Submitted Project description
Britain's race to electrify our transport and heat is reshaping every street, yet open trenches slow the journey, increase costs and disrupt the lives of millions. By 2035 every new car will be electric and heat pumps installations could reach 1.5 million installations/year. Utilities already dig up Britain's roads four million times per year at an enormous cost financially and environmentally. Grounds for Change will investigate precise slot cutting, directional drilling, and innovative onsite spoil recycling to reduce waste and restore sites faster. This approach promises quieter, cleaner, and more affordable works with less disruption for everyone.

Eligibility Criteria met or not met – Expert Assessors' evaluation	
1. Projects must address the Innovation Challenge set by Ofgem.	Met
2. Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers	Met
3. Projects must involve network innovation.	Met
4. Projects must not undermine the development of competitive markets.	Met
5. Projects must be innovative, novel and/or risky.	Met
6. Projects must include participation from a range of stakeholders.	Met
7. Projects must provide value for money and be costed competitively.	Met

8. Projects must be well thought through and have a robust methodology so that they are capable of progressing in a timely manner.	Met

Recommendation to the Office of Gas and Electricity Markets (Ofgem)
FUND
The majority of Expert Assessors agree that this Project has met the Eligibility Criteria and recommend this Application for funding. The Project addresses the Innovation Challenge because it explores new methods for reducing disruption and improving consumer acceptance of local network excavation and cable-laying activities, which is a core aspect of consumer-centric grid expansion. Expert Assessors agreed that the Project has the potential to accelerate grid expansion by improving the speed, cleanliness, and efficiency of trench excavation and reinstatement, thereby strengthening public support for essential infrastructure works. The Project has a clearly identified potential to deliver a net benefit to electricity consumers because it aims to develop more efficient and less disruptive street works techniques that could reduce costs, minimise environmental impacts, and improve customer experience. The majority of Expert Assessors agreed that reduced disruption, reduced waste, and more sustainable trenching approaches could translate into meaningful system-level benefits. The Project is considered to involve network innovation because it adapts trenchless, spoil-reuse, and alternative reinstatement techniques—commonly deployed in other sectors—to electricity distribution networks for the first time. Expert Assessors agreed that these methods represent a notable departure from current LV excavation practices and could lead to improved efficiency, reduced environmental impacts, and enhanced safety, albeit with varying levels of technical novelty. The Project is not considered to undermine the development of competitive markets because the consortium intends to disseminate findings widely through a show & tell event, and industry forums. Expert Assessors agreed that the

proposed approach supports transparency and avoids preferential advantage, enabling future replication across all Distribution Network Operators.

The Project is considered innovative and risky because it applies novel excavation and reinstatement techniques in a new context, challenges established standards, and introduces technical, operational, and integration risks appropriate for SIF Discovery. Expert Assessors noted that while some techniques may be proven in other utilities, their adaptation to LV electricity networks remains untested and therefore represents legitimate innovation.

The Project has included participation from a sufficient range of stakeholders because it brings together a DNO, an innovation intermediary, a local authority, and four specialist SMEs. Expert Assessors agreed that the Project Partners provide a balanced mix of technical expertise, operational insight, and customer-focused considerations necessary to explore feasibility within the Discovery Phase.

The Project is considered to be delivering value for money and be costed competitively because overall costs and contributions are reasonable for the scope of activity, and the distribution of funds across the Project Partners and subcontractors is proportionate. One Expert Assessors noted that clearer justification of costs relative to comparable trenching innovation Projects would strengthen confidence; however, this does not materially undermine the Project meeting the criterion.

The Project has a methodology that gives sufficient confidence that it will be capable of progressing in a timely manner because the plan sets out the core work packages, governance arrangements, and high-level milestones required for Discovery. While one Expert Assessor noted the absence of detailed resource metrics, quantified indicators, and clearer dependencies, the majority concluded that the proposed structure and Project management approach are adequate for the Discovery Phase and provide a reasonable basis for timely delivery.

Decision from the Office of Gas and Electricity Markets (Ofgem)
FUND
Ofgem agrees with the Expert Assessors and approves this Project for funding.

Recommended Project-specific conditions
Prior to the start of Discovery Phase funding, the Funding Party must submit a revised Project plan that includes clearer task-level dependencies, resource allocations, delivery metrics, and milestone acceptance criteria.

8 Innovation Challenge: Enhanced system visibility and control

8.1 Overview of Projects

This section covers the assessment of Cycle 4 Discovery Phase Applications received into the 'Enhanced system visibility and control' Innovation Challenge.

In order to protect intellectual property rights (IPR), unsuccessful Projects have been redacted from the final published version.

Project reference number	Project name	Funding licensee	Total Project costs (£)	Total Project contribution (£)	Total SIF Funding requested (£)	Recommended by Expert Assessors for funding (Yes/No)	Decision by Ofgem for funding (Yes/No)
10179172	SwitchTwin	National Grid Electricity Transmission plc	165,816	16,582	149,234	Yes	Yes
10179149	Smart Open Load Visibility Exchange - SOLVE	Northern Powergrid (Northeast) Limited	165,458	16,547	148,911	Yes	Yes

8.2 Expert Assessors' recommendations on Projects

8.2.1 Project 10179172 – SwitchTwin

Submitted Project description
As Great Britain aims for net zero, Inverter-Based Resources (IBRs) are vital for network operations, but their power electronics (PEs) present challenges for grid resilience and capacity utilisation due to unpredictable degradation. This causes operators to under-utilise thermal capacity, leading to inefficiencies and premature replacements. Traditional sensors fail to provide reliable condition information in the electro-magnetic interference (EMI) environment of PE switches. By combining advanced sensing technologies with AI/ML-driven digital twin analytics, operators can enhance asset management strategies and provide better insights on the condition of these assets, ultimately saving costs for the network and consumers.

Eligibility Criteria met or not met – Expert Assessors' evaluation	
1. Projects must address the Innovation Challenge set by Ofgem.	Met
2. Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers	Met
3. Projects must involve network innovation.	Met
4. Projects must not undermine the development of competitive markets.	Met
5. Projects must be innovative, novel and/or risky.	Met
6. Projects must include participation from a range of stakeholders.	Met
7. Projects must provide value for money and be costed competitively.	Met
8. Projects must be well thought through and have a robust methodology so that they are capable of progressing in a timely manner.	Met

Recommendation to the Office of Gas and Electricity Markets (Ofgem)
FUND
The Expert Assessors agree that this Project has met the Eligibility Criteria and recommend this Application for funding. The Project addresses the Innovation Challenge because it proposes a novel approach to improving system visibility and control through enhanced monitoring and digital-twin techniques for inverter-based resources (IBRs). Expert Assessors agreed that the Project is well aligned with Innovation Challenge 5, Enhanced system visibility and control, which seeks to improve operational decision-making, asset management, and network resilience as IBR penetration increases across the system. The Project has clearly identified potential to deliver a net benefit to electricity consumers because improved failure prediction, condition monitoring, and asset-life estimation could support more reliable operation of power-electronic assets and avoid the costs of unplanned outages. Expert Assessors noted that optimised utilisation of existing infrastructure may also defer capital reinforcement, reduce maintenance costs, and ultimately lower costs borne by consumers. The Project is considered to involve network innovation because it integrates fibre-Bragg-grating sensing, proxy-metric monitoring, and digital-twin modelling to provide deeper insight into IBR failure modes. Expert Assessors noted that although the proposal could have been clearer about the precise network locations of the units under study, the Application nonetheless demonstrates that the work focuses on network-embedded IBRs, such as those associated with HVDC systems. The majority agreed that this represents meaningful innovation unavailable through current asset-monitoring techniques. The Project is not considered to undermine the development of competitive markets because the Funding Party commits to sharing findings openly with other network operators through the Smarter Networks Portal and sector-wide dissemination activities. Expert Assessors also noted that the research must be developed with the involvement of network operators to ensure that any solutions are suitable for operational deployment, and that the approach does not favour any specific commercial entity.

The Project is considered innovative and risky because its proposed use of proxy sensing to predict remaining asset life and headroom is technically unproven. Expert Assessors highlighted that it is uncertain whether the selected proxy metrics will provide reliable predictive information, especially compared with full instrumentation, which remains cost prohibitive.

The Project includes participation from a sufficient range of stakeholders because it brings together a transmission network operator, a specialist technical consultancy, and an academic Project Partner with relevant expertise in power-electronic reliability and sensing technologies. Expert Assessors agreed that this combination provides the necessary technical capability and operational insight for effective delivery within the Discovery Phase.

The Project represents value for money because the costs and scope are proportionate to the technical work proposed, with Project Partner contributions meeting SIF requirements and day rates benchmarked appropriately. Expert Assessors noted that the level of work planned is ambitious for the time available, which may require careful prioritisation; however, the overall budget structure is reasonable for Discovery and is expected to generate learning of clear value to the sector.

The Project has a robust methodology that gives confidence it will be capable of progressing in a timely manner because it presents a clear structure of work packages, Project Partner responsibilities, and dependencies supported by project-management processes and risk-tracking arrangements. One Expert Assessor noted that the number of work packages may be slightly over-complex for a Discovery timeframe, but agreed that the Project's planning, governance, and Project Partner coordination approach provide a sound basis for successful delivery.

Decision from the Office of Gas and Electricity Markets (Ofgem)
FUND
Ofgem agrees with the Expert Assessors and approves this Project for funding.

Recommended Project-specific conditions

Prior to the End of the Phase meeting, the Funding Party must provide to the Monitoring Officer a summary of how the Project has engaged with, and aligned its approach to, the Transmission-led Beta Projects on Power Electronic Devices (PEDs), e.g. Network DC, D-Suite, Phased Switch System, including any relevant learning incorporated into the Project's methodology and future planning.

8.2.2 Project 10179149 – Smart Open Load Visibility Exchange - SOLVE

Submitted Project description
Electricity networks face new challenges from electric vehicles, heat pumps and solar. These low-carbon technologies are vital for net zero but can strain local grids - high voltages waste solar energy, while low voltages trip EV chargers. Project SOLVE builds on Ofgem's and NESO's innovation programmes, using open standards and smart meter data to provide real-time visibility of low-voltage networks. By combining this with real-time, appliance-level forecasting, SOLVE enables networks to predict local demand and flexibility, plan ahead, and make better use of existing assets - reducing costs, avoiding curtailment, and delivering a more reliable, fairer energy system for consumers.

Eligibility Criteria met or not met – Expert Assessors' evaluation	
1. Projects must address the Innovation Challenge set by Ofgem.	Met
2. Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers	Met
3. Projects must involve network innovation.	Met
4. Projects must not undermine the development of competitive markets.	Met
5. Projects must be innovative, novel and/or risky.	Met
6. Projects must include participation from a range of stakeholders.	Met

7. Projects must provide value for money and be costed competitively.	Met
8. Projects must be well thought through and have a robust methodology so that they are capable of progressing in a timely manner.	Met

Recommendation to the Office of Gas and Electricity Markets (Ofgem)
FUND
The Expert Assessors agree that this Project has met the Eligibility Criteria and recommend this Application for funding. The Project addresses the Innovation Challenge because it aims to enhance grid visibility and control by using existing smart meter infrastructure and emerging standards to provide near real-time data from low carbon technologies in homes. This directly aligns with Innovation Challenge 5, Enhanced system visibility and control, on advanced monitoring and automated grid control, by improving situational awareness of LV networks and informing operational decision-making and reinforcement needs. The Project has clearly identified potential to deliver a net benefit to electricity consumers because it aims to optimise the use of existing network capacity, reduce unnecessary reinforcement, and minimise curtailment of domestic solar generation and EV charging. Expert Assessors agreed that enabling consumers to use low carbon technologies more efficiently and with fewer interruptions could support progress towards et zero and help maintain consumer trust in electrification. The Project is considered to involve network innovation because it proposes to combine network, supplier and smart meter data in an integrated way that is not currently business as usual. By testing the feasibility of extracting and integrating granular LV data via open standards and exploring how that data can be made actionable for DSOs and the NESO, the Project introduces new approaches to network monitoring and planning. The Project is not considered to undermine the development of competitive markets because it relies on open standards, and commits to sharing outputs,

lessons learned and data-exchange frameworks openly. Expert Assessors noted that this transparency supports wider adoption of scalable, standardised solutions across the sector, and could enable increased flexibility market participation and retail competition rather than conferring exclusive advantage on individual parties.

The Project is considered innovative and risky because it is exploring emerging standards and new combinations of datasets that have not previously been integrated in this way. There is a material risk that data quality, interoperability, or timing limitations mean the resulting information is less useful than anticipated, or that all planned analysis cannot be completed in the Discovery timeframe. These uncertainties are appropriate to a Discovery Phase.

The Project includes participation from a sufficient range of stakeholders because it brings together a DSO, a smart metering/data integration specialist, and a supplier, which Expert Assessors judged to be the minimum credible set of Project Partners required to test the concept. Plans to engage external stakeholders such as other networks and consumer bodies add further confidence, and additional stakeholder diversity can be addressed in later phases.

The Project represents value for money because the requested budget is proportionate to the scope of activity, involves experienced Project Partners bringing relevant expertise, and tackles a key barrier that is not being addressed elsewhere through existing integration activities. Expert Assessors considered that the costs are competitive for a data integration project of this nature, and that the anticipated insights could unlock significant consumer and system benefits in future phases.

The Project has a robust methodology that gives confidence it will be capable of progressing in a timely manner because it sets out clear work packages, responsibilities, deliverables and a structured risk register. Expert Assessors noted that the five-month Discovery window ais tight given the ambition of the work, but the Project planning, governance arrangements and mitigation measures provide sufficient assurance that meaningful progress can be achieved within the timeframe.

Decision from the Office of Gas and Electricity Markets (Ofgem)
FUND
Ofgem agrees with the Expert Assessors and approves this Project for funding.

Recommended Project-specific conditions
Prior to the Kick-off meeting, the Funding Party must provide to the Monitoring Officer an updated stakeholder engagement plan that identifies additional external stakeholders, such as flexibility providers, appliance/EV manufacturers, home energy management system suppliers, and relevant consumer bodies, and sets out how the Project will engage them to validate data pathways, interoperability needs, and future adoption barriers.

9 Innovation Challenge: Green gas

9.1 Overview of Projects

This sub-section covers the assessment of Discovery Phase Applications received into the 'Green gas' Innovation Challenge in Cycle 4.

In order to protect intellectual property rights (IPR), unsuccessful Projects have been redacted from the final published version.

Project reference number	Project name	Funding licensee	Total Project costs (£)	Total Project contribution (£)	Total SIF Funding requested (£)	Recommended by Expert Assessors for funding (Yes/No)	Decision by Ofgem for funding (Yes/No)
10179797	Project CLEAN GREEN	Cadent Gas Limited	155,271	17,238	138,033	Yes	Yes
10179412	BioCapMap	Cadent Gas Limited	161,232	16,124	145,108	Yes	Yes
10179195	Renewable Energy Harvest	Northern Gas Networks Limited	168,704	19,437	149,267	Yes	Yes

9.2 Expert Assessors' Recommendations on Projects

9.2.1 Project 10179797 - Project CLEAN GREEN

Submitted Project description
Biomethane is key to decarbonising the UKs gas network. However, in comparison to natural gas, it has a lower energy density and requires enrichment before injection into the gas network. Currently propane is used, a fossil fuel, undermining the environmental credentials of biomethane, increasing production cost and introducing bituminous elements causing down-time in biomethane plants. Project CLEAN GREEN will identify alternative green enrichment gases to fossil propane, and consider how improved measurement technology can inform network intelligence to optimise biomethane injection. This will lead to improvements in cost, carbon efficiency and injection volumes of biomethane into the distribution networks.

Eligibility Criteria met or not met – Expert Assessors' evaluation	
1. Projects must address the Innovation Challenge set by Ofgem.	Met
2. Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers	Met
3. Projects must involve network innovation.	Met
4. Projects must not undermine the development of competitive markets.	Met
5. Projects must be innovative, novel and/or risky.	Met
6. Projects must include participation from a range of stakeholders.	Met
7. Projects must provide value for money and be costed competitively.	Met
8. Projects must be well thought through and have a robust methodology so that they are capable of progressing in a timely manner.	Met

Recommendation to the Office of Gas and Electricity Markets (Ofgem)
FUND
The Expert Assessors agree that this Project has met the Eligibility Criteria and recommend this Application for funding. The Project addresses the Innovation Challenge by seeking to enable the safe and scalable introduction of higher oxygen concentrations in biomethane into the gas network, including underground storage. This would support the decarbonisation of the gas system by reducing barriers to green gas integration and enhancing system flexibility. The Project focuses on developing and testing oxygen removal technologies that could allow for more cost-effective and widespread biomethane deployment. The Project has a clearly identified potential to deliver a net benefit to gas consumers by reducing corrosion-related failures and extending asset life; it could lower infrastructure maintenance and replacement costs. However, Expert Assessors noted that the financial benefits presented in the Application were inconsistently quantified, with varying figures and unclear assumptions. Clarifying the number of sites and the nature of the cost-benefit relationship—particularly where internal ownership structures (e.g., Premtech and National Gas) are involved—would strengthen the consumer value case. The Project is considered to involve network innovation. It addresses a previously untested challenge in the GB gas system: managing wet, oxygen-rich biogas streams in underground storage. The integration of catalytic oxidation and adsorption technologies, combined with real-time monitoring and corrosion mitigation strategies, represents a novel approach. While the drying of gas streams was not explicitly considered as an alternative, the focus on wet gas treatment is technically relevant and underexplored. The Project does not undermine the development of competitive markets. It commits to producing an open technical standard for oxygen removal, ensuring that no single vendor or technology is locked into the solution. Contractual commitments to share technical data and performance results further support transparency and sector-wide benefit.

The Project is considered innovative, novel and risky because it introduces unproven technologies into a new application context, with uncertainties around technical performance, scalability, and long-term durability. These risks are appropriate for a Discovery Phase. However, future Phases should consider whether alternative approaches (e.g. gas drying) have been sufficiently evaluated.

The Project includes participation from a range of stakeholders. The consortium includes a network operator, underground gas storage operators, technology developers, and monitoring specialists. While the current stakeholder mix is appropriate, Expert Assessors recommended that future Phases include more direct engagement with biogas producers to ensure the solution is aligned with upstream operational realities.

The Project is delivering value for money and is costed competitively. The budget is appropriate for the scope of the Discovery Phase and is supported by a clear technical work programme.

The Project has a robust methodology which gives confidence that it will be delivered on time and within budget. It includes a well-structured Project plan, defined work packages, milestones, and a comprehensive risk management strategy. The Project team appears to have the necessary skills and resources to deliver the proposed work, and the governance model is appropriate for the scale and complexity of the challenge.

Decision from the Office of Gas and Electricity Markets (Ofgem)
FUND
Ofgem agrees with the Expert Assessors and approves this Project for funding.

Recommended Project-specific conditions
None

9.2.2 Project 10179412 - BioCapMap

Submitted Project description

BioCapMap is a Strategic Innovation Fund Discovery project led by Cadent, with Bohr Energy and Energy Systems Catapult. It will unlock the UK's biomethane potential by developing a digital, self-service tool that helps developers identify optimal gas network connection points, being the first of kind to solve this gap in the connections planning process. By addressing outdated network data and inefficient connection processes, the tool will streamline planning, reduce costs, and accelerate green gas deployment. BioCapMap supports rural growth and decarbonisation of the gas network by improving network visibility, enabling smarter investment, and enhancing coordination between developers and network operators.

Eligibility Criteria met or not met – Expert Assessors' evaluation	
1. Projects must address the Innovation Challenge set by Ofgem.	Met
2. Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers	Met
3. Projects must involve network innovation.	Met
4. Projects must not undermine the development of competitive markets.	Met
5. Projects must be innovative, novel and/or risky.	Met
6. Projects must include participation from a range of stakeholders.	Met
7. Projects must provide value for money and be costed competitively.	Met
8. Projects must be well thought through and have a robust methodology so that they are capable of progressing in a timely manner.	Met

Recommendation to the Office of Gas and Electricity Markets (Ofgem)
FUND

The Expert Assessors agree that this Project has met the Eligibility Criteria and recommend this Application for funding.

The Project addresses the Innovation Challenge because it proposes a novel digital tool to accelerate biomethane connections, directly supporting Challenge 6, Green gas, by enabling faster, more cost-effective access to low-carbon gas. Expert Assessors agreed that the Project responds to an identified need for improved visibility, modelling, and coordination in biomethane connection processes, which is essential for supporting the transition to net zero and ensuring that gas networks can accommodate future renewable gas sources.

The Project has clearly identified potential to deliver a net benefit to gas consumers because it seeks to reduce the cost, time, and complexity associated with connecting new biomethane sites. Expert Assessors noted that the Project could enhance energy security, reduce reliance on fossil fuels, and support long-term affordability for consumers. The proposal outlines credible pathways for delivering financial, operational, and environmental benefits at system level, demonstrating that the Project meets this Eligibility Criterion.

The Project is considered to involve network innovation because it introduces a new digital approach for capacity assessment, option appraisal, and developer interfacing - capabilities not currently available in business-as-usual processes. Expert Assessors noted that the tool would enable smarter, faster, and more transparent decision-making around biomethane connections, representing a meaningful advance in how gas networks plan and manage low-carbon gas integration.

The Project is not considered to undermine the development of competitive markets because it commits to sector-wide dissemination of the tool and underlying methodologies. The Project Partners have made clear that outputs will be shared with all gas networks, industry bodies, and biomethane developers, ensuring open access and supporting broader market participation rather than creating a proprietary advantage.

The Project is considered innovative, novel, and risky because it applies a new modelling and digital-engagement approach to biomethane connections, an area

with longstanding data gaps and coordination challenges. Expert Assessors noted that uncertainty around data quality, modelling assumptions, and developer needs introduces technical and delivery risk that is appropriate for the Discovery Phase and well-justified for SIF funding.

The Project includes participation from a sufficient range of stakeholders because the consortium brings together technical, analytical, and industry-facing expertise through the involvement of Bohr, Energy Systems Catapult, ADBA, and IGEM. While biomethane developers are not formal Project Partners, Expert Assessors considered the structured engagement plan to be adequate for the Discovery Phase and sufficient to ensure that developer requirements inform the tool's design.

The Project represents value for money because the proposed budget is proportionate to the scope of work and aligned with clearly defined work packages. Expert Assessors noted that Project Partner contributions are transparent, labour rates are consistent with previous SIF projects, and the Project has strong potential to deliver sector-wide benefits. Although some costs, particularly those associated with Energy Systems Catapult, sit at the higher end of the typical range, they were deemed justified by the specialist expertise required.

The Project has a sufficiently robust methodology that gives confidence it will progress in a timely manner because it sets out clear work packages, responsibilities, stakeholder engagement activities, and defined deliverables. Expert Assessors agreed that the Project Plan and governance arrangements are appropriate for Discovery, although noted that effective coordination with developers will be important to ensuring delivery of meaningful insights.

Decision from the Office of Gas and Electricity Markets (Ofgem)
FUND
Ofgem agrees with the Expert Assessors and approves this Project for funding.

Recommended Project-specific conditions

Prior to the End of Phase meeting, the Funding Party should provide to the Monitoring Officer an update on developer engagement activities, confirming that planned interviews and requirement-gathering activities have been completed and summarising how developer input has informed the tool's initial design. Prior to the End of Phase meeting, the Funding Party must provide to the Monitoring Officer a summary of how the Project has engaged with the 'Renewable Energy Harvest' Project (led by NGN) and the 'Green Gas Access' Project (led by SGN). This summary should set out opportunities for alignment, any shared insights, and how learning from these Projects has informed the development of the Project's approach.

9.2.3 Project 10179195 - Renewable Energy Harvest

Submitted Project description
Renewable Energy Harvest unlocks the untapped power of Britain's countryside by turning farm, food, and forestry residues into clean, flexible green gas. By combining biomethane and syngas production with advanced mapping and forecasting tools, the project will identify where rural resources can best connect into the gas network. This innovation supports a fair, low-carbon transition - cutting emissions, reducing costs, and keeping energy value in local communities. Backed by Northern Gas Networks and Project Partners, Renewable Energy Harvest paves the way for smarter, more resilient infrastructure that helps Britain make better use of low-carbon gases for a decarbonised future energy system.

Eligibility Criteria met or not met – Expert Assessors' evaluation	
1. Projects must address the Innovation Challenge set by Ofgem.	Met
2. Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers	Met
3. Projects must involve network innovation.	Met
4. Projects must not undermine the development of competitive markets.	Met

5. Projects must be innovative, novel and/or risky.	Met
6. Projects must include participation from a range of stakeholders.	Met
7. Projects must provide value for money and be costed competitively.	Met
8. Projects must be well thought through and have a robust methodology so that they are capable of progressing in a timely manner.	Met

Recommendation to the Office of Gas and Electricity Markets (Ofgem)
FUND
The Expert Assessors agree that this Project has met the Eligibility Criteria and recommend this Application for funding. The Project addresses the Innovation Challenge because it proposes a novel, multi-vector spatial analysis tool to support more efficient planning and integration of green gases, directly contributing to Challenge 6, Green gas. Expert Assessors agreed that the Project responds to a clear need for improved visibility of agricultural residues, more informed siting of biomethane and syngas production, and better understanding of where and how renewable gas can be injected into the network. The Project has clearly identified potential to deliver a net benefit to gas and electricity consumers because it seeks to inform optimal locations for green gas production and injection, which could reduce network costs, carbon emissions, and dependence on fossil fuels. Expert Assessors noted that the Project also outlines potential indirect benefits, such as additional income streams for farmers and increased renewable gas availability for rural communities. The Project is considered to involve network innovation because it introduces a new, GB-wide, data-driven approach that links agricultural residues, biomethane production, syngas production, and network capability for the first time. Expert Assessors emphasised that combining these data sources to identify green gas "hubs" is novel and goes beyond existing, more siloed approaches. The

methodology represents a meaningful step forward in how gas networks could plan future intake points and coordinate with emerging low-carbon producers.

The Project is not considered to undermine the development of competitive markets because all outputs will be published openly, ensuring that data, mapping outputs, and insights are accessible to the wider industry. Expert Assessors noted that the Project focuses on early-stage system mapping rather than proprietary technology development, and therefore supports wider market participation rather than restricting it.

The Project is considered innovative, novel, and risky because it seeks to integrate two renewable gas pathways—biomethane and syngas—into a unified spatial planning tool. Expert Assessors agreed that this has not been done before and that coordinating farmers, gas producers, networks, and communities introduces genuine delivery risk. Some also noted that parts of the technological landscape (particularly syngas production routes) remain immature, making the Discovery Phase an appropriate environment to assess feasibility and identify technical red flags.

The Project includes participation from a sufficient range of stakeholders because the consortium brings together expertise across green gas production, agricultural residues, energy economics, community engagement, and network planning. Expert Assessors agreed that this represents a strong foundation for Discovery. However, two Expert Assessors recommended that additional technical expertise in anaerobic digestion and gasification would further strengthen the analysis, and that electricity network representation and the NFU could add value in later stages. Overall, the Discovery Phase consortium was considered appropriate.

The Project represents value for money because the overall spend is proportionate to the scope of work, and Project Partner contributions meet the SIF requirement. Expert Assessors noted that the bulk of spending is directed toward GIS mapping, stakeholder engagement, and carbon analysis, which aligns with the Project's objectives. One Expert Assessor raised concerns about whether the distribution of funding across Project Partners is fully balanced or justified, but the majority

agreed that the Project meets this Eligibility Criterion and offers reasonable value for money.

The Project has a robust methodology that gives confidence it will progress in a timely manner because the work plan clearly defines deliverables, milestones, work package responsibilities, and risks. Expert Assessors highlighted the strong project management structure, well-developed risk register, and planned steering group oversight as evidence that the Project is likely to deliver its outputs within the Discovery timeframe.

Decision from the Office of Gas and Electricity Markets (Ofgem)
FUND
Ofgem agrees with the Expert Assessors and approves this Project for funding.

Recommended Project-specific conditions
Prior to the Kick-off meeting, the Funding Party must provide to the Monitoring Officer a summary explaining how the Project has addressed gaps in technical expertise relating to anaerobic digestion and gasification, including how stakeholder input has been incorporated to strengthen the robustness of the analysis. Prior to the End of Phase meeting, the Funding Party must provide to the Monitoring Officer a summary of how the Project has engaged with the 'BioCapMap' Project (led by Cadent) and the 'Green Gas Access' Project (led by SGN). This summary should set out opportunities for alignment, any shared insights, and how learning from these Projects has informed the development of the Project's approach.

10 Innovation Challenge: Whole system optimisation

10.1 Overview of Projects

This sub-section covers the assessment of Discovery Phase Applications received into the 'Whole system optimisation' Innovation Challenge in Cycle 4.

In order to protect intellectual property rights (IPR), unsuccessful Projects have been redacted from the final published version.

Project reference number	Project name	Funding licensee	Total Project costs (£)	Total Project contribution (£)	Total SIF Funding requested (£)	Recommended by Expert Assessors for funding (Yes/No)	Decision by Ofgem for funding (Yes/No)
10179238	Quantum optimisation for future gas network design	National Gas Transmission plc	167,490	19,056	148,434	Yes	Yes
10179237	Whole-system modelling for future energy interconnectors	National Gas Transmission plc	164,700	16,766	147,934	Yes	No

10.2 Expert Assessors' Recommendations on Projects

10.2.1 Project 10179238 - Quantum optimisation for future gas network design

Submitted Project description
This project is a first of its kind exploration into the applicability of quantum-inspired optimisation to improve and accelerate modelling of future gas transmission configurations and whole-systems planning. It will assess use cases where these techniques can enhance scenario coverage, integrate multiple additional energy vectors, address current computational limitations in modelling hydrogen and CO_2 networks, and improve granularity of planning outputs. By engaging National Gas and supported by NESO, the project will identify where quantum-inspired methods offer the greatest system-wide benefit, culminating in a prioritised use case and roadmap for Alpha-phase development.

Eligibility Criteria met or not met – Expert Assessors' evaluation	
1. Projects must address the Innovation Challenge set by Ofgem.	Met
2. Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers	Met
3. Projects must involve network innovation.	Met
4. Projects must not undermine the development of competitive markets.	Met
5. Projects must be innovative, novel and/or risky.	Met
6. Projects must include participation from a range of stakeholders.	Met
7. Projects must provide value for money and be costed competitively.	Met
8. Projects must be well thought through and have a robust methodology so that they are capable of progressing in a timely manner.	Met

Recommendation to the Office of Gas and Electricity Markets (Ofgem)
FUND
The Expert Assessors agree that this Project has met the Eligibility Criteria and recommend this Application for funding. The Project addresses the Innovation Challenge because it applies quantum-inspired optimisation to overcome current modelling limitations in whole-system and gas-transmission planning. Expert Assessors agreed that this aligns with Challenge 7, Whole system optimisation, by enabling more dynamic, granular, and integrated scenario analysis for future hydrogen and CO_2 networks. While one Expert Assessor questioned whether the Project had clearly demonstrated how digital annealing would materially advance Ofgem's strategic planning objectives, the majority considered the Project's focus on accelerated, higher-fidelity modelling to be a valid and timely response to the Innovation Challenge. The Project has a clearly identified potential to deliver a net benefit to gas consumers because it seeks to reduce modelling time, improve scenario coverage, and support more cost-effective sequencing of network investments. Expert Assessors noted that this could reduce the risk of stranded assets, support more efficient hydrogen and CO_2 infrastructure planning, and enhance long-term affordability. One Expert Assessor, however, found that the proposal did not sufficiently articulate the link between the proposed optimisation improvements and the actual planning constraints limiting consumer benefit today. Notwithstanding this dissenting view, the Project is considered by the majority to have met this Criterion due to the potential high-impact system benefits. The Project is considered to involve network innovation because it introduces a novel computational approach - quantum-inspired optimisation - for energy-system modelling challenges that current tools struggle to solve efficiently. Expert Assessors agreed that the Project represents a meaningful departure from business-as-usual by applying digital annealing to multi-vector modelling, enabling greater spatial granularity and faster scenario iteration. This novel application was considered an appropriate and justified use of SIF Discovery funding.

The Project is not considered to undermine the development of competitive markets because it focuses solely on feasibility and strategic modelling rather than commercial deployment. Expert Assessors noted that the Project commits to publishing approaches, insights, and learning to support sector-wide adoption. One Expert Assessor raised concerns about potential "lock-in" to a private technology provider in later Phases, emphasising the need for evidence that any future toolset could be adopted by multiple suppliers. However, this concern is noted but does not impact at Discovery Phase, where no proprietary platform will be deployed.

The Project is considered innovative, novel and risky because it applies emerging quantum-inspired techniques to gas-system modelling, an approach not yet validated in this context. Expert Assessors identified technical uncertainty around how well digital annealing will perform on real-world system-planning problems, which introduces appropriate Discovery Phase risk. The novelty of integrating these techniques into strategic spatial energy planning was also highlighted as a strong justification for SIF support.

The Project includes participation from a sufficient range of stakeholders because National Gas, NESO and the modelling/optimisation provider collectively bring the operational, planning and technical expertise needed to evaluate the feasibility of quantum-inspired approaches. Expert Assessors agreed that the partnership is adequate for Discovery.

The Project represents value for money because its costs are proportionate to the scope, and the potential benefits of improved system-planning capability are significant at whole-system scale. The majority of Expert Assessors found the budget competitive, with appropriate Project Partner contributions and clearly defined work packages. One Expert Assessor, however, considered the proposal poor value for money, citing limited project hours, an inverted design logic, and uncertainty over whether meaningful depth could be achieved. The majority view is that the Project meets the Criterion given the potentially transformative benefits if feasibility is demonstrated.

The Project has a robust methodology which gives confidence it will progress in a timely manner because it sets out clear work packages, deliverables, and a

structured engagement plan with National Gas and NESO. Expert Assessors considered the methodology sufficient for a Discovery Phase feasibility study. One Expert Assessor, however, expressed concern that the plan lacked ambition and did not include practical proof-of-concept simulations despite stating that similar work had been funded previously. Overall, the methodology is regarded as adequate for Discovery, and the Criterion is considered met.

Decision from the Office of Gas and Electricity Markets (Ofgem)
FUND
Ofgem agrees with the Expert Assessors and approves this Project for funding.

Recommended Project-specific conditions
Prior to the End of Phase meeting, the Funding Party must demonstrate how the Project will avoid creating dependence on a single technology provider.

10.2.2 Project 10179237 - Whole-system modelling for future energy interconnectors

Submitted Project description
Future energy interconnectors may use gas pipeline infrastructure to transport hydrogen across borders, with the potential to stimulate a UK hydrogen economy and deliver wider system benefits to electricity and gas systems by providing low-carbon dispatchable power and long-term energy storage. However, hydrogen interconnectors by their nature would be complex - potentially linking up electricity, gas and carbon capture networks. This project will use advanced modelling and future energy scenarios to explore how hydrogen interconnectors interact with the wider energy system. This will help identify the best locations and designs, support long-term planning, investment, and policy decisions.

Eligibility Criteria met or not met – Expert Assessors' evaluation	
1. Projects must address the Innovation Challenge set by Ofgem.	Met

2. Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers	Met
3. Projects must involve network innovation.	Met
4. Projects must not undermine the development of competitive markets.	Met
5. Projects must be innovative, novel and/or risky.	Met
6. Projects must include participation from a range of stakeholders.	Met
7. Projects must provide value for money and be costed competitively.	Met
8. Projects must be well thought through and have a robust methodology so that they are capable of progressing in a timely manner.	Met

Recommendation to the Office of Gas and Electricity Markets (Ofgem)
FUND
The Expert Assessors agree that this Project has met the Eligibility Criteria and recommend this Application for funding. The Project addresses the Innovation Challenge because it applies whole-system linear-optimisation modelling and scenario analysis to explore future configurations and roles for hydrogen interconnectors across gas, electricity, and hydrogen systems. Expert Assessors agreed that the Project responds directly to Innovation Challenge 7, Whole system optimisation, by providing whole-system evidence to inform future gas network planning, support scenario assessment, and improve understanding of how hydrogen interconnection could contribute to net zero. The Project has a clearly identified potential to deliver a net benefit to gas and electricity consumers because improved siting and design of hydrogen interconnectors could reduce renewable curtailment, avoid inefficient reinforcement, and support better utilisation of existing infrastructure.

The Project is considered to involve network innovation because it explores how emerging hydrogen interconnectors, under new and uncertain market arrangements, interact with multiple vectors and cross-border energy flows using whole-system modelling. Expert Assessors agreed that this represents a novel application of modelling techniques to an area with limited existing analysis. They considered that the Project offers the opportunity to generate new insights that go beyond business-as-usual modelling approaches.

The Project is not considered to undermine the development of competitive markets because it will generate analytical insights, modelling methodologies, and a Discovery Phase report that will be openly disseminated and targeted engagement. The Project does not trial any proprietary technology or favour particular interconnector developers.

The Project is considered innovative, novel, and risky because it examines hydrogen interconnector roles and system-wide impacts that are not yet well understood and have not been studied within a comprehensive whole-system framework. Expert Assessors noted that the policy and commercial context for hydrogen is uncertain, which increases delivery risk but is appropriate for the Discovery Phase. The Expert Assessors agreed that the Project fits well within the SIF's remit to explore complex and emerging system-level challenges.

The Project has included participation from a sufficient range of stakeholders because the consortium brings together National Gas, Arup, and NESO, complemented by structured engagement with European transmission system operators and hydrogen network operators. Expert Assessors agreed that this combination provides relevant technical, modelling, and strategic expertise. One Expert Assessor noted that additional input from European operators will become increasingly important if the Project progresses beyond Discovery.

The Project is considered to be delivering value for money and costed competitively because most costs relate directly to specialist modelling and analysis, and Project Partner contributions meet the minimum requirement. However, one Expert Assessor raised concerns that the Project allocates a high proportion of funding to senior resource, which they considered disproportionate given that most delivery activity sits with a single modelling Project Partner. While

these concerns reduced that Expert Assessor's confidence in cost efficiency, the majority view was that the budget is acceptable for Discovery, and the Project meets this Criterion.

The Project has a robust methodology which gives confidence that it will be capable of progressing in a timely manner because it is structured across six defined work packages, supported by recognised project-management processes, and includes a clear approach to risk, dependencies, and stakeholder engagement.

Decision from the Office of Gas and Electricity Markets (Ofgem)
DO NOT FUND
Ofgem does not agree with the Expert Assessors' recommendation to fund this Project, as it does not meet Eligibility Criterion 2 and 7. The Project fails to demonstrate convincingly that the overall budget is proportionate to the scope of work or that the anticipated benefits adequately justify the requested support given roughly a third of Project costs goes towards Project Management. Ofgem also notes that the wider policy environment introduces additional uncertainty, including the lack of clarity around the timing and direction of the GB Hydrogen Strategy. This uncertainty reduces confidence that the insights generated would provide actionable or timely value for consumers or network planning processes.

Recommended Project-specific conditions
N/A