

Strategic Innovation Fund (SIF)
Round 2 Innovation Challenges – Discovery Phase
Expert Assessors' Recommendations Report
(unsuccessful Projects redacted)

Contents

Contents.....	2
1 Introduction.....	5
2 Round 2 Summary.....	7
3 Assessment Process.....	9
3.1 Meeting the SIF Eligibility Criteria	11
4 SIF Round 2 Discovery Phase – Supporting a just energy transition	12
4.1 SIF Discovery Phase – Supporting a just energy transition - Summary	13
4.2 Evaluation of Applications.....	15
4.2.1 10054930, Hy-Fair, Initial Net Funding Requested £111,854.....	15
4.2.2 10055259, Net Zero Terrace, Initial Net Funding Requested £129,519	20
4.2.3 10057788 EV Respond, Initial Net Funding Requested £121,384	25
4.2.4 10059427, VIVID - Vulnerability Identification Via Informative Data, Initial Net Funding Requested £94,459.....	30
4.2.5 [REDACTED]	34
4.2.6 10061358, Guidelight, Initial Net Funding Requested £119,628	34
4.2.7 10061386, SHIELD (Smart Heat and Intelligent Energy in Low-Income Districts), Initial Net Funding Requested £82,163	39
5 SIF 2021 Round 2 Discovery Phase – Improving energy system resilience & robustness	44
5.1 SIF Discovery Phase – Improving energy system resilience & robustness - Summary	45
5.1.1 10052119, Distribution Network Information Modelling (DNIM), Initial Net Funding Requested £2.....	50
5.1.2 [REDACTED]	53
5.1.3 10053640, SIF Black start Demonstrator from offshore wind (SIF BLADE), Initial Net Funding Requested £149,226.....	53
5.1.4 10056144, REWIRE (REsidential Whole System Integrated REsilience), Initial Net Funding Requested £149,947	57
5.1.5 [REDACTED]	61
5.1.6 [REDACTED]	61
5.1.7 [REDACTED]	61
5.1.8 [REDACTED]	61
5.1.9 10057667, SECURE - Securing the future delivery of all HVDC projects by de-risking the HVDC cable supply chain, Initial Net Funding Requested £147,909	61
5.1.10 [REDACTED]	66
5.1.11 10058442, Hydrogen Cost Reduction (HyCoRe), Initial Net Funding Requested £137,262	66
5.1.12 10058535, REACT (Rapid Evaluation Areal Connection Tool), Initial Net Funding Requested £149,320	70
5.1.13 10058665, Dynamic Networks, Initial Net Funding Requested £139,273	74
5.1.14 [REDACTED]	78

5.1.15	10060000, Supply Chain Resilience in the Transition, Initial Net Funding Requested £77,893.....	78
5.1.16	10060423, D-suite, Initial Net Funding Requested £131,875.....	82
5.1.17	10060460, Scenarios for Extreme Events, Initial Net Funding Requested £149,999	86
5.1.18	10060978, Resilient Customer Response, Initial Net Funding Requested £117,889	90
5.1.19	10061033, Whole Energy System Resilience Vulnerability Assessment, Initial Net Funding Requested £142,820	94
5.1.20	10061098, SF6 whole life strategy, Initial Net Funding Requested £119,60798	
5.1.21	[REDACTED]	102
5.1.22	10061159, SCOHL - SuperConductor OverHead Lines, Initial Net Funding Requested £132,507	102
5.1.23	10061184, NextGen Electrolysis – Wastewater to Green Hydrogen, Initial Net Funding Requested £81,422.....	107
5.1.24	10061243, CommsConnect, Initial Net Funding Requested £110,138	111
5.1.25	10061245, WARN (Weather Alerts and Risk analysis for Network operators), Initial Net Funding Requested £109,647.....	115
5.1.26	10061343, Connectrolyser, Initial Net Funding Requested £118,525	120
5.1.27	10061355, Trinity, Initial Net Funding Requested £134,793	124
5.1.28	10061439, Looking-Glass, Initial Net Funding Requested £88,007	128
5.1.29	[REDACTED]	133
5.1.30	10061719, Digital Inspector, Initial Net Funding Requested £47,600.....	133
6	SIF Round 2 Discovery Phase – Preparing for a net zero power system.....	138
6.1	SIF Discovery Phase – preparing for a net zero power system – Summary.....	139
6.2	Evaluation of Applications	140
6.2.1	10051585, INSIGHT (Innovative Network Status Intelligence Gathered by Holistic use of Telemetry and Simulation), Initial Net Funding Requested £83,515 .	141
6.2.2	10052878, Electrolyser Improvements driven by Waste Heat Recovery, Initial Net Funding Requested £95,714	146
6.2.3	[REDACTED]	150
6.2.4	10059797, Shifting Currents, Initial Net Funding Requested £99,040	150
6.2.5	10060432, Hybrid Storage Systems for site safety and efficiency, Initial Net Funding Requested £133,656	155
6.2.6	10060474, Powering Wales Renewably, Initial Net Funding Requested £135,491	159
6.2.7	10061137, Diversified Flexible Queue Management, Initial Net Funding Requested £147,151	164
6.2.8	10061160, Artificial Forecasting, Initial Net Funding Requested £126,722 .	168
6.2.9	10061242, Power Block, Initial Net Funding Requested £42,355	173
6.2.10	10061340, CReDo+ Climate Resilience Demonstrator (extension to new climate risks), Initial Net Funding Requested £112,284	178
7	SIF Round 2 Discovery Phase – Accelerating decarbonisation of major demands	184
7.1	SIF Discovery Phase – accelerating decarbonisation of major demands - Summary	185

7.2	Evaluation of Applications	187
7.2.1	10055401, RetroMeter, Initial Net Funding Requested £148,081.....	187
7.2.2	10058729, LEO-N, Initial Net Funding Requested £141,756	191
7.2.3	10059404, Tyseley Environmental Enterprise District, Initial Net Funding Requested £145,216	196
7.2.4	10060736, Planning Regional Infrastructure in a Digital Environment (PRIDE), Initial Net Funding Requested £130,641.....	201
7.2.5	10061146, Inform, Initial Net Funding Requested £123,196	204
7.2.6	10061241, Integrated Hydrogen Transport Hubs, Initial Net Funding Requested £135,169	208
7.2.7	10061292, Proportional Investment of Networks in Energy Efficiency Retrofit (PIONEER), Initial Net Funding Requested £125,446.....	213
7.2.8	10061308, Park & Flex, Initial Net Funding Requested £108,554	216
7.2.9	[REDACTED]	220
7.2.10	10061338, Indus, Initial Net Funding Requested £141,349	220
7.2.11	10061339, Heatropolis, Initial Net Funding Requested £146,195	225
7.2.12	10061341, Full Circle, Initial Net Funding Requested £108,453	229
7.2.13	10061544, Watt Heat, Initial Net Funding Requested £86,697.....	233
7.2.14	10061568, Lightspeed, Initial Net Funding Requested £140,552	237
7.2.15	10061572, Heat Risers, Initial Net Funding Requested £92,341	241
7.2.16	10061578, Calfacto Latent Energy, Initial Net Funding Requested £82,469	246
7.2.17	10061606, Net Zero Community Energy Hubs, Initial Net Funding Requested £81,315	251
7.2.18	10061608, Carnot Gas Plant, Initial Net Funding Requested £93,952	256
8	SIF Round 2 Discovery Phase portfolio Gas Sector Projects - Summary	261
8.1	Gas Sector Projects recommended for SIF Funding.....	261
8.2	Gas Projects not recommended for SIF Funding	262
9	SIF Round 2 Discovery Phase Portfolio Electricity Sector Projects - Summary	263
9.1	Electricity Projects recommended for SIF Funding	263
9.2	Electricity Projects not Recommended for funding	266

1 Introduction

Innovation will play a crucial role in delivering best value to energy consumers. Innovation will prepare the regulated energy network companies to deliver Net-Zero greenhouse gas emissions at lowest cost to consumers, while maintaining world-class levels of system reliability and customer service, and ensuring no consumer is left behind.

The SIF was introduced within the RIIO-2 price control by Ofgem to support network innovation that contributes to the achievement of Net-Zero while delivering real benefits to network consumers. The SIF is being delivered in partnership with Innovate UK (part of UKRI), who are administering the SIF and are working to coordinate innovation activities funded by network consumers with other innovation funded programmes.

For each round of the SIF new Innovation Challenges are launched focusing on strategic issues currently facing gas and electricity networks. Round 1 of the SIF was launched in July 2021 with four Innovation Challenges on whole system integration, data and digitalisation, heat, and zero emissions transport¹. Round 2 of the SIF, launched in May 2022, focuses on four new Innovation Challenges: supporting a just energy transition, preparing for a net zero power system, improving energy system resilience and robustness, and accelerating decarbonisation of major energy demands.² The SIF adopts a three Project Phase approach within each round 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 per the SIF Governance Document³, Round 2 of the SIF is open to the Electricity System Operator, Electricity Transmission, Electricity Distribution⁴, Gas Transmission and Gas Distribution licence:

- Cadent Gas Limited (Cadent)
- Electricity North West Limited (ENWL)

¹ For more information on round 1 of the SIF, including the Innovation Challenges, please see:

<https://www.ofgem.gov.uk/publications/strategic-innovation-fund-innovation-challenges>

² Find the four Innovation Challenges launched for round 2 here: <https://www.ofgem.gov.uk/publications/strategic-innovation-fund-round-two-innovation-challenges>

³ The SIF Governance Document can be found here: <https://www.ofgem.gov.uk/publications/updated-sif-governance-document>

⁴ Following a formal consultation, Ofgem has decided to allow DNOs to be able to submit an Application to the round 2 Discovery Phase prior to the RIIO-ED2 licences coming into force on 1 April 2023. No decision on the round 2 Discovery Phase Projects will be made prior to the RIIO-ED2 Final Determinations and underlying SIF licence condition coming into force. For more information on this decision, please see: <https://www.ofgem.gov.uk/publications/updated-sif-governance-document>.

- National Grid Electricity Distribution⁵ (NGED): West Midlands (WMID)
- National Grid Electricity Distribution⁵ (NGED): East Midlands (EMID)
- National Grid Electricity Distribution⁵ (NGED): South Wales (SWALES)
- National Grid Electricity Distribution⁵ (NGED): South West (SWEST)
- National Grid Electricity System Operator Limited (NGESO)
- National Grid Electricity Transmission Plc (NGET)
- National Grid Gas Plc (NGGT)
- Northern Gas Networks Limited (NGN)
- Northern Powergrid (NPg): Northeast (NPgN)
- Northern Powergrid (NPg): Yorkshire (NPgY)
- Scotland Gas Networks Plc and Southern Gas Networks Plc (SGN)
- Scottish and Southern Energy Power Distribution (SSE): Scottish Hydro Electric Power Distribution (SSEH)
- Scottish and Southern Energy Power Distribution (SSE): Southern Electric Power Distribution (SSES)
- Scottish Hydro Electric (SHE) Transmission Plc
- SP Energy Networks (SPEN): Distribution (SPD)
- SP Energy Networks (SPEN): Manweb (SPMW)
- SP Transmission Plc (SPT)
- UK Power Networks (UKPN): Eastern Power Networks (EPN)
- UK Power Networks (UKPN): London Power Networks (LPN)
- UK Power Networks (UKPN): South East Power Networks (SPN)
- Wales & West Utilities Limited (WWU)

This recommendations report is for the round 2 Discovery Phase. It provides the consolidated recommendations from the Expert Assessors for Ofgem's consideration for Projects which submitted an Application for the round 2 Discovery Phase and met the Eligibility Criteria set out in the SIF Government Document and the Innovation Challenge-specific requirements outlined in the round 2 Innovation Challenges.

⁵ Western Power Distribution (WPD) was acquired National Grid and is now National Grid Electricity Distribution.

2 Round 2 Summary

Four Innovation Challenges were launched in May 2022 for round 2 of the SIF⁶. These Innovation Challenges focus on strategic issues currently facing networks – supporting a just energy transition, preparing for a net zero power system, improving energy system resilience and robustness, and accelerating decarbonisation of major energy demands. The four 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.

Within each of the Innovation Challenges are specific requirements on scope and partner requirements. Projects submitted to the SIF must meet these specific requirements and must follow the SIF Governance Document⁷. For the Discovery Phase of round 2, Projects must start no sooner than 3 April 2023, end by 30 June 2023 and not request funding of more than £150,000, exclusive of VAT.

Applications submitted to the round 2 Discovery Phase by the 23 November 2022 deadline and which met the Innovation Challenge-specific requirements were assessed by Expert Assessors. The Expert Assessors are external appointees used to inform Ofgem's decision-making on the selection of Project for SIF Funding. The Expert Assessors have relevant expertise and knowledge on the respective Innovation Challenge, Innovation Challenges and/or the energy sector, including in areas such as policy and regulatory, commercial, financial and technical. Consistent with the requirements of the SIF Governance Document⁸, the Expert Assessors have assessed each Application with reference to (a) 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, partial funding, or no funding at all. Due to the short timeframe and nature of Discovery Phase Projects, where Projects are focussing on initial feasibility studies, the recommendations from the Expert Assessors were naturally more focused on recommending the Project be funded either in its entirety or not at all.

⁶ Find the four Innovation Challenges launched for round 2 here: <https://www.ofgem.gov.uk/publications/strategic-innovation-fund-round-two-innovation-challenges>

⁷ The SIF Governance Document is available here: <https://www.ofgem.gov.uk/publications/updated-sif-governance-document>

⁸ The SIF Governance Document is available here: <https://www.ofgem.gov.uk/publications/updated-sif-governance-document>

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, the total mean Expert Assessor score achieved against the Application questions, 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 the Assessment Process below.

This recommendations report is a consolidation of the Applications which were assessed by the Expert Assessors and features recommendations from the Expert Assessors to Ofgem on which Projects have met the Eligibility Criteria and should be considered for SIF Funding in this Discovery Phase of round 2. Ofgem is the sole decision-maker for the SIF and on which Projects receive SIF Funding.

3 Assessment Process

For the round 2 Discovery Phase there is a maximum of 5 stages to assess eligible submitted Applications:

- Initial sift - completed by Innovate UK to confirm whether an Application complies with the Innovation Challenge-specific requirements⁹.
- Expert Assessor evaluation – Each Expert Assessor assesses and scores questions 3-7, 9 and 11 of each Application and the accompanying appendices. These questions tie directly to the Eligibility Criteria outlined in chapter 2 of the SIF Governance Document. The scores are only used by the Expert Assessors as a guide for whether a Project is recommended for SIF Funding. Each Expert Assessor also includes their assessment of how and why an Application has met or not met each Eligibility Criteria and an overall comment for each Application assessed.
- Expert Assessors' overall recommendation – As part of their assessment, each Expert Assessor provides an overall recommendation on whether the Application and Project should be considered for SIF Funding in the Discovery Phase. This decision is made based on a balance between scores of each scored question, an assessment on whether the Project has a majority recommendation for all of the Eligibility Criteria, and any consideration of any serious risk or opportunity to an Application. Applications will be recommended for SIF Funding if they have a majority of Expert Assessors recommending it (two of the three Expert Assessors who assessed an Application), no significant risks are identified which could prevent the Project from progressing, and 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 a Project-specific condition be included. In many cases these have been offered as ways of strengthening the Project outcomes and does not necessarily reflect a weakness in the Application. The recommended Project-specific conditions are then considered by Ofgem and finalized in each of the successful Projects' Project Direction.
- Final decision – The consolidated recommendations report is provided to Ofgem for consideration on which of the Applications should be considered for SIF Funding in the round 2 Discovery Phase. Having taken into account the Expert

⁹ For more information on the Innovation Challenge-specific requirements please see: <https://www.ofgem.gov.uk/publications/strategic-innovation-fund-round-two-innovation-challenges>

Assessors' report, the Authority will decide which Projects should receive SIF Funding.

3.1 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)
3	Project summary	Eligibility Criteria 1: Projects must address the Innovation Challenge set by Ofgem. Eligibility Criteria 6: Projects must include participation from a range of stakeholders.
4	Innovation justification	Eligibility Criteria 3: Projects must involve network innovation. Eligibility Criteria 5: Projects must be innovative, novel or risky.
5	Benefits Part 1	Eligibility Criteria 2: Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers (whomever is paying for the innovation).
6	Benefits Part 2	Eligibility Criteria 2: Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers (whomever is paying for the innovation).
7	Project Plan and milestones	Eligibility Criteria 8: Projects must be well thought through and have a robust methodology so that they are capable of progressing in a timely manner.
9	Route to market	Eligibility Criteria 4: Projects must not undermine the development of competitive markets.
11	Costs and value for money	Eligibility Criteria 7: Projects must provide value for money and be costed competitively.

4 SIF Round 2 Discovery Phase – Supporting a just energy transition

Achieving a net zero energy system and economy will see different communities and sectors impacted in different ways. A key part of UK government's net zero strategy¹⁰ is to ensure that the transition is just and fair for all parts of society, both in terms of sharing costs based on ability to pay and sharing the benefits widely.

Specifically, from an energy transition perspective, the key challenge is to acknowledge that energy consumers¹¹ are people with differing preferences, and who have varying levels of capability or resources to engage with reducing their energy related emissions. The combination of Covid-19 pandemic and a 'cost of living crisis' has exacerbated consumer vulnerability recently, with potential long-term implications for driving a fair net zero transition. This requires decarbonisation approaches that embed a range of consumer needs at the core of new product and service development.

Whilst significant work has been undertaken to understand vulnerability¹² in the context of the energy sector, the net zero transition could alter these characterisations in future.

Deepening this understanding across energy and other sectors is critical to be able to develop and execute long term and well considered strategies to meet net zero in a fair way. Furthermore, approaches which cater for the needs of all groups in society will be needed to drive adoption of low carbon technologies and achieve the deep decarbonisation required to meet national targets. Existing approaches to heat and transport decarbonisation do not work effectively and fairly for certain socio-economic and demographic groups.

The Rural Net Zero Report¹³ published by UK100's Countryside Climate Network captures some of the just transition aspects from a rural community perspective. This research found that rural communities face greater barriers to achieving net zero, including lower average incomes affecting affordability of new technologies, poor digital connectivity limiting access to digital services, buildings needing bespoke

¹⁰ <https://www.gov.uk/government/publications/net-zero-strategy>

¹¹ Users of network services (for example generators, shippers) as well as domestic and business end consumers, and their representatives.

¹² Refers to someone who, due to their personal circumstances, is especially susceptible to harm.

¹³ https://www.uk100.org/sites/default/files/publications/Rural%20Net%20Zero_May%202021.pdf

energy efficiency solutions and grid capacity constraints limiting electrified heat and transport solutions.

Another example is from the recent Department for Transport research¹⁴ which focused on people without off-street parking. It found that 56% of those surveyed were likely to purchase or lease a petrol or diesel engine when replacing their current vehicle in the future. The main concerns raised on transitioning to electric vehicles included high up-front cost and perceived issues around time for charging and lack of access to public charging infrastructure.

A key theme that is pervasive in the context of rising digitalisation in energy and other sectors is digital exclusion. 10% of the UK adult population are not internet users¹⁵ and this puts some groups at risk of vulnerability and exclusion from information and future changes in the energy sector. More broadly digital inclusion should also consider effective consent models for consumers that is both simple and builds trust on the usage of their data.

These examples outline the types of issues that need to be considered to develop decarbonisation and energy transition approaches that work across society.

Addressing these issues is important for energy networks given their central role in enabling effective and reliable access to net zero solutions for all consumers.

This section covers the assessment of round 2 Discovery Phase Applications received into the 'supporting a just energy transition' Innovation Challenge¹⁶.

4.1 SIF Discovery Phase – Supporting a just energy transition - Summary

This section covers the assessment of round 2 Discovery Phase Applications received into the 'supporting a just energy transition' Innovation Challenge¹⁷.

For the Discovery Phase, 7 Applications were submitted to Innovate UK through the Innovation Funding Service (IFS) portal by the closing deadline of 11am 23 November

¹⁴

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1061865/public-ev-charging-infrastructure-research-report.pdf

¹⁵

<https://www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediausage/articles/exploringtheuksdigitaldivide/2019-03-04>

¹⁶ <https://www.ofgem.gov.uk/publications/strategic-innovation-fund-round-two-innovation-challenges>

¹⁷ <https://www.ofgem.gov.uk/publications/strategic-innovation-fund-round-two-innovation-challenges>

2022 and are listed below. In order to protect the early stage innovation and IPR, unsuccessful Projects have been redacted from final published version.

Project reference number	Project name	Funding licensee	Total Project costs (£)	Total Project contribution (£)	Total SIF Funding requested (£)	Recommended for funding (Yes/No)
10054930	Hy-Fair	SOUTHERN GAS NETWORKS	124,644	12,790	111,854	Yes
10055259	Net Zero Terrace	ELECTRICITY NORTH WEST LIMITED	151,966	22,447	129,519	Yes
10057788	EV Respond	NATIONAL GRID ELECTRICITY DISTRIBUTION (SOUTH WEST) PLC	134,872	13,488	121,384	Yes
10059427	VIVID - Vulnerability Identification Via Informative Data	SOUTHERN ELECTRICITY POWER DISTRIBUTION PLC	104,954	10,495	94,459	Yes
[REDACTED]						
10061358	Guidelight	UK POWER NETWORKS (OPERATIONS) LIMITED	140,720	21,092	119,628	Yes
10061386	SHIELD - Smart Heat and Intelligent Energy in Low-Income Districts	UK POWER NETWORKS (OPERATIONS) LIMITED	91,237	9,074	82,163	Yes

4.2 Evaluation of Applications

4.2.1 10054930, Hy-Fair, Initial Net Funding Requested £111,854

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
SOUTHERN GAS NETWORKS PLC	51,034	0	51,034
CENTRE FOR ENERGY EQUALITY LTD	69,200	9,955	59,245
FIFE COUNCIL	4,410	2,835	1,575

Submitted Project description
Hy-Fair; leaving no one behind in the transition to green energy.

Eligibility Criterion 1: Projects must address the Innovation Challenge set by Ofgem.
Eligibility Criterion met
The Expert Assessors considered the Project to have addressed the Innovation Challenge because it examines the socio-technical precursors and conditions necessary to enable a just transition from natural gas to hydrogen for vulnerable customers and businesses. This was considered to be directly related to the Innovation Challenge. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2: Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers
Eligibility Criterion met
The Expert Assessors considered the Project to have identified potential to deliver a net benefit to gas consumers, thereby meeting this Eligibility Criteria. The Project, through investigating consumer needs, concerns and preferences, will work to develop solutions that enable greater social inclusion in the energy transition. This was considered by the majority of the Expert Assessors to have the potential to deliver benefits in the form of health and welfare and potentially energy affordability for customers and business in vulnerable situations. One Expert Assessor noted the stated benefits could have been strengthened by

stating the quantitative metrics used. However, all Expert Assessors considered this Eligibility Criteria to have been met.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

All Expert Assessors considered the Project to involve network innovation because it proposes examining what network operators can do to align social and technical changes required to facilitate a transition to novel technology of hydrogen. This would directly impact those who are most susceptible of being left behind due to being consumers in vulnerable situations. This was considered to involve network innovation because it has the potential to help ensure that vulnerable consumer needs are understood and accounted for before the transition commences, and new technologies and innovations are rolled out. The Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors considered the Project to not be undermining the development of competitive markets. This is because the Project focuses on access to clean energy for consumers in vulnerable situations, and this area is not competitive in nature. Additionally, the Project plan references the intention to use open procurement should new tools or methodologies be developed following the research. The Expert Assessors noted that there is potential for learnings to be shared across networks, equipment suppliers and others. Overall, the Project was considered by the Expert Assessors to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to be innovative and novel because the Project will investigate in detail the circumstances and experiences of consumers and businesses in vulnerable situations in the context of a hydrogen network and service provision. This was considered as being capable of

shaping future investment in customer services and support for low-income groups ahead of any major transition, which was considered innovative and novel. One Expert Assessor did not consider the Application to include sufficient detail to fully evaluate whether the Project's intended approach is innovative and noted additional details would have strengthened the Application. However, the majority of the Expert Assessors did consider this Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

All the Expert Assessors considered the Project to have a participation from a sufficient range of stakeholders for the works described in the Discovery Phase. The Project Partners are drawn from commercial, public, and third-party sectors with a sub-contractor for technical-economic and social option assessments. The programme of work also proposes customer panels, therefore directly engaging with the consumers being targeted. The range of stakeholders cited should therefore be able to provide reasonable representative examples. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The majority of the Expert Assessors considered this Project to be providing value for money and being costed competitively. It was noted that the Project's proposed solution could lead to avoiding network costs incurred through delay and avoiding failure to anticipate and plan for customer needs, as well as providing potentially more affordable access to clean energy.

It was noted that the costs are reasonable compared against industry norms and the Project specifications. The 10% contribution requirement from the Project Partners was satisfied and was noted by the Expert Assessors. One Expert Assessor did not more information on the day rates would have strengthened the Application. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The Expert Assessors considered the Project to have met this Eligibility Criteria. The Project plan was considered to be sufficiently robust with Project Partners appropriately skilled for the tasks allocated to ensure the Project is delivered successfully. It was also noted that the timelines are realistic and should be deliverable within the time required. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria and have confidence the Project will be capable of progressing in a timely manner.

Regulatory barriers identified**NO**

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority**FUND**

The majority of the Expert Assessors recommended this Project be approved for SIF Funding. All three Expert Assessors considered the Project to have addressed the Innovation Challenge. The Project was considered to respond to the core aims of the Innovation Challenge by investigating novel and replicable methods for identification, support, and inclusion of vulnerable groups in the context of a conversion to hydrogen. The Project proposes looking ahead to the end user through ascertaining impacts of the transition hydrogen on consumers in vulnerable situations. Consumers and businesses in vulnerable situations form sizeable proportion of the end user population and considering and understanding them should contribute to a just energy transition.

One Expert Assessor noted the Application would've been strengthened by including more information on the technical approach, noting that aspects would rely on third parties and suppliers. It was also noted that the Application could have been strengthened by providing more information on why the Funding Party would not fund this Project outside of the SIF. A Project-specific condition was recommended for the Funding Party to provide justification for each of these by

the completion of the Discovery Phase. On balance, majority of the Expert Assessors recommended the Project be approved for SIF Funding.

Recommended Project specific conditions

Prior to the completion of the Discovery Phase, the Funding Party must provide to the monitoring officer a more detailed explanation on the Project's key areas of innovation.

Prior to the completion of the Discovery Phase, the Funding Party must provide to the monitoring officer justification as to why this Project is suitable for SIF Funding going forward rather than being funded directly by the Funding Party.

4.2.2 10055259, Net Zero Terrace, Initial Net Funding Requested £129,519

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
ELECTRICITY NORTH WEST LIMITED	51,152	6,650	44,502
BURO HAPPOLD LIMITED	59,564	6,048	53,516
ROSSENDALE BOROUGH COUNCIL	17,250	2,250	15,000
ROSSENDALE VALLEY ENERGY LIMITED	18,400	1,900	16,500
NORTHERN POWERGRID (NORTHEAST) LIMITED	5,600	5,599	1

Submitted Project description
This project will demonstrate how to decarbonise an entire terraced street using a Smart Local Energy System that is integrated with the network, optimised, affordable to consumers and easily replicable across GB.

Eligibility Criterion 1: Projects must address the Innovation Challenge set by Ofgem.
Eligibility Criterion met
The Expert Assessors considered this Project to have addressed the Innovation Challenge because it brings affordable net zero heat to a group of potentially excluded consumers (those in terraced houses) and at times vulnerable households. This is aligned with one of the aims of the Innovation Challenge to support the decarbonisation of heat and mobility for rural, off-gas-grid, fuel poor and those consumer groups with reduced access to opportunities for decarbonisation. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2: Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers
Eligibility Criterion met
The Expert Assessors considered this Project to have identified clear benefits for electricity consumers through bill reduction (cost savings) and CO2 emission savings (environmental benefits). The metrics used to track selected benefits were

considered by the Expert Assessors to cover a suitable range of quantitative and qualitative outputs.

One Expert Assessor did note that the costs, revenues and new to 'market' benefits could have been over-emphasised. It was also noted that the Application would have been strengthened by including more detail on the value enabled by the community energy approach.

However, all Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered this Project to involve network innovation because it explores the split incentive and equality issues of energy access with mixed ownership terrace housing. The split focus of the Project was considered to involve network innovation as it represents the potential to solve an existing problem and create a business model for a combined local energy system. The Expert Assessors therefore considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

The Expert Assessors considered this Project to not undermine the development of competitive markets because it is investigating decarbonisation options for terraced homes and opportunities for participation in flexibility markets.

The Project was considered to represent a potential route for communities to participate in flexibility services and revenues, based on integrated local energy systems and storage. This could also lead to new market opportunities for technology specialists such as heat pump suppliers, thereby creating market opportunities.

The Expert Assessors considered this Project to have met the Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Project was considered by the majority of the Expert Assessors to be innovative in its efforts to address heat decarbonisation for terraced houses specifically by applying a heat-focussed 'Smart Local Energy Systems' approach. The Project was also considered to involve a degree of risk because even though the technologies are mainstream, the Project will require buy-in from communities, something which has previously been considered challenging because of the different stakeholders involved and current barriers to widespread adoption. The Expert Assessors therefore considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered the Project to have included participation from a sufficient range of stakeholders for the Project as they include technical and customer backgrounds. The Project utilising resources from a BEIS North West Net Zero hub was also noted favourably. This was considered by the Expert Assessors to have met the Eligibility Criteria.

However, the Expert Assessors did note two areas where additional clarity would have strengthened the Application. First, it was noted that more details could have been provided on how the partners will engage directly with local authorities and other community groups outside of those involved in the Project. Second, it was questioned why the Centre for Energy Equality was a subcontractor rather than Project Partner.

However, overall, all the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Expert Assessors considered the Project to be delivering value for money and be costed competitively because the Project was considered to have reasonable

costs for the outputs. The Project states the modelling will be replicable which could offer wider benefits to consumers and the grid which increases value for money. This was considered by the Expert Assessors to have met the Eligibility Criteria. It was noted by one Expert Assessor that stronger justification for higher than anticipated Project Partner and subcontractor costs would have strengthened the Application.

Overall, all Expert Assessors considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The Expert Assessors considered the Project to have a robust methodology which gives confidence to the Expert Assessors that it will be capable of progressing in a timely manner. This was because the Project plan includes clear details on responsibilities, planning and resources. The Project plan was considered by the Expert Assessors to provide a sufficient level of clear information and gave the Expert Assessors confidence the Project would be able to progress the work in a timely manner.

Regulatory barriers identified

No

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority

FUND

The Expert Assessors recommend this Project for SIF Funding. The Project was considered to address a holistic energy and heat approach to developing technical and business model strategies to terraced housed customers, which was considered to involve network innovation while also being risky. The Project was also considered to have identified clear benefits for electricity consumers with bill

reductions and CO2 emission reductions. The Project Partners were deemed to be suitable with a robust plan and methodology for delivery in the Discovery Phase.

Recommended Project specific conditions

Prior to the end of the Discovery Phase, the Funding Party must provide to the monitoring officer an explanation and justification as to whether the Project has or has not sought to explore more diverse communities.

During the Discovery Phase, the Funding Party must engage with the Project team behind the SIF Project SHIELD to discuss potential areas of similarity and overlap. The Funding Party must provide prior to the end of the Discovery Phase a summary of this discussion. Innovate UK can facilitate an introduction if necessary.

Prior to the completion of the Discovery Phase, the Funding Party must provide to the monitoring officer an explanation on why network investment is only deferred rather than avoided with the proposed solution.

4.2.3 10057788 EV Respond, Initial Net Funding Requested £121,384

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
NATIONAL GRID ELECTRICITY DISTRIBUTION (SOUTH WEST) PLC	13,248	1,325	11,923
REGEN SW	70,850	4,950	44,550
CENTRE FOR ENERGY EQUALITY LTD	49,500	7,085	63,765
WEST MIDLANDS COMBINED AUTHORITY	1,274	128	1,146

Submitted Project description
EV-Respond; safeguarding consumers using the power of electric vehicles.

Eligibility Criterion 1: Projects must address the Innovation Challenge set by Ofgem.
Eligibility Criterion met
The Expert Assessors considered this Project to have addressed the Innovation Challenge because it explores novel solutions for vehicle to grid (V2G) technology to support vulnerable households through power outages. This can support the decarbonisation of heat and mobility consumer groups with reduced access to opportunities for decarbonisation, thereby focusing on one of the key areas of this Innovation Challenge.

Eligibility Criterion 2: Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers
Eligibility Criterion met
The Expert Assessors considered this Project to have identified the potential to deliver a net benefit to electricity consumers through greater network efficiency which would result in cost savings and social benefits. The Project was noted to have the potential to result in safety and reliability benefits as consumers, through this Project, would have a more secure power connection meaning their household could recover more quickly from blackouts. The CO2 reductions and

grid flexibility benefits were also considered to have a potential to deliver a strong net financial benefits to electricity consumers.

While the Expert Assessors considered this Project to have met this Eligibility Criteria, the Expert Assessors also noted that the health benefits associated with reducing the loss of supply for vulnerable households should have stronger links with the solution, thereby showing a stronger connection between the proposed solution and the identified potential benefits to consumer. Second, it was noted that the Application would have been strengthened with greater detail on the financial benefits provided by the proposed solution over the current solution.

Overall, all Expert Assessors considered the Project to have addressed this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered this Project to involve network innovation and therefore meet this Eligibility Criteria as it explores novel solution to restoring power for the vulnerable in outages through examining the role of electric vehicle V2G technology to support the grid and vulnerable consumers during outages. This was considered the involve network innovation because it was considered to involve a novel solution to support the grid and vulnerable consumers during outages.

One Expert Assessor noted the Project could have included other barriers to the Project (e.g. rural locations, access to connectivity points at houses) which would have strengthened the Application. that would make it difficult for this solution to meet the needs of the most vulnerable. However, all Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors did not consider this Project to be undermining the development of competitive markets because it explores novel solutions to localised outage management and creates a new service that EV owners can

competitively offer to the grid. This was considered to have the potential to open new competitive opportunities. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Expert Assessors considered the Project to be innovative and novel because it presents a new way to offer grid services and support to vulnerable groups during outages. V2G services have not been demonstrated for this use case before, therefore the Expert Assessors considered it novel and innovative.

The Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered the Project Partners to be sufficient for the Project because they have strong experience and reputations in ensuring stakeholder feedback and consumer engagement as well grid and local authority expertise. One Expert Assessor noted the Project Partners would have been strengthened with the inclusion of more technical expertise. However, all Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Expert Assessors considered the Project to be delivering value for money and be costed competitively because it explores innovative business models and solutions to support vulnerable households using a strong consortium, which represents cost benefits over the existing solutions. While the Projects costs were considered to provide value for money, it was also noted that stronger justification for one of the Project Partners' higher-than-anticipated costs would have strengthened the Application. However, all Expert Assessors still considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The Expert Assessors consider the Project to have a robust methodology which gave confidence that it will be capable of progressing in a timely manner because the work package and deliverables have been clearly articulated and defined. The Expert Assessors also noted that the timing of the work packages were considered reasonable. It was noted that the milestones and gantt chart could have been more clearly presented. However, all Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified**NO**

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority**FUND**

The majority of the Expert Assessors recommended that this Project be approved for SIF Funding. This is because it has a majority of the Expert Assessors considering each of the Eligibility Criteria as met. One Expert Assessor did not recommend the Project for SIF Funding because they did not consider the Project to be providing sufficient benefits over current or other solutions to justify the cost and complexity for a Discovery Phase.

Overall, all the Expert Assessors considered the Project's proposed solution to offer the potential for new grid services with V2G technology to be innovative and valuable for vulnerable consumer groups. The Project Partners were deemed to be suitable and the Project was considered to have a robust plan for delivery. The Expert Assessors also considered the Project to involve network innovation through its focus on V2G technology to support the grid and vulnerable consumers, and also considered this to be innovative and novel.

Recommended Project specific conditions

Prior to the completion of the Discovery Phase, the Funding Party must engage with the team behind the SIF Project 'Resilient Customer Response' to examine potential areas of overlap and duplication. Prior to the completion of the Funding Party must provide to monitoring officer a summary of its findings. Innovate UK can facilitate an introduction if necessary.

Prior to the completion of the Discovery Phase, the Funding Party must provide an explanation as to whether the Project has sought to engage with EV owners as part of its Discovery Phase. As part of this explanation, the Funding Party must also provide an explanation on whether it has considered the Project in different locations, such as rural and urban, street access, etc.

4.2.4 10059427, VIVID - Vulnerability Identification Via Informative Data, Initial Net Funding Requested £94,459

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
SOUTHERN ELECTRICITY POWER DISTRIBUTION PLC	23,686	10,495	13,191
CGI IT UK LIMITED	11,160	0	59,908
QUARRIERS	59,908	0	11,160
ABERDEEN CITY COUNCIL	10,200	0	10,200

Submitted Project description
Project VIVID will develop new techniques to use smart meter and public data sets to identify which consumers would most benefit from timely, relevant and free offers of practical and financial support from their local authority, reputable charities and responsible energy companies.

Eligibility Criterion 1: Projects must address the Innovation Challenge set by Ofgem.
Eligibility Criterion met
The Expert Assessors considered the Project as addressing the Innovation Challenge because it proposes making use of previously untapped smart energy in a way which enables systematic identification of vulnerable customers to provide more targeted support in a way that could be transferred to other areas. This was considered as being directly related to the Innovation Challenge's aim of progressing the understanding vulnerable consumers and developing a strategy to support them. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2: Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers
Eligibility Criterion met
The majority of the Expert Assessors considered the Project to have clearly identified the potential to deliver benefits to both electricity consumers (as well as gas consumers) by better identifying customers experiencing vulnerable

circumstances to provide more targeted support. This was considered by the Expert Assessors to offer a social benefit. It was noted that the additional benefits to be delivered to those consumers beyond existing processes and knowledge base could have been described in more detail. Overall, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The majority of the Expert Assessors considered this project to involve network innovation due to the focus of vulnerability experienced by energy network consumers, and the relation of their vulnerable circumstances to energy supply through the regulated energy networks. It was noted that more details in the description of the data activities to be undertaken or considered would have strengthened the Application. The majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Project is not considered by Expert Assessors as undermining the development of competitive markets because it is focused on delivering solutions to vulnerable consumers. This focus area and the Project's focus was not considered by the Expert Assessors to be undermining the development of competitive markets. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The majority of the Expert Assessors consider this Project to be innovative and novel and consider this Project to have met this Eligibility Criteria. The Expert Assessors acknowledged that there is some effort to utilise previously untapped smart energy data to provide more targeted support to vulnerable consumers, which was considered innovative. The development of a vulnerability assessment

tool which gave insights to consumers situations beyond the simple classifications of vulnerability was also considered novel.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered the Project to have participation from a suitable range of stakeholders for the work described as part of the Discovery Phase. This includes a network operator, data specialist business and social expertise entity who understands aspects of consumer vulnerability. The Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The majority of the Expert Assessors considered the costs of the Project against deliverables to be providing value for money and costed competitively for the outputs described, and therefore that the Project meets the eligibility criteria. It was also noted that the costs outlined by the Project Partners were reasonable for the Discovery Phase plans. One Expert Assessor noted that while the costs were reasonable for the Discovery Phase, the balance between the Project Partners could have been more equal.

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.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project as meeting this Eligibility Criteria because the Project plan is well developed with clear roles for the Project Partners based on their experience. The Project team combines relevant expertise which should enable effective delivery. It was noted that the Project plan was well thought through for the Discovery Phase. However, it was also noted that the risks could have been better defined, especially with regard to the timing associated with data access and permissions and the penetration of smart meters.

Regulatory barriers identified
NO
The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority
FUND
<p>The Expert Assessors considered the Project as having the potential to deliver value to vulnerable consumers and have therefore recommended it for SIF Funding. The Project was considered to be taking an innovative and novel approach to using smart meter data to identify and manage vulnerable consumers in a single replicable tool. If successful, the output may be utilised in other regions and could provide a way to systematically identify vulnerable groups of customers that could be best targeted for support.</p> <p>The Project was considered as being innovative with good prospects for delivering solutions which could be implemented to support consumers in vulnerable situations. While the Project was considered to offer value for money and as being costed competitively, the Expert Assessors noted that a more equal balance between Project Partners would have strengthened the Application. The Expert Assessors also noted that the Project plan provided sufficient information and was well thought through for them to have confidence it will be capable of progressing but noted that risks could have been better defined.</p>

Recommended Project specific conditions
<p>Prior to the completion of the Discovery Phase the Funding Party must provide to the monitoring officer an updated and more detailed risk register. Furthermore, as part of this, the Funding Party must include an explanation as to how crucial smart meter data is to the Project's success, and how the Project will address the issue of only partial smart meter penetration.</p>

4.2.5 [REDACTED]

4.2.6 10061358, Guidelight, Initial Net Funding Requested £119,628

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
UK POWER NETWORKS (OPERATIONS) LIMITED	14,750	13,292	1,458
UNIVERSITY OF SOUTHAMPTON	56,270	0	56,270
CENTRE FOR SUSTAINABLE ENERGY	58,900	1,800	57,100
PORTSMOUTH CITY COUNCIL	3,600	0	3,600
SEDGEMOOR DISTRICT COUNCIL	3,600	3,000	600
LONDON BOROUGH OF HACKNEY	3,600	3,000	600

Submitted Project description
Low-income and vulnerable consumers receive grant funded LCTs through local authority retrofit schemes, but without supporting households to switch tariffs or using digital optimisation tools, retrofit schemes risk creating a socio-technical performance gap that this project will evidence and address through a range of capability-based interventions that are tailored to those in vulnerable circumstances.

Eligibility Criterion 1: Projects must address the Innovation Challenge set by Ofgem.
Eligibility Criterion met
The Project was considered by the Expert Assessors to have addressed the Innovation Challenge because it focuses on low-income and vulnerable households to identify their needs to enhance their experience in using low carbon technologies and to support them to be included in the provision of flexibility services. This was considered by the majority of the Expert Assessors to be aligned with the Innovation Challenge's aim of narrowing the gap between vulnerable consumers in their use and accessibility of decarbonisation solutions. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Expert Assessors considered the Project to have clearly identified potential to deliver a net benefit to electricity consumers through its focus on increasing the benefits of grant funded low carbon technologies for vulnerable group of consumers. The Expert Assessors also noted that the Project can support bill reductions directly, thereby creating a financial benefit, and deliver social benefits such as mental wellbeing.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Project was considered by the Expert Assessors to involve network innovation as it is examining the effects of low carbon technology use on the network. It will consider how Distribution Network Operators could use the connections process to improve low carbon technology asset performance and increase consumer participation in demand side flexibility services. This could help the networks in decision making of network improvements and provide other direct network benefits and was considered to involve innovation by all Expert Assessors. As a result, all Expert Assessors considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Project was not considered by the Expert Assessors to undermine the development of competitive markets. The Expert Assessors considered it to have the potential to support market development of low carbon technologies and increasing participation opportunities for low income and vulnerable consumers. The output of the Project was also outlined as being an open access resource to all stakeholders, which could support market development and expansion to include new consumer segments. The Expert Assessors considered the Project as having met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to be innovative in its aims to understand low carbon technology engagement and use by vulnerable consumer groups. Its aim of identifying new supports services with mutual benefits to networks and consumers was also considered novel. One Assessor noted that the Project is not innovative and novel as the approach is not sufficiently detailed and has not clearly evidenced its novelty. On the whole, however, the majority of the Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Project was considered by the Expert Assessors to include participation from a sufficient range of stakeholders because it involves a cross-sector consortia across the third sector, academia and local government. It was also noted that the Project Partners and stakeholders hold the necessary skills for the tasks set out for the Discovery Phase. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Project was considered by the Expert Assessors to provide value for money and be costed competitively. The Expert Assessors considered the Projects costs to be reasonable for the Discovery Phase activities and aligned with industry norms. The Project Partner and Funding Party contribution is also over 10%, which was noted favourably by the Expert Assessors as demonstrating additional value for money. It was also noted that the Project aims to build from existing expertise and intellectual property developed via other research and innovation programme, providing value for money.

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.

Eligibility Criterion met

The Project was considered to have a robust methodology because each stage of the work plan was clearly outlined, responsibilities of the main Project Partners are detailed against work packages, and the Project Partners were considered appropriately skilled for the work set out. The Expert Assessors also considered the delivery timelines in the context of the workplan to be realistic. The Project consortium was also considered to be experienced against the different capabilities needed in the activities. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified**NO**

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority**FUND**

The majority of the Expert Assessors have recommended this Project for SIF Funding. The Project was considered by the Expert Assessors to potentially provide a solution to a knowledge gap in terms of low-income households' interaction with low carbon technologies and flexibility services, which was considered to be related to the Innovation Challenge and Eligibility Criteria 1. The Project was also considered to involve network innovation because it could help networks in decision making of network improvements. The Project was also considered to have the potential to deliver large net benefits to consumers and to open up new markets for inclusive innovators. One Expert Assessor noted that the Application would have been strengthened by a clearer articulation of the current state of the industry and how the Project is providing an innovative solution to this. However, overall, the majority of the Expert Assessors recommended the Project for SIF Funding.

Recommended Project specific conditions

Prior to the kick-off of the Project, the Funding Party must provide to the monitoring officer a revised Project budget and ensure the SIF Funding allocated to the different Project Partners is consistent throughout.

Prior to the kick-off of the Project, the Funding Party must provide to the monitoring officer clarification on the roles and responsibilities of the local authorities in the consortium.

Prior to the end of the Discovery Phase, the Funding Party must provide to the monitoring officer a summary of the current method and approaches in use and how this Project demonstrates an innovative approach in comparison.

Prior to the end of the Discovery Phase, the Funding Party must provide to the monitoring officer an updated benefits case.

4.2.7 10061386, SHIELD (Smart Heat and Intelligent Energy in Low-Income Districts), Initial Net Funding Requested £82,163

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
UK POWER NETWORKS (OPERATIONS) LIMITED	9,075	9,074	1
ESSEX COUNTY COUNCIL	3,498	0	3,498
UK COMMUNITY WORKS CIC	15,274	0	15,274
KENSA HEAT PUMPS LIMITED	7,644	0	7,644
CITIZENS ADVICE ESSEX LIMITED	5,400	0	5,400
EASTLIGHT COMMUNITY HOMES LIMITED	8,870	0	8,870
POWER CIRCLE PROJECTS LTD	32,100	0	32,100
THERMIFY HOLDINGS LIMITED	9,376	0	9,376

Submitted Project description
SHIELD aims to test and deploy new approaches and business models for installing low carbon technologies (LCTs) such as photovoltaic (PV), other renewable generation, storage, and electric vehicles (EVs) in conjunction with low carbon heating solutions to make the decarbonisation of heat and energy affordable and accessible to vulnerable consumers.

Eligibility Criterion 1: Projects must address the Innovation Challenge set by Ofgem.
Eligibility Criterion met
The Expert Assessors considered this Project to have addressed the Innovation Challenge because it has the potential to reduce emissions in homes and particularly those in vulnerable groups. It proposes identifying a range of low carbon solutions which can be utilised to support these groups and aims to improve cross-sector coordination and to engage more vulnerable households in clean energy transition and grid flexibility services. This was considered by the Expert Assessors to be directly related to one of the aims of the Innovation Challenge, which is to significantly narrow the gap between consumers in terms of ease, accessibility, and cost effectiveness of decarbonisation solutions relevant

to energy networks. The Expert Assessors considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Expert Assessors considered this Project to have clearly identified potential to deliver a net benefit to electricity consumers, particularly to those on low incomes and vulnerable households. There are both financial and social benefits articulated as it proposes an innovative method to decarbonise heat, using recovered heat from distributed data centres alongside more distributed local carbon energy technologies. It could also benefit all network users through cost savings on network operation and reinforcement, and through wider participation in flexibility services to the grid, managed through local aggregation. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

One Expert Assessors noted that the benefits focussed solely on the Thermify systems and PV and considered there to be other opportunities such as with wind or EV that could have been included. It was also noted that the Application would have been strengthened by providing more information on the route to market of the services.

Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered this Project to involve network innovation as it proposes investigating improved management of low carbon technologies connected to the distribution network and prospects for local system balancing through use of storage and aggregation services. This would, in addition, result in innovation in cross sector collaboration with potential for energy service business models. This was considered to involve network innovation because it could contribute to greater energy network resilience and allows new approaches to be

tested at scale. The Expert Assessors considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors considered this Project to not be undermining the development of competitive markets because it is investigating a route to open up markets for decarbonised heat services to more vulnerable, low income households and social housing providers. It may also provide a route for communities to participate in flexibility services and revenues, based on integrated local energy systems and storage. It could lead to new market opportunities for technology specialists such as heat pump suppliers and data centre service providers. The Expert Assessors considered this Project to have met the Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Project is considered innovative and novel by the Expert Assessors because it proposes investigating previously unexplored questions about how to decarbonise heat at scale, and affordably, particularly for low income and vulnerable groups, which was considered novel. It was also considered innovative in aiming to develop clean heat provisions through heat recovery and integrated local systems, using storage and small-scale renewables. The Project also aims to embed such low carbon technologies in flexibility services, with network benefits and revenues for demand side participants, which was also considered innovative. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Project was considered by the Expert Assessors to have met this Eligibility Criteria as it includes participation from a sufficient range of stakeholders. This is because it engages across commercial, public and third sectors, with each partner

considered to be appropriately skilled to manage their component tasks. It was noted that Essex County Council has an intermediary management role, working with the Distribution Network Operators and not-for-profit social housing and community organisations to develop new heating services, with feasibility assessment by the technology specialists. The Expert Assessors considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Expert Assessors considered the Project to be delivering value for money and be costed competitively because it was considered to have set an appropriately costed budget for the length of the Project to complete inter-related social and technical research and further development options. The Project was considered to be costed competitively and to be delivering value for money because of the relatively wide range of technologies and potential applications addressed, which could lead to opportunities for replication at larger scales, with increased practical impact on a just transition for vulnerable and low-income customers. It was also noted that the funding requested by Project Partners was appropriate for the activities set out and the Expert Assessors considered the breakdown of funding between Project Partners to be appropriate.

This was considered by the Expert Assessors to have met the Eligibility Criteria.

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.

Eligibility Criterion met

The Expert Assessors considered this Eligibility Criteria to have been met as it has a robust methodology, which gives them confidence that it will be capable of progressing in a timely manner. The work plan was considered to be well structured, with a clear division of labour between Project Partners, and deadlines for completion at each stage. The risk register was clear about the main risks and mitigation; each Project Partner contributes distinctive skills and experience to the Project, and their knowledge should be valuable for solving ongoing problems.

Regulatory barriers identified
No
The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority
FUND
The Expert Assessors considered this Project to have met all the Eligibility Criteria and therefore recommend this Project for SIF Funding. The Expert Assessors considered this Project to be innovative in its approach of trying to unlock a range of solutions suitable for vulnerable end-users. In addition, this Project could also provide potential for flexibility services for community revenues and improved network efficiencies. The Project Partners were deemed to be suitable with a robust plan and methodology of delivery and it was noted that the Project costs were competitive and the Project represents potential to deliver a net benefit for consumers. It was noted that the Application could have more clearly articulated the route to market of the services. Overall, all the Expert Assessors recommended the Project for SIF Funding.

Recommended Project specific conditions
<p>Prior to the completion of the Discovery Phase, the Funding Party must provide to the monitoring officer an explanation as why the Project is focussing on Thermify systems and PV, rather than other opportunities such as wind or electric vehicles.</p> <p>Prior to the completion of the Discovery Phase, the Funding Party must provide to the monitoring officer an updated route to market for the services, incorporating any learnings from the Discovery Phase.</p> <p>Prior to the completion of the Discovery Phase, the Funding Party must engage with the team behind the SIF Project Net Zero Terrace to discuss similarities and potential areas of overlap. The Funding Party must provide prior to the end of the Discovery Phase a summary of this discussion. Innovate UK can facilitate an introduction if necessary.</p>

5 SIF 2021 Round 2 Discovery Phase – Improving energy system resilience & robustness

Energy system resilience is broadly defined as the ability to recover from shocks whilst being able to deliver the required energy service needs via alternative means. Whereas robustness is the system's ability to withstand shocks without significant loss of the ability to deliver those services. These two characteristics are critical aspects to consider for a net zero energy system. As the energy system becomes more complex, distributed, and interdependent between vectors, it creates new challenges and opportunities to deal with increasing risks from natural and other hazards¹⁸.

There is considerable evidence on the value of multi-energy systems¹⁹ where services are coordinated rather than treated separately for cost effective decarbonisation. Such system configurations also offer novel approaches to maintain or even increase resilience of a dynamic energy system in the future. Examples include power-to-gas (including hydrogen) coupling (for applications including long term storage during periods of low renewable generation output), and multi-energy microgrids operating independently to deliver critical services during disruptions to the national system.

Whilst such multi-energy systems are currently being developed in different contexts including smart local energy systems, specific aspects around how they can impact and provide wider system resilience is not being considered. Additionally, there is a need for better understanding of consumer behaviours and acceptance (cost, quality of service etc) of novel approaches to increasing system resilience.

Innovations in policies, codes, organisational responsibilities, operational strategies, and measurement approaches, relating to resilience and security of supply are important considerations alongside technology developments.

In addition to operational resilience, securing and strengthening aspects of the energy system including the supply chains for energy networks (hardware and digital) is also critical to ensure a robust energy transition towards net zero. This challenge is further compounded by the pace of change and associated integration rates required in the energy networks for meeting the net zero commitments.

¹⁸ This could include intentional cyber or physical attacks and technical failures.

¹⁹ Systems in which electricity, heat, cooling, fuels, transport, and so on optimally interact with each other at various levels - for instance, within a district, city, or region (taken from Mancarella, 2014).

5.1 SIF Discovery Phase – Improving energy system resilience & robustness - Summary

This section covers the assessment of round 2 Discovery Phase Applications received into the 'improving energy system resilience & robustness' Innovation Challenge.²⁰

For the Discovery Phase, 30 Applications were submitted to Innovate UK through the Innovation Funding Service (IFS) portal by the closing deadline of 11am 23 November 2022 and are listed below. In order to protect the early stage innovation and IPR, unsuccessful Projects have been redacted from final published version.

Project reference number	Project name	Funding licensee	Total Project costs (£)	Total Project contribution (£)	Total SIF Funding requested (£)	Recommended for funding (Yes/No)
10052119	Distribution Network Information Modelling (DNIM)	SOUTHERN GAS NETWORKS PLC	15,236	15,234	2	Yes
[REDACTED]						
10053640	SIF Black start Demonstrator from offshore wind (SIF BLADE)	SP TRANSMISSION PLC	271,303	122,077	149,226	Yes
10056144	REWIRE (REsidential Whole System Integrated REsilience)	ELECTRICITY NORTH WEST LIMITED	186,389	36,442	149,947	Yes
[REDACTED]						

²⁰ <https://www.ofgem.gov.uk/publications/strategic-innovation-fund-round-two-innovation-challenges>

[REDACTED]						
[REDACTED]						
[REDACTED]						
10057667	SECURE - Securing the future delivery of all HVDC projects by de-risking the HVDC cable supply chain	SCOTTISH HYDRO ELECTRIC TRANSMISSION PLC	164,344	16,435	147,909	Yes
[REDACTED]						
10058442	Hydrogen Cost Reduction (HyCoRe)	NORTHERN GAS NETWORKS LIMITED	171,675	34,413	137,262	Yes
10058535	REACT (Rapid Evaluation Areal Connection Tool)	SCOTTISH HYDRO ELECTRIC TRANSMISSION PLC	169,409	20,089	149,320	Yes
10058665	Dynamic Networks	SOUTHERN ELECTRICITY POWER DISTRIBUTION PLC	154,748	15,475	139,273	Yes
[REDACTED]						

10060000	Supply Chain Resilience in the Transition	NATIONAL GRID GAS PLC	86,547	8,654	77,893	Yes
10060423	D-Suite	SP ENERGY NETWORKS: MANWEB PLC	157,114	15,475	139,273	Yes
10060460	Scenarios for Extreme Events	NATIONAL GRID ELECTRICITY SYSTEM OPERATOR LIMITED	182,949	32,950	149,999	Yes
10060978	Resilient Customer Response	NORTHERN POWERGRID (NORTHEAST) PLC	137,975	20,086	117,889	Yes
10061033	Whole Energy System Resilience Vulnerability Assessment	NATIONAL GRID ELECTRICITY TRANSMISSION PLC	160,642	17,822	142,820	Yes
10061098	SF6 whole life strategy	NATIONAL GRID ELECTRICITY TRANSMISSION PLC	132,899	13,292	119,607	Yes
[REDACTED]						

10061159	SCOHL - SuperConductor OverHead Lines	NATIONAL GRID ELECTRICITY TRANSMISSION PLC	153,846	21,339	132,507	Yes
10061184	NextGen Electrolysis – Wastewater to Green Hydrogen	WALES & WEST UTILITIES LIMITED	90,470	9,048	81,422	Yes
10061243	CommsConnect	UK POWER NETWORKS (OPERATIONS) LIMITED	122,376	12,238	110,138	Yes
10061245	WARN (Weather Alerts and Risk analysis for Network operators)	UK POWER NETWORKS (OPERATIONS) LIMITED	121,830	12,183	109,647	Yes
10061343	Connectrolyser	UK POWER NETWORKS (OPERATIONS) LIMITED	139,521	20,996	118,525	Yes
10061355	Trinity	UK POWER NETWORKS (OPERATIONS) LIMITED	154,770	19,977	134,793	Yes
10061439	Looking-Glass	SOUTHERN GAS	118,557	30,550	88,007	Yes

		NETWORKS PLC				
[REDACTED]						
10061719	Digital Inspector	CADENT GAS LIMITED	53,241	5,641	47,600	Yes

5.1.1 10052119, Distribution Network Information Modelling (DNIM), Initial Net Funding Requested £2

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
SOUTHERN GAS NETWORKS PLC	5,953	5,952	1
ULC Technologies LLC	9,283	9,282	1

Submitted Project description
DNIM aims to support the energy transition with the development of a cost effective and non-disruptive robotic system that will internally map and analyse the entire gas distribution network in a cost-effective manner.

Eligibility Criterion 1: Projects must address the Innovation Challenge set by Ofgem.
Eligibility Criterion met
All Expert Assessors considered the Project to have addressed the Innovation Challenge because it has the potential to increase the accuracy of locational data and inspections of buried gas infrastructure using remote monitoring and machine learning approaches, thereby harnessing the potential to enable a resilient and robust transition to a hydrogen economy and the transition to net zero. This was considered to be aligned with the Innovation Challenge's aim of improving the understanding of robustness in future energy system configurations and to develop solutions to improve and strengthen it. As a result, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2: Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers
Eligibility Criterion met
All Expert Assessors considered the Project to have clearly identified a potential to deliver a net benefit to gas consumers. The Project aims to optimise the maintenance of gas distribution pipelines through increasing the accuracy of pipeline location and inspection data. This was considered to represent potential to assist the transition to green gases in a safe and cost effective manner for the consumer and was considered to represent a potential to increase network

efficiency thereby delivering financial benefits. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Project was considered to involve network innovation because it proposes to use technology which is not currently readily available within the sector. This focus and the Project's use of this technology to provide a digitized approach to mapping and analysis of network assets was considered to involve network innovation because it is not an approach which is currently used in the sector. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

All Expert Assessors considered the Project to not be undermining the development of competitive markets. It was noted that the technology the Project proposes to use will be shared with other gas distribution networks and that the technology is too early in its development for it to be undermining the development of competitive markets. Additionally, the Expert Assessors did not consider the potential progression of the technology in the Project to represent any potential to undermine the development of competitive markets. Overall, the Project was considered to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

All Expert Assessors considered the Project to be innovative, novel and risky because it attempts to digitise gas distribution pipelines. It was considered innovative because it constitutes the development of visual pattern matching to categorise various elements of pipelines and their status. It was also noted that the innovation and risks were associated with the Project's use of a tetherless robot, with the Expert Assessors noting the challenging operating environment

presented plenty of obstacles and risks. Overall, the Project was considered to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

All Expert Assessors considered the Project to include participation from a sufficient range of stakeholders for the Discovery Phase because it includes industrial Project Partners with capability and experience in supply chains. It was also noted that the two delivery partners are sufficient for this Project because the Funding Party has control over the pipelines which will require inspection, and the Project Partner can use their experience to develop the robot for pipeline inspection. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

All Expert Assessors considered the Project to be providing value for money and to be costed effectively. This was considered because the Project as a whole sought minimal SIF Funding, with the Discovery Phase being funded primarily by the Funding Party and the Project Partner. Overall, the Project was considered by the Expert Assessors to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The Expert Assessors considered the Project to have a robust methodology and to be capable of progressing in a timely manner. The Expert Assessors considered there to be a high level of detail provided in the Application, and the level of resource allocated was considered sufficient for the activities set out. It was noted that the Project is fairly limited in its scope, therefore only requiring a simple methodology. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified
No
No regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase.

Recommendation to the Gas & Electricity Markets Authority
FUND
<p>The majority of the Expert Assessors recommended the Project for SIF Funding in their overall assessment. Accurate asset mapping was considered to be important to the decarbonisation of the gas supply system.</p> <p>One Expert Assessor noted that the Application could have had more detail in the Project plan, and another commented that further evidence on the potential of the innovation to help keep customers' bills down and assist in increasing network robustness as potential areas of focus for the Discovery Phase.</p> <p>All Expert Assessors noted the Project provides value for money as the Project has requested a nominal amount of SIF Funding for this Discovery Phase. It was noted that the details around the robot the Project proposes developing and its capabilities could have been more clearly described.</p> <p>Overall, this Application was recommended for SIF Funding by the majority of the Expert Assessors.</p>

Recommended Project specific conditions
The Expert Assessors have not recommended any Project-specific conditions for this Project.

5.1.2 [REDACTED]

5.1.3 10053640, SIF Black start Demonstrator from offshore wind (SIF BLADE), Initial Net Funding Requested £149,226

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)

SP TRANSMISSION PLC	51,244	9,772	41,472
UNIVERSITY OF STRATHCLYDE	32,994	0	32,994
SCOTTISH HYDRO ELECTRIC TRANSMISSION PLC	29,690	0	29,690
THE CARBON TRUST	157,375	112,305	45,070

Submitted Project description

Enabling a low-cost net zero GB electricity network that is robust and secure, by investigating and demonstrating how novel technology can allow offshore wind farms to restore the onshore grid following a black out.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

All the Expert Assessors considered this Project to have addressed the Innovation Challenge because it is investigating the use of large offshore wind generation network assets in restarting the electricity network following a black out event. This was considered to align with the aims of the Innovation Challenge, one of which is to develop innovations using novel multi-energy-system configurations for increasing system resiliency. It was also noted that the Project explores technology challenges, system operations and business models. The Expert Assessors considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Expert Assessors considered this Project to have identified a clear benefit for electricity consumers through exploring a cost-effective means to provide black start capability for the electricity transmission network in a future without the availability of wide-scale fossil fuelled assets. Restarting the grid quickly in the event of an outage was considered to represent a clearly identified potential to deliver a net benefit to electricity consumers through increased system resiliency. It was also noted that the Project's focus is one which presents the opportunity to minimise costs by using readily deployed assets over specialist assets (e.g., fossil fuel plant and stores kept solely for this purpose). These were considered to

represent the potential to reduce costs to consumers as well as carbon emissions. The Expert Assessors therefore considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered this Project to involve network innovation because the network does not have the capability to utilise and support offshore wind assets for black starts. The Expert Assessors considered there to be network innovation in the Project's approach to explore physical assets (connectors, transformers, generating equipment) to support black starts, operational procedures, potential business models and market trading opportunities.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

All Expert Assessors did not consider this Project to be undermining the development of competitive markets. This is because it proposes to create a competitive market for generators to provide black start services, which could result in a new tool to enable the transmission networks to be managed in the event of faults. Various providers should be able to compete to provide the required services to the network operator. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

This Project builds on previous innovation projects and all Expert Assessors agree this Project is both risky and innovative as there is limited research into black start capability from offshore wind and no clear market signals to stimulate its development. The Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 6: Projects must include participation from a range of stakeholders.
Eligibility Criterion met
All Expert Assessors considered the Project Partners to be sufficient for the Project at the Discovery Phase because it includes the critical stakeholders affected by the problem. These stakeholders were considered to consist of a network operator, the centre for HVDC, an academic partner, and a wide range of offshore wind operators via the Offshore Wind Association. The Expert Assessors therefore considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 7: Projects must provide value for money and be costed competitively.
Eligibility Criterion met
The Expert Assessors considered the Project to be delivering value for money and to be costed competitively because the Project Partners have contributed above the minimum contribution requirements and the costs by the Project Partners were considered to be appropriate against industry norms and for the activities set out for the Discovery Phase. It was also noted that the Project represents the potential for a strong potential payback for consumers which they considered to demonstrate value for money.

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.
Eligibility Criterion met
All Expert Assessors considered the Project to have a robust methodology which gives confidence that the Project will be capable of progressing in a timely manner due to its clear articulation of plans for the Discovery Phase. The Expert Assessors considered the Project plan, risk register and roles and responsibilities to be sufficiently robust as they were clearly outlined. The Expert Assessors therefore considered this Project to have met this Eligibility Criteria.

Regulatory barriers identified
No

No regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase. It was noted that the Project's proposed plan would need to be implemented by transmission system operators.

Recommendation to the Gas & Electricity Markets Authority

FUND

All Expert Assessors have agreed that this Project meets all Eligibility Criteria and all recommend this Project for SIF Funding. The Application was considered relevant to the Innovation Challenge as it identifies a resilience problem for the electricity network which will grow as fossil fuel assets retire. The Project was considered to represent potential to deliver reduced costs to consumers as well as carbon emission savings. The Project was considered to build on existing and previous innovation projects, which was well-structured in its plans and brings together a strong group of relevant stakeholders. The Project was also considered good value for money and to be costed competitively.

Recommended Project specific conditions

The Expert Assessors have not recommended any Project-specific conditions for this Project.

5.1.4 10056144, REWIRE (REsidential Whole System Integrated REsilience), Initial Net Funding Requested £149,947

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
ELECTRICITY NORTH WEST LIMITED	107,889	12,892	94,997
IMPERIAL COLLEGE LONDON	78,500	23,550	54,950

Submitted Project description

REWIRE will develop innovative domestic level multi-energy systems that exploit cross-vector technologies to provide flexible demand profiles, thereby alleviating network constraints, maintaining security of supply and improving overall energy system resilience.

Eligibility Criterion 1: Projects must address the Innovation Challenge set by Ofgem.
Eligibility Criterion met
<p>The Expert Assessors considered the Project to have addressed the Innovation Challenge through utilisation of multi-energy systems to improve overall energy system resilience, whilst aiming to deliver benefits aligned with the objectives of the SIF programme. The Project was considered to be aligned with the aims of the Innovation Challenge, which is to incorporate resilience and robustness as into future multi-energy system design.</p>

Eligibility Criterion 2: Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers
Eligibility Criterion met
<p>The Expert Assessors considered the Project to have a clearly identified potential to deliver a net benefit to electricity consumers as the Project’s focus on balancing the overall energy system could lead to cost savings, increased system resilience and carbon savings. The Expert Assessors considered the Project to have met this Eligibility Criteria.</p>

Eligibility Criterion 3: Projects must involve network innovation.
Eligibility Criterion met
<p>The Expert Assessors considered the Project to involve network innovation because it proposes an opportunity to explore behind-the-meter integration with domestic hydrogen storage, domestic vector conversion technology and utilisation of existing low pressure gas assets to better support energy network integration. This was considered to involve network innovation because the interaction and incorporation of these different elements was represents advancements on existing network coordination approaches. The Expert Assessors considered the Project to have met this Eligibility Criteria.</p>

Eligibility Criterion 4: Projects must not undermine the development of competitive markets.
Eligibility Criterion met

The Project was not considered by the Expert Assessors to undermine the development of competitive markets. The Expert Assessors considered the Project to represent the potential to increase competition in the areas of heating and energy storage through the Project's focus on multi-vector integration in the energy system. As a result, the Expert Assessors considered this Eligibility Criteria to have been met.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Project is considered innovative and risky because it proposes the linkage of the gas and electricity sectors in a manner which could help to provide whole network resilience. Expert Assessors commented that there are significant technical and regulatory barriers associated with using this solution in domestic properties and how it interfaces with network operation, warranting the need for an innovation Project funded through the SIF programme. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors all considered the Project to involve a sufficient range of stakeholders for the Project. The Funding Party represents the electricity distribution side of the Project and was considered to have the experience of building, operating and maintaining the distribution network. The Expert Assessors noted that the academic Project Partner has specific expertise in multi-energy systems, which was noted favourably and considered sufficient for the Discovery Phase activities. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Project is considered by Expert Assessors as delivering value for money because the longer term benefit of domestic sector-linked use of hydrogen (if

determined to be technically and economically viable) was considered high and greater than the costs of the Project. The Expert Assessors also considered the costs to be broadly appropriate for the proposed outputs of the Discovery phase Project. The Expert Assessors considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The Project was considered to have a reasonably well thought through plan and a sufficiently robust methodology. The Expert Assessors evaluated the methodology as being sufficiently thorough to give confidence that it will be capable of progressing in a timely manner. The Project plan, milestones and deliverables were considered sufficiently clear. The breakdown and lead for each work package was clearly defined, with a good risk management plan. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

No

No immediate regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase. However, both the Expert Assessors and the Project noted that there would likely be regulatory barriers in the future, and the Project has articulated its intent to examine these as part of the Discovery Phase.

Recommendation to the Gas & Electricity Markets Authority

FUND

The majority of the Expert Assessors have recommended the Project for SIF Funding. The Expert Assessors considered the proposed solutions to be an interesting area worthy of exploration which aligns with the Innovation Challenge. The Expert Assessors considered the Project to be ambitious, innovative, novel and risky in nature, representing clear network innovation. The Project was considered to have a clear value proposition and costs were considered reasonable for the Discovery Phase activities. A significant proportion of costs are

allocated to a subcontract consultancy, though it is noticed that a reasonably strong contribution is made to the Project by the consortium.

Recommended Project specific conditions

The Expert Assessors have not recommended any Project-specific conditions for this Project.

5.1.5 [REDACTED]

5.1.6 [REDACTED]

5.1.7 [REDACTED]

5.1.8 [REDACTED]

5.1.9 10057667, SECURE - Securing the future delivery of all HVDC projects by de-risking the HVDC cable supply chain, Initial Net Funding Requested £147,909

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
SCOTTISH HYDRO ELECTRIC TRANSMISSION PLC	42,968	16,435	26,533
CARBON TRUST ADVISORY LIMITED	63,745	0	63,745
DIGITAL CATAPULT SERVICES LIMITED	57,631	0	57,631

Submitted Project description

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

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met
<p>The Project was considered to have addressed the Innovation Challenge because it has potential to deliver a more resilient and robust energy system through securing a more efficient and effective supply of HVDC cables. The Expert Assessors acknowledged that future delays or challenges in the HVDC cable supply chain could cause increased infrastructure costs as well as challenges to the flexibility of the energy system, and that this was a sufficient and realistic risk. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria because the Project aligns directly with one of the aims of the Innovation Challenge, which is to improve understanding of robustness in future energy system configurations and develop solutions to improve and strengthen it.</p>

Eligibility Criterion 2: Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers
Eligibility Criterion met
<p>The Project was considered to have identified a clear benefit for electricity consumers through the development of a digital supply chain hub focused on de-risking the procurement and delivery of HVDC cables. Enabling effective supply of critical assets to areas of demand was considered to have the potential to reduce costs (financial benefit) and carbon emissions (environmental benefit). Expert Assessors considered credible opportunities for the Project to deliver these benefits through:</p> <ul style="list-style-type: none"> • Increasing competition in the provision of key components of the future network. • Increasing confidence that necessary network upgrades can be delivered on schedule, therefore reducing balancing costs and allowing lower-carbon operation of the system. • Reducing the risk that Transmission Operators face regarding costs and delivery timeframes for new infrastructure, as well as the pass-through of some elements of this risk to end consumers. <p>Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.</p>

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Project was considered to involve network innovation because it examines the development of the electricity network to supply chains and the aspects of integration, involvement and interface which make up the supply chain. The suggested approach to supply chain management was considered innovative against current energy network business practices because it would import emerging and innovative approaches from other sectors and apply them to the electricity network. Expert Assessors acknowledged that this would represent the first example of a digital supply chain hub in the energy networks sector. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Project was not considered to undermine the development of competitive markets since a core aspect of the Project is to develop healthy competitive markets. It was understood by Expert Assessors that the Project has the potential to significantly increase competition in the provision of high voltage cabling. The proposed digital tool provides opportunities to support the growth of supply chains within the UK as well as ensuring Transmission Operators have access to the best value international supply chains. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Project was considered innovative because it makes use of emerging ideas from the digital sector and applies them to the electricity network sector. The concept of Digital Supply Chains is relatively new in general and has yet to be applied to the type of application considered in the proposal. This was also considered by the Expert Assessors to be risky as it has yet to be applied in the

ways the Project envisions. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Project Partners were considered sufficient for the Project because they consist of a wide range of knowledge and capability applicable to the problem and the solution. Other non-network partners and subcontractors will support National Grid in technology, digital issues, future models, and consumer value in a suitable team. The Expert Assessors highlighted that if successful in moving to future phases, the Project may benefit from the involvement of a company that has direct experience of implementing innovative Digital Supply Chains in other sectors. However, for the Discovery Phase, the Project Partners were sufficient and the Expert Assessors considered this Eligibility Criteria to have been met.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Project was considered by the Expert Assessors as providing value for money because the costs and activities set out were considered appropriate for the Discovery Phase. Most costs were considered competitive with the Expert Assessors only challenging a single cost category with minimal overall impact on the value for money of the Project. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The Project has a robust methodology which gave confidence to the Expert Assessors that it will be capable of progressing in a timely manner. The Expert Assessors considered the planning to be clear and completed to a good standard, with the work packages being realistic and likely to deliver the proposed milestones. They considered there to be good likelihood of success in delivering

this Project based on the presented planning information and the team, according to the Expert Assessors. The Expert Assessors also noted an appropriate identification of risks which gives confidence that it can be delivered on time. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

NO

No regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase.

Recommendation to the Gas & Electricity Markets Authority

FUND

The Project aims to address the supply chain challenges associated with the expected growth of HVDC networks. Monitoring of the supply chain should provide greater transparency of bottlenecks and how to deal with them. The Expert Assessors considered this approach to involve network innovation, whilst also being innovative and risky. Overall, the Project was recommended by all the Expert Assessors for SIF Funding as it was considered to have the potential to provide important information on the barriers to gaining digital supply chain information and to build innovative arrangements around the digitalisation of supply chains.

The Expert Assessors considered the Project planning to be strong and had confidence it will be capable to progressing. They considered there to be clear, sector-wide benefits that could be achieved through the proposal but considered that a greater justification of how value for money is being delivered directly to the consumer would have strengthened the Application. The cooperative approach of bringing together expertise across digital, power systems and supply chain management was considered to be an important aspect by the Expert Assessors.

Recommended Project specific conditions

The Expert Assessors have not recommended any Project-specific conditions for this Project.

5.1.10 [REDACTED]

5.1.11 10058442, Hydrogen Cost Reduction (HyCoRe), Initial Net Funding Requested £137,262

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
NORTHERN GAS NETWORKS LIMITED	4,520	1,400	3,120
OFFSHORE RENEWABLE ENERGY CATAPULT	72,137	0	72,137
OVE ARUP & PARTNERS LIMITED	8,001	8,000	1
NATIONAL GRID GAS PLC	1,111	1,110	1
KINEWELL ENERGY LTD	77,000	15,000	62,000
UNASYS LIMITED	3,601	3,600	1
SOUTHERN GAS NETWORKS PLC	1,305	1,304	1
LHYFE UK LTD	4,000	3,999	1

Submitted Project description
<p>This HyCoRe Discovery project seeks to acquire new knowledge regarding the optimal placement of electrolyzers and energy storage devices, which will be applied in subsequent phases to develop a software tool to allow offshore wind/hydrogen project developers to optimise the planning process, reducing costs associated with offshore-wind/hydrogen production and its integration into the gas network, and accelerating the net-zero transition.</p>

Eligibility Criterion 1: Projects must address the Innovation Challenge set by Ofgem.
Eligibility Criterion met
<p>The Expert Assessors considered this Project to have met this Eligibility Criteria because of the Project's focus on understanding the trade-offs between electricity and hydrogen production for offshore wind farms and the impact this has on the gas and electricity networks. This was considered to be directly aligned with the Innovation Challenge's aim of incorporating resilience and robustness as key and measurable considerations into future multi-energy system design. The Expert</p>

Assessors considered the Project to have taken a whole-systems approach which considered to be aligned with Innovation Challenge.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Expert Assessors considered the Project to represent the potential to deliver a net benefit to gas consumers via financial benefits through a reduction of network investments and greater network efficiency, which would result in less network charges for consumers. It was also noted that the Project could represent benefits for energy other system users as well, with the Expert Assessors also noting that electricity consumers would benefit from the Project's proposed solution. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered the Project involve network innovation because it focuses on whole-system decision making, where offshore energy can be best utilized and placed. The Project's focus on hydrogen and offshore wind energy was considered to involve network innovation because it examines the efficient combination of different energy sources. It was however noted that the network innovation could have been outlined with more clarity in the Application. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors did not consider the Project to be undermining the development of competitive markets and thereby considered the Project to have met this Eligibility Criteria. The Expert Assessors did not identify any areas of market distortion arising from the Project and considered that the Project and its focus on utilizing offshore energy provides a methodology where alternative

options can be compared which supports competitive markets. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Expert Assessors considered the Project to be innovative, novel and risky. This is because the Project's scope which involves understanding and utilizing offshore energy wind generation to improve on energy system resilience and robustness was considered to be innovative and risky, and the methodology that the Project proposes was considered to be novel. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to have met this Eligibility Criteria. The majority of the Expert Assessors recognised the benefits that such a range of stakeholders in the Project could bring in the execution of the Project. However, it was noted that the Project would have been strengthened by the involvement of an academic partner to support the learning and whole system optimisation, as well as participation from an electricity transmission licensee. Overall, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Expert Assessors considered the Project to have met the Eligibility Criteria because the Project was considered to be using the standard labour costs for the industry, thereby being costed competitively, and the benefits communicated represented both network and wider energy system benefits. One Expert Assessor did note that the communication of the methodology or mechanism for how the Project would be achieving these benefits would have strengthened the

Application. However, the Expert Assessors considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The Expert Assessors considered the Project to have a robust methodology because they considered the Project plan and approach for the Discovery Phase as being credible and deliverable. This gave the Expert Assessors confidence that the Project would be capable of progressing in a timely manner. It was noted that the Project could have provided greater evidence on the justification of comparable efficiencies being possible from different energy carriers and their transmission between source and end user. However, overall the Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

No

No regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase.

Recommendation to the Gas & Electricity Markets Authority

FUND

The majority of the Expert Assessors recommended this Project for SIF Funding. The Project was considered to be highly innovative and risky and represents the potential to deliver novel benefits to the energy system, which would deliver financial benefits to energy consumers as a whole. The Project was considered to have addressed the Innovation Challenge, to involve network innovation and it gave the Expert Assessors confidence that it will be capable of progressing in a timely manner. It was noted that additional Project Partners or stakeholders would have strengthened the Application.

Recommended Project specific conditions

Prior to the end of the Discovery Phase, the Funding Party must provide to the monitoring officer an explanation or justification as to whether the Project will be including an academic partner and electricity transmission licensee holder in the Project.

5.1.12 10058535, REACT (Rapid Evaluation Areal Connection Tool), Initial Net Funding Requested £149,320

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
SCOTTISH HYDRO ELECTRIC TRANSMISSION PLC	20,998	5,248	15,750
ICEBREAKER ONE LIMITED	61,011	6,101	54,910
OLWG LTD	45,100	4,510	40,590
MAPSTAND LIMITED	42,300	4,230	38,070

Submitted Project description

Strategic geographic planning of all future demand and generation connection requests, using green hydrogen as a use case.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Expert Assessors considered the Project to have met this Eligibility Criteria as they considered the Project to be focusing on the strategic planning of hydrogen plant investments, an area which was considered to potentially benefit from investment and new infrastructure. This focus was considered to address the Innovation Challenge as one its aims is to improve the understanding of robustness in future energy system configurations and develop solutions to improve and strengthen it. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to have met this Eligibility Criteria because it has identified a net benefit for electricity consumers via a financial benefit through a reduction of costs. The Project was considered to represent a reduction in the need for investment to connect new demands. It was noted by one Expert Assessor that the net benefit could have been presented with more clarity. However, on the whole, the majority of the Expert Assessors considered the Project to have met the Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered the Project to have met this Eligibility Criteria because it focuses on the introduction of hydrogen plants on the network in areas where the network will have the capacity to support their development. This was considered to involve two currently separate activities (spatial planning and power flow management) into one more efficient activity, thereby representing network innovation. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Project was not considered by the Expert Assessors to be undermining competitive markets because the Project has communicated that the tool will be open and available to all. Furthermore, it was noted that the tool would improve on key services that are provided by electricity networks (both transmission and distribution networks), and would benefit the emerging hydrogen production market. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The majority of the Expert Assessors considered this Project to be innovative and novel because it takes a new approach to two currently separate activities (planning

and power flow management) and because it involves new ways of working for distribution and transmission networks. It was noted that the specific area of innovation and associated risk could have been represented with more clarity. However, overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered the participation to have been from a sufficient range of stakeholders for the activities in the Discovery Phase. The Project Partners were considered to have the necessary expertise and techniques, and the allocation of the proposed work amongst the Project Partners was considered appropriate. It was noted that the SMEs have expertise in visualising and managing geospatial activities, and that they would be able to support the Project in understanding project development from the perspective of potential electrolyser developers.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to be costed competitively and to provide value for money. However, it was noted that one Project Partner had higher than anticipated day rates and the justification provided for this could have been stronger. Overall, the majority of the Expert Assessors considered the Project to be delivering value for money and being costed competitively because the costs were deemed appropriate for the Discovery Phase, the Project represented a potential net benefit to consumers, and the majority of the Project Partners had acceptable day rates.

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.

Eligibility Criterion met

The Expert Assessors considered the Project to have a robust methodology which gave them confidence that the Project will be capable of progressing in a timely manner for the Discovery Phase. This was because the Expert Assessors considered the Project plan to be sufficiently clear, the risk register to be robust, and the Gantt chart gives support to the descriptions of the work packages.

Regulatory barriers identified

NO

No regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase.

Recommendation to the Gas & Electricity Markets Authority

FUND

The majority of the Expert Assessors recommended the Project for SIF Funding. The Project was considered to have addressed the Innovation Challenge with its focus on evaluation techniques, which was also considered to involve network innovation. The Expert Assessors considered the Project to represent the potential to deliver a net benefit for consumers and had confidence that it would be capable of progressing in a timely manner.

It was noted that the Application could have been clearer in several areas, including on the potential benefits for consumers, whether the Project involved risk, and the justification for higher costs by one Project Partner.

Overall, the majority of the Expert Assessors recommended the Project for SIF Funding because the Project examines a new approach to power flow management and planning, which represents value for consumer through a reduction in bills.

Recommended Project specific conditions

Prior to the end of the Discovery Phase, the Funding Party must provide to the monitoring officer a summary of how it envisions the Project's pathway to business as usual, and how the Funding Party plans to incorporate or take into consideration other technologies with the tool, such as for heat and transportation. Additionally,

the Funding Party must include as part of this summary, an explanation as to whether additional Project Partners will be required.

5.1.13 10058665, Dynamic Networks, Initial Net Funding Requested £139,273

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
SOUTHERN ELECTRICITY POWER DISTRIBUTION PLC	27,853	15,475	12,378
E.ON ENERGY SOLUTIONS LIMITED	43,485	0	43,485
BARINGA PARTNERS LLP	83,410	0	83,410

Submitted Project description

Dynamic Networks: Enabling faster LCT connections in constrained areas of the network, benefiting customers and accelerating Net Zero.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Expert Assessors considered the Project to have addressed the Innovation Challenge because it was considered to have potential to reduce low voltage constraints on the network, and to build the resilience of the network to prepare for the transition to net zero and low carbon technologies. This was considered to be directly related to the one of the aims of the Innovation Challenge, which is to improve the understanding of robustness in future energy system configurations and develop solutions to improve and strengthen it.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

All Expert Assessors considered the Project to have clearly identified a potential to deliver a net benefit to electricity consumers. This is because the Project was

considered to represent the potential to enable low carbon technology developments through earlier participation of customers in flexible demand markets at low voltage. This was considered to expedite readiness for net zero and deliver financial savings through delaying reinforcement projects. Alleviating network constraints will help to deliver more low carbon technology with lower running costs to reduce costs and reduce emissions. Overall, the Project was considered to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

All Expert Assessors considered the Project to involve network innovation. One Expert Assessor noted that overcoming the problem of enabling net zero through low carbon technology without reinforcement expenditure and resulting disruption on the network as requiring network innovation. Another Expert Assessor noted that because the Project is concerned with accelerating the connection of low carbon technologies on the distribution networks subject to demand constraints, this is classed as network innovation. Overall, the Project was considered to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

All Expert Assessors considered that the Project does not undermine the development of competitive markets. The Expert Assessors noted that output of the Project will be disseminated freely and will include openly sharing standard specifications for load control, low carbon technology demand assessment techniques and initiating an open tender for procuring demand management solutions. Overall, the Project was considered to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to be innovative, novel and risky. It was noted that risk is low for the use of low carbon

technologies which already exist, and that the innovation and increased risk lies in the use of low carbon technologies at scale in a network-constrained area. It was also noted that the Project provided detail on how the learning will be used in an innovative way and that previous investigations into demand flexibility have only been attempted at non-domestic level. The element of potential regulatory barriers was considered to add risk to the Project. Overall, the Project meets the Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to include participation from a sufficient range of stakeholders for the Discovery Phase. The Partners include both suppliers and local government, and were deemed most qualified and with the necessary skill set in their respective fields to achieve the goals of the Project. It was noted that participation from a stakeholder which has experience in examining the type of solutions that this Project proposes would have strengthened the Application. Overall, the Project was considered by the majority of the Expert Assessors to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to be providing value for money and as being costed competitively. One Expert Assessor noted that the Project has the potential to deliver strong benefits to customers of low carbon technologies and is therefore providing value for money. It was noted that the greater justification could have been provided for the Project Partner which had higher than anticipated costs. However, on balance the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

All Expert Assessors considered the Project to be well thought through and to have a sufficiently robust methodology, giving them confidence that it can progress in a timely manner. It was noted that the detailed account of time allocations included in the PM book indicate a high level of planning. The Project plan includes focussed work packages and deliverables, demonstrating sound Project management abilities. One Expert Assessor cited that the Project, while well planned, could be exposed to risk due to regulatory issues that would need to be addressed. Overall, the Project was considered to meet this Eligibility Criteria.

Regulatory barriers identified

NO

No regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase.

Recommendation to the Gas & Electricity Markets Authority

FUND

The majority of the Expert Assessors recommended this Project for SIF Funding. It was considered to be a Project that is relevant to and aligned with the Innovation Challenge. The Expert Assessors considered it to involve innovation and to demonstrate delivery the potential of net benefits to electricity consumers due to its focus on network constraints and low carbon technologies. However, it was noted that the Project could have articulated with more clarity on how existing Projects are informing this Project, that an additional Project Partner would have strengthened the Application, and that the costs of one Project Partner were higher than anticipated. However, for each of these statements, the majority of the Expert Assessors considered the Project to have met the relevant Eligibility Criteria.

Recommended Project specific conditions

Prior to the end of the Discovery Phase, the Funding Party must provide to the monitoring officer a summary of how the related or similar Projects identified in the Project's Application are informing the Project.

Prior to the end of the Discovery Phase, the Funding Party must provide to the monitoring officer an updated list of what it considers to be the regulatory barriers and how the Project plans on addressing or overcoming each barrier.

5.1.14 [REDACTED]

5.1.15 10060000, Supply Chain Resilience in the Transition, Initial Net Funding Requested £77,893

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
NATIONAL GRID GAS PLC	16,547	8,654	7,893
INSIDER PRO LTD	70,000	0	70,000

Submitted Project description

Without a structured plan or strategy for procurement, gas networks could be at risk of very long lead times for key assets during a significant change to the industry such as the energy transition.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Project was considered by the majority of the Expert Assessors to have met the Eligibility Criteria. The Project was considered to have addressed the Innovation Challenge because it has the potential to support the roll out of new infrastructure, namely hydrogen transmission assets. This was considered to be directly related to one of the core aims of the energy system resilience and robustness Innovation Challenge. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to have met the Eligibility Criteria because there is the potential for better value-for-money in procurement. It was noted that the Application could have outlined how the benefits would be reflected to consumers with more clarity. The Expert Assessors considered that the lower procurement costs would translate to lower network operation costs, but the benefits case will need to analyse, quantify and provide more detail as it develops. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Project is considered to involve network innovation because it aims to develop a supply chain of innovative products and services required to develop a hydrogen transmission network from a methane network. This was considered to involve network innovation because it is focused on the transition to net zero for networks beyond simply transitioning to hydrogen network. The Expert Assessors noted that greater details on how this approach to procurement (and the Project itself) would incorporate other network operators and gas operators would have strengthened the Application.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors did not consider the Project to undermine the development of competitive markets because the Project will not prevent other networks from using the supply chains identified or from the applicant using suppliers not identified by the Project. The Expert Assessors noted that the Project has the potential to promote competition by opening the supply chain for smaller and UK-based suppliers. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Project is considered innovative and risky by the majority of Expert Assessors. The Project was considered to apply new approaches to novel risks presented by the overall hydrogen transition, which was considered to require innovation from top to bottom of the supply chain.

An Expert Assessor has challenged the degree of innovation, highlighting that hydrogen conversion is exemplary of a business transition processes that naturally occurs across industry, which requires changing procurement needs as part of standard business practices.

However, overall, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Project includes participation from a sufficient range of stakeholders because the Project plan involves engaging with potential companies in the supply chain for interview/consultation and the Project is considering involvement of major companies. However, the Project plans to closely engage with certain stakeholders, and greater details on how the Project plans to involve them would have strengthened the Application. Overall, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to be delivering value for money and as being costed competitively because the breakdown of costs between Project Partners were considered sufficiently justified and with clear and defined outputs. The supply chain will be a large proportion of hydrogen transmission investment costs and a project that optimises the supply chain was considered likely to have positive financial benefits.

The Expert Assessors considered the Project's potential benefits to outweigh the costs of the Project, and therefore also provide value for money.

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.

Eligibility Criterion met

The Project has a reasonably robust methodology which gives confidence that it will be capable of progressing in a timely manner because it has a clearly defined aim, clear division of responsibilities, and clearly defined objectives. Additional value would be provided through the inclusion of activities which would describe how wider network benefits could be derived from this Project, and how outputs would be embedded into new innovative business practices. The majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified**NO**

No regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase.

Recommendation to the Gas & Electricity Markets Authority**FUND**

The Project was considered by the majority of Expert Assessors as suitable for SIF Funding. The Project is aimed at using novel techniques to better understand the supply chain required to deliver a hydrogen transmission network in the UK. Expert Assessors raised some concerns about the degree of innovation in the outputs themselves as it is acknowledged that the Project will help understand the available technology in the supply chains for gas transmission and will therefore also surface needs for further innovation. Additionally, it could highlight the need to develop additional robustness to supply chain interruptions to meet network enhancement project objectives.

It was also noted that greater details on the engagement plans would have strengthened the Application. Furthermore, the Project does appear to be primarily focussed on improving the procurement practice of a single organisation (National Grid Gas Transmission), whereas SIF Projects should develop innovations which can be applied across a significant cohort of the energy networks sector.

It will be challenging to quantify the benefits of improved supply chain resilience delivered through the solutions, but greater detail of those benefits will be needed for future progression.

Overall, the majority of the Expert Assessors recommended the Project for SIF Funding and considered the Project to have met the Eligibility Criteria.

Recommended Project specific conditions

The Funding Party must provide to the monitoring officer at the Project kick-off meeting a more detailed stakeholder engagement plan which demonstrates consideration for involving more stakeholders which may be examining similar issues to those the Project is investigating, and how the Project will ensure its solutions will be applicable to other energy networks.

5.1.16 10060423, D-suite, Initial Net Funding Requested £131,875

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
SP ENERGY NETWORKS: MANWEB PLC	48,145	4,815	43,330
NEWCASTLE UNIVERSITY	42,119	8,125	33,994
UK POWER NETWORKS (OPERATIONS) LIMITED	2,550	2,549	1
INTEGRATED POWERTECH LIMITED	64,300	9,750	54,550

Submitted Project description

Our proposal is ambitious in its scope but carefully planned to ensure delivery of SMART goals at different SIF-Phases. It is focused on addressing the necessary transformation of the LV network. The Discovery phase comprises the elaboration of a feasibility study which, recognising the latest advances in power electronic technology and the most recent learnings from relevant innovation projects, analyses the costs and benefits of deploying D-suite devices, which in-turn lays a

solid foundation for the successful trial and roll-out in the later phases of SIF.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Expert Assessors considered the Project to have met the Eligibility Criteria because it is focused on providing insights into how low-voltage networks can be optimised to encourage additional low carbon technology deployments. This was considered to demonstrate a novel way of improving energy system resilience, whilst preparing for an efficient roll out of improved infrastructure. This was considered to be directly related to the Innovation Challenge's aim of improving the understanding of robustness in future energy system configurations and developing solutions to improve it and strengthen it. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Expert Assessors considered the Project to have identified a potential to deliver a net benefit to electricity consumers through financial benefits, as the Project was considered to present potential for cost savings associated with reducing network losses and deferring network reinforcement. It was also considered to increase efficiency and speed of electricity network management, thereby representing the potential for additional benefits for electricity consumers via financial benefits. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered this Project to involve network innovation because it represents a potential to re-optimize the low-voltage network and introduce new and innovative control algorithms to be better equipped with more renewable energy being connected to the network. This focus was considered to

involve network innovation because it could increase network efficiency and resilience through the use of new algorithms. The Expert Assessors therefore considered this Project to involve network innovation, and therefore considered this Eligibility Criteria to have been met.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors did not consider this Project to be undermining the development of competitive markets because it was considered to be developing a new sub-sector of the market while supporting the operator and the energy customer. It was noted the potential innovations on the low voltage market could lead to increased competitive opportunities. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Expert Assessors considered this Project to be innovative and risky because it develops new tools and methodologies to increase the capacity on the network, which have not been tested in the UK. The Expert Assessors considered this Project to represent the potential for network optimisation to be reconsidered and that the technological advancements necessary will require an innovative approach. The Project was therefore considered by the Expert Assessors to be innovative and risky.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered the Project to include representation from a sufficient range of stakeholders for the Discovery Phase activities. The Expert Assessors considered the expertise of the Project Partners to be appropriate for the activities described, and considered the involvement of multiple electricity network operators, an academic institution, and power electronics support to be

beneficial for the Project. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Expert Assessors considered this Project to be delivering value for money and be costed competitively as they considered the activities described and costs of the Project Partners to be appropriately priced. The Expert Assessors also noted positively the contribution by the Funding Party and Project Partners. The benefits offered by the Project were also considered to represent value for money compared to the costs of the Project. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The Expert Assessors considered the Project to have a sufficiently robust methodology for the Expert Assessors to have confidence that the Project will be capable of progressing in a timely manner because the Project plan, risks and responsibilities were clearly outlined. The Expert Assessors also noted a clear commitment from the Project Partners, which also gave confidence that the Project will develop auspiciously. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

NO

No regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase.

Recommendation to the Gas & Electricity Markets Authority

FUND

The Project was considered by each of the Expert Assessors to have met all of the Eligibility Criteria and therefore the Project has been recommended for SIF

Funding. The Expert Assessors considered the Project to be innovative as it examines new solutions which have not been deployed on the UK's electricity network and represent the potential to deliver efficiency and cost benefits to consumers. The Project Partners and Project plan gave the Expert Assessors confidence that the Project will be able to deliver the Discovery Phase in a timely manner.

Recommended Project specific conditions

The Expert Assessors have not recommended any Project-specific conditions for this Project.

5.1.17 10060460, Scenarios for Extreme Events, Initial Net Funding Requested £149,999

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
NATIONAL GRID ELECTRICITY SYSTEM OPERATOR LIMITED	114,859	18,852	96,007
UNIVERSITY OF STRATHCLYDE	41,576	1,620	39,956
NATIONAL GRID ELECTRICITY DISTRIBUTION	5,888	589	5,299
CADENT GAS LIMITED	3,495	500	2,995
NATIONAL GRID GAS PLC	2,590	0	2,590
SOUTHERN ELECTRIC POWER DISTRIBUTION PLC	3,150	0	3,150
SCOTTISH HYDRO ELECTRIC TRANSMISSION PLC	3,391	3,390	1
CORPORATION OF LLOYD'S	8,000	7,999	1

Submitted Project description

This project seeks to develop a proactive approach to identifying and analysing extreme, unexpected events, and forecasting their impact on the electricity grid and wider energy system. Novel use of probabilistic modelling combined with insights from risk management, insurance costing and climate modelling experts

will be used to develop a decision-making tool to improve whole system resilience in a rapidly changing world.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Expert Assessors considered this Project to have addressed the Innovation Challenge because it has potential to directly increase the knowledge of the risks associated with extreme weather events, which themselves are a major element of disruption to energy networks. The Expert Assessors considered this to be aligned with one of the aims of the Innovation Challenge, which is to improve understanding of robustness in future energy system configurations and to develop solutions to improve and strengthen it. The Expert Assessors consider the Project to have met this Eligibility Criteria to have been met.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Expert Assessors considered this Project to have clearly identified potential to deliver a net benefit to electricity consumers through a reduction in outages in extreme events and lower system costs. These were considered to represent a potential financial benefit to consumers.

It was noted that the Application would have benefited from estimated value of the benefits and details on the methodology of how they could be measured or assessed. However, overall, the Expert Assessors considered the Project to have sufficiently identified a net benefit for the Discovery Phase and considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered this Project to involve network innovation because it aims to provide a solution that cuts across multiple energy vectors and

could potentially create a novel probabilistic model of extreme events through state-of-the-art methods and approaches that are being considered and progressed in other sectors and bringing them across to the electricity sector. The Expert Assessors considered this Project to have met the Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors did not consider this Project to be undermining the development of competitive markets as they considered it to be likely that the Project will open the energy market to new participants, products and services or enhance existing datasets. The Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

All Expert Assessors considered the Project to be innovative and risky because it aims to develop a proactive framework for responding to 'black-swan' type events. The risk was considered to come from the methodology for assessing the value of benefit that is currently not known and the requisition of in-depth research. The Project's focus area was considered to be an emergent area of knowledge, with a large amount of uncertainty in terms of when events may appear, and when they do, the impacts that might be associated with them.

The Expert Assessors therefore considered the Project to be innovative and risky and considered this Eligibility Criteria as met.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered this Project to include participation from a sufficient range of stakeholders for this Eligibility Criteria to be met. This was because the Project Partners all play a key role in the Project's focus area, and include electricity network operators, gas network operators, the met office, an academic institution and an insurance specialist. The Expert Assessors considered

these to be sufficient for the scope of works outlined for the Discovery Phase and therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to have met this Eligibility Criteria. It was noted that the Project was providing value for money because its outputs have the potential to outweigh the Project's costs and to also extend beyond the energy sector to other service providers, such as roads, rail, water. It was however, noted that the Funding Party has subcontracted significant portions of the work out and because the subcontractor is not a Project Partner, the same level of detail was not provided. It was also noted that the Project could have communicated with more clarity on how existing assets and facilities would be incorporated into the Project.

Overall, the majority of the Expert Assessors did consider the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The Expert Assessors considered the Project to have a robust methodology which gives confidence that it will be capable of progressing in a timely manner because the Expert Assessors considered the Project to have demonstrated a robust methodology, clear milestones, resource requirements (when subcontracting costs are discounted), and Project plan. These give confidence of an effective approach to timely project delivery and the Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

NO

No regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase.

Recommendation to the Gas & Electricity Markets Authority

FUND

All Expert Assessors have recommended for SIF Funding. The Project was considered to have addressed the aims of the Innovation Challenge, gave confidence that it will be delivered in a timely manner and does not undermine competitive markets but instead has potential to enhance them. It was also considered to have demonstrated network innovation due to its focus on providing a solution that cuts across multiple energy vectors. The Expert Assessors also considered the Project to be innovative and risky due to its aim to develop a proactive framework for responding to 'black-swan' type events because it is an emerging area of focus, and to have the potential to deliver a net benefit to consumers.

Recommended Project specific conditions

The Funding Party must engage with the SIF Project 'CReDo+ Climate Resilience Demonstrator' during the Discovery Phase to discuss potential areas of overlap and similarities. As part of this, the Funding Party must provide to the monitoring officer prior to the end of the Discovery Phase a summary of these engagements and findings.

5.1.18 10060978, Resilient Customer Response, Initial Net Funding Requested £117,889

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
NORTHERN POWERGRID (NORTHEAST) PLC	12,800	12,799	1
UNIVERSITY OF SOUTHAMPTON	31,930	2,750	29,180
LANE CLARK & PEACOCK LLP	93,245	4,537	88,708

Submitted Project description

Resilient Customer Response will explore how new categories of customers with behind the meter assets can help themselves and other local network customers

by improving resilience in the event of network outages.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Expert Assessors considered this Project to have addressed the Innovation Challenge because it was considered to examine a previously under-researched area of behind-the-meter (BTM) assets in homes and businesses and their role in restoring power following incidents. This was considered to be a novel approach to achieving energy resilience and was considered to be directly related to the Innovation Challenge. The Expert Assessors therefore consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Expert Assessors considered the Project to have clearly identified a potential to deliver a net benefit to electricity consumers because the Project has the potential to enable communities to become more resilient in times of a power loss, leading to social benefits. Additionally, the Project could minimize service losses whilst avoiding costly upgrades, thereby delivering financial benefits. Whilst it was noted that the benefits for vulnerable consumers could have been presented with more clarity, the Expert Assessors nonetheless considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered this Project to involve network innovation because it examines non-traditional and whole system methods to mitigate outages on electricity distribution networks. It was understood that the Project's approach would represent a potential reduction in the timing and frequency of disruptions, as well as a reduction in required unplanned network asset replacement, all of which would increase the efficiency of the network. The

Project was considered by all the Expert Assessors to involve network innovation as it proposes to look at how network efficiency and resiliency can be improved beyond business as usual focuses. The Expert Assessors therefore considered this Eligibility Criteria to have been met.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors considered the Project to not be undermining the development of competitive markets because there currently is not a market for localised energy resilience services and the Project could encourage the development of a more active low carbon technology market in the UK, thereby creating new competitive markets. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Project was considered innovative, novel and risky by the Expert Assessors because the Project's focus on behind-the-meter solutions was considered to have the potential to deliver a more holistic energy system approach which has not been examined or trialled in detail in the UK to date. This was considered to be innovative and novel. Furthermore, the Project would necessitate regulatory advancements to progress to business as usual (namely for the distribution network operators to have access to behind the meter consumer data) which was considered to be risky. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered the Project to involve participation from a suitable range of stakeholders for the Discovery Phase activities. The Expert Assessors noted favourably the expertise of the Project Partners and considered the experience and roles of the Project Partners, including the involvement of a

law firm and academic institution to be sufficient for the plan proposed in the Discovery Phase.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to be providing value for money and being costed competitively. Whilst the value of the Project's research into a new area was noted as representing value for money because of the potential benefits, it was also noted that the costs of one Project Partner were higher than anticipated. The Expert Assessors also noted favourably the contributions from the Funding Party and Project Partners. Overall, the majority of the Expert Assessors considered the Project to be providing value for money and as being costed competitively.

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.

Eligibility Criterion met

The Expert Assessors considered the Project to have clearly presented its objectives and plan for the Discovery Phase. The Expert Assessors have confidence that the Project will be capable of progressing in a timely manner because the plan, risks and milestones were clearly communicated and appropriate for the Discovery Phase. The Expert Assessors also noted favourably the allocation of work packages between the Funding Party and the Project Partners. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

NO

No regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase.

Recommendation to the Gas & Electricity Markets Authority

FUND

The Expert Assessors all recommended this Project be approved for SIF Funding. The Expert Assessors considered the Project's area of study to have addressed the Innovation Challenge and they considered the topic to be innovative and novel, representing a clearly identified potential to deliver a net benefit to electricity consumers through increased efficiency and reduced costs. It was also noted to involve network innovation as its focus goes beyond traditional electricity network practices. Whilst it was noted that the benefits for vulnerable consumers could have been identified with more clarity, and that the costs of one Project Partner were higher than anticipated, the Expert Assessors still considered the Project on the whole to have the potential to deliver a net benefit, to provide value for money and as being costed competitively.

Recommended Project specific conditions

The Expert Assessors have not recommended any Project-specific conditions for this Project.

5.1.19 10061033, Whole Energy System Resilience Vulnerability Assessment, Initial Net Funding Requested £142,820

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
National Grid Electricity Transmission PLC	17,473	1,747	15,726
THE UNIVERSITY OF MANCHESTER	31,280	6,737	24,543
IMPERIAL COLLEGE LONDON	29,350	5,700	23,650
OVE ARUP & PARTNERS LIMITED	42,781	0	42,781
ELECTRICITY NORTH WEST LIMITED	15,422	1,502	13,920
UNIVERSITY OF CYPRUS	24,336	2,136	22,200

Submitted Project description

Project WELLNESS will develop a standardised approach to embed resilience into whole energy network decision making.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Expert Assessors considered this Project to have addressed the Innovation Challenge because it focuses on developing the tools and modelling needed to justify regulated expenditures that will improve the resilience of the power system in the face of growing challenges from intermittency, extreme weather events and cross-fuel linkages. This is aligned with one of the aims of the Innovation Challenge, which is to develop innovations using multi-energy configurations for increasing system resilience. The Project was considered by the Expert Assessors to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Expert Assessors considered this Project to have clearly identified potential to deliver a net benefit to electricity consumers (and gas consumers) through cost savings. The Project plans on identifying and quantifying rare events with early modest investments, which avoids high retrofit costs later down the line, , thereby resulting in cost savings.

One Expert Assessor noted that by nature, extreme events are not likely to recur annually, and so the benefits are the avoidance of higher losses that may occur in a decade-long timeframe. As a result, it was noted that a net present value metric would be more suitable for demonstrating potential values. However, it was recognised that part of the Project is to develop and refine suitable metrics that can be given a cash value.

As a result, the Expert Assessors considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered this Project to involve network innovation because it builds on previous research around the need for planning tools which

considers cross-fuel and intermittent power options to support flexibility whilst considering complexities of risks which could threaten network resilience.

One Expert Assessor did note that it was unclear if the proposal suggested there should be a focus on the negative consequences of losing fossil fuels, especially gas, to provide resilience, as well as for new challenges such as 'cold start' from the electrification of heat. Additional details on this area and why the Application is suited for SIF Funding rather than other funding avenues would have strengthened the Application.

However, the Expert Assessors considered this Project to have met the Eligibility Criteria and to involve network innovation because it aims to identify and mitigate complex and unusual risks which threaten the resiliency of the network.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors did not consider this Project to be undermining the development of competitive markets because the outcome will be an open access tool which could support the creation of new markets and services.

The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Expert Assessors considered the Project to be innovative and novel because it aims to integrate simultaneously the events whose impacts in the past have been considered separately, and risky because it identifies the cost of the risks and the benefits of mitigating them. It was considered novel because the Project plans to develop this information and the resulting tool into an output which is open-access, to support planning and distribution flexibility activities.

The Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 6: Projects must include participation from a range of stakeholders.
Eligibility Criterion met
All Expert Assessors considered the Project to have participation from a sufficient range of stakeholders for the Discovery Phase. The Expert Assessors considered the stakeholders to represent all interests for making the Project deliver successful whilst taking into consideration the different viewpoints and expertise. The Expert Assessors considered the Project to have met the Eligibility Criteria.

Eligibility Criterion 7: Projects must provide value for money and be costed competitively.
Eligibility Criterion met
The Expert Assessors considered the Project to be delivering value for money and to be costed competitively because the work required was considered extensive and the costs are almost entirely highly skilled labour, providing justification for the higher costs. Furthermore, it was noted that more than 10% of total funding is being made by contributions from the Project Partners which was considered to demonstrate value for money. The Expert Assessors considered the Project to have met the Eligibility Criteria.

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.
Eligibility Criterion met
The Expert Assessors considered the Project to have a robust methodology which gives confidence to them that it will be capable of progressing in a timely manner. This is because the Discovery Phase was considered to have been divided into sensible work packages and allocated to the organisation with the relevant expertise. Simple milestones have also been set. The risk register was also considered clear. One Expert Assessor noted that there are likely to be additional risks which are not currently included. However, all Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified
No

No regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase.

Recommendation to the Gas & Electricity Markets Authority

FUND

All Expert Assessors considered the Project to have met all Eligibility Criteria and all recommended it for SIF Funding. The Application was considered to have addressed the Innovation Challenge as the use of demand-side flexibility for resilience offers an important future system benefit, both in terms of enhanced resilience and lower cost to consumers. The Project proposes how both the flexibility resources and their application to resilience needs will be investigated prior to a practical application. The identification of assessment tools should be a valuable output and was considered to involve network innovation.

The Project also has the potential to deliver cost savings to consumers as well as carbon emission savings. The Project was also considered to deliver value for money and as being costed competitively, and also gave confidence to the Expert Assessors that it will be capable of progressing in a timely manner.

Recommended Project specific conditions

Prior to the end of the Discovery Phase, the Funding Party must engage with the other SIF Projects in round 2 that are focussing on extreme events and weather events to consider potential areas of overlap. Innovate UK can provide an introduction if necessary. As part of this, the Funding Party must provide a summary of these engagements prior to the end of the Discovery Phase.

5.1.20 10061098, SF6 whole life strategy, Initial Net Funding Requested £119,607

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
National Grid Electricity Transmission PLC	19,425	1,943	17,482
The University of Manchester	51,305	5,131	46,174
SCOTTISH HYDRO	3,182	319	2,863

ELECTRIC TRANSMISSION PLC			
DNV SERVICES UK LIMITED	58,987	5,899	53,088

Submitted Project description

To develop an economic, efficient and holistic replacement strategy for SF6 that will support GB's ambition to facilitate a net-zero and resilient energy system.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Expert Assessors considered the Project to have addressed the Innovation Challenge because of its focus on removing SF6 from electricity lines and developing an alternative, which supports the UK's net zero target whilst also ensuring energy system resilience and robustness is upheld. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Expert Assessors considered the Project to have clearly identified the potential to deliver a net benefit to electricity consumers through environmental benefits due to the replacement of SF6 in the use of electricity lines, a potent greenhouse gas. This was considered to be directly related to the aims of the Innovation Challenge, one of which is to improve the understanding of trade-offs between increasing resilience, robustness and the cost implications and consumer trust & acceptability in the net zero transition. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered the Project to involve network innovation because the focus on SF6 alternatives is an innovative area for networks which

moves away from a business as usual approach. The Expert Assessors noted that additional information could have been provided to support the Project's Application, particularly around what has already been tested for SF6 alternatives, but considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors did not consider the Project to be undermining the development of competitive markets because it was considered that the Project would support finding transitional pathways to enable alternative offerings to the networks' use of SF6 and in the transition to net zero. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Expert Assessors considered the Project to be innovative and risky as the Project's focus was considered to be in a key area that is lacking innovative solutions from the electricity networks. The approach communicated by the Project was considered to be new and innovative whilst still retaining elements of risk due to the transition away from SF6 being an ongoing challenge for networks. It was noted by one Expert Assessor, however, that the Project could have presented some aspects of its Project, including the risk of new gas regulations to the Project with more clarity. However, all the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered the Project to involve participation from a sufficient range of stakeholders for the Discovery Phase activities. It was noted by one Expert Assessor that the Project would have been strengthened by including stakeholders who are already working on developments in the SF6 transition. However, overall, the Expert Assessors considered the participation from the two

network utilities, academia and notable consultant, to be sufficient for the Discovery Phase.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to be providing value for money and being costed competitively. It was noted by one Expert Assessor that the Funding Party could have communicated the Project's value for money with more detail, considering other areas that are likely to already be examining the transition away from SF6. However, the majority of the Expert Assessors considered the Project to represent value for money because it has clearly communicated the potential benefits (financial and environmental) of finding solutions and that the cost savings could be significant. Furthermore, the majority of the Expert Assessors considered the costs of the Project Partners and the Project as a whole as being costed competitively.

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.

Eligibility Criterion met

The Expert Assessors considered the Project to have a robust methodology which gave them confidence that the Project would be capable of progressing in a timely manner. It was also considered that the engagement between relevant stakeholders for the development of alternative to SF6 was sufficient for the Discovery Phase. The Expert Assessors consider the Project to have met this Eligibility Criteria.

Regulatory barriers identified

NO

No regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase.

Recommendation to the Gas & Electricity Markets Authority

FUND

The majority of the Expert Assessors recommended the Project to approved for SIF Funding. The Project was considered to be taking an innovative, novel and risky approach to investigating a long-standing problem in the industry of SF6 usage and the development of alternatives, which was also considered to involve network innovation. Whilst it was noted that the Application could have provided more clarity on its proposed benefits and how the Project plans to utilize the existing expertise in the sector, the majority of Expert Assessors considered the Project to have met all the Eligibility Criteria. The Project provided the Expert Assessors with confidence that it will be capable of progressing in a timely manner in the Discovery Phase.

Recommended Project specific conditions

Prior to the end of the Discovery Phase, the Funding Party must provide to the monitoring officer a justification on whether the Project will consider any additional Project Partners, including those from organisations which have expertise in examining SF6 alternatives, those who specialize in supply chain development, and involvement from any European organisations also examining the SF6 transition.

5.1.21 [REDACTED]

5.1.22 10061159, SCOHL - SuperConductor OverHead Lines, Initial Net Funding Requested £132,507

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
National Grid Electricity Transmission PLC	105,406	10,540	94,866
University of Strathclyde	37,640	0	37,640
VEIR	10,800	10,799	1

Submitted Project description

The SCOHL project, led by National Grid Electricity Transmission (NGET), will explore the opportunity for deploying high-capacity, superconducting overhead

lines in the UK, gauge technical and economic limitations, and roadmap a means to scale adoption for customer benefit.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Project was considered to have addressed the Innovation Challenge because it has the potential to increase the electricity transmission network resilience and robustness. More specifically, the Expert Assessors acknowledged the proposed Project to have the potential to reduce transmission losses while accepting higher input of renewables. The Expert Assessors considered this to have addressed the Innovation Challenge as it directly relates to one of its main aims, which is to incorporate resilience and robustness as a key focus as well as measurable considerations into future multi-energy system design. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Expert Assessors considered the Project to have a clearly identified potential to deliver a net benefit to electricity consumers because it has addressed the possibility of increasing transmission capacity at pinch points on the UK grid system using a novel transmission technology. Expert Assessors accepted the potential for the Project to deliver benefits to electricity consumers through lower transmission network costs, faster pathways to connect new renewable generation to demand centres and improved security of electricity supply. All of these were considered to represent a potential to deliver a net benefit in the form of financial benefits. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Project is considered to clearly involve network innovation because it aims to optimise capacity of overhead transmission lines with improved, novel assets. Use of these may help with grid planning, better load carrying, and cost optimisation. The innovation described in the project presents the possibility of qualifying and deploying new technology into high voltage overhead lines, which was considered to involve network innovation because it represents an opportunity to examine network design and resolve capacity issues. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Project is not considered to undermine the development of competitive markets because the Expert Assessors considered there to be little possibility of market distortion arising from a successful outcome to this project. The Expert Assessors did note that greater details on how the Project's proposed solution would be made available to others would have strengthened the Application. Overall, all the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Project was considered innovative and risky by Expert Assessors because it aspires to prove that all the operating parameters required for the successful upgrade of overhead lines to be superconducting materials. It was considered to be the first time this novel super conducting technology would have been evaluated for use in real overhead transmission lines (only lab-based investigations have been completed to date). Use of the existing transmission corridors, with increased capacity through use of novel methods, is also innovative at a system level. Furthermore, the Expert Assessors considered the Project novel on account that it examines all the potential aspects of successful innovation rollout such as technical, environmental, financial, customer-related and electricity grid-related benefits. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered the Project to include participation from a sufficient range of stakeholders including the transmission network, expertise in high voltage transmission planning and technologies, an innovative technology developer, as well as a range of suitably qualified subcontractors. The Expert Assessors considered additional value might be brought to the Project with some participation or input from a contracting organisation involved in the installation of overhead lines, to test operational viability. However, overall, all the Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Project is considered to be delivering value for money and be costed competitively in line with industry standard rates. The Expert Assessors acknowledged the value of contributions above the minimum required from the Project Partners' own resources. The Project was considered to be delivering value for money with a suitably experienced delivery team, which in turn should minimise the risks to the successful delivery of the Project, representing value for money. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The Project was considered to have a robust methodology which gives confidence that it will be capable of progressing in a timely manner. The Project was considered to be well structured and planned, with major risks identified. Most necessary skills and experience were outlined, with an approach for engaging key stakeholders. The project was considered to have a robust methodology for the Discovery Phase, and the path to business-as-usual following the success of the

Project is reasonably well considered for this early stage. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

NO

No regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase.

Recommendation to the Gas & Electricity Markets Authority

FUND

The Expert Assessors considered this to be a well-developed Project which has the potential to alleviate some of the pressures on the transmission grid resulting from the increasing numbers of renewable generation centres. The Project attempts to alleviate these pressures using cooled, semi-conducting overhead lines. The team has the skills and experience to tackle the problem, with a suitable consortium of credible Project Partners and collaborators. Ultimately the Project has potential to deliver a tangible range benefits to consumers. The Expert Assessors noted the network innovation in its approach to network design and supply constraints, and have confidence that the Project would be capable of progressing in a timely manner.

Overall, the Expert Assessors considered the Project to have met all the Eligibility Criteria and have recommended it for SIF Funding.

Recommended Project specific conditions

The Funding Party must engage in the Discovery Phase with an organisation or organisations involved in the installation of overhead lines to test the operational viability of the Project's proposed solution. A summary of this engagement and engagements must be provided to the monitoring officer prior to the end of the Discovery Phase.

The Funding Party must engage with the team behind the round 1 SIF Project 'SCADENT – SuperConductor Applications for Dense Energy Transmission' prior to the end of the Discovery Phase. As part of this engagement, the two Projects must discuss the key areas of crossover in the two Projects and potential areas of

collaboration. The Funding Party must provide to the monitoring officer prior to the end of the Discovery Phase a summary of this engagement. Innovate UK can facilitate an introduction if necessary.

5.1.23 10061184, NextGen Electrolysis – Wastewater to Green Hydrogen, Initial Net Funding Requested £81,422

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
WALES & WEST UTILITIES LIMITED	10,092	1,010	9,082
HYDROSTAR EUROPE LTD	75,962	7,596	68,366
NATIONAL GRID ELECTRICITY DISTRIBUTION (SOUTH WEST) PLC	4,416	442	3,974

Submitted Project description

Next Gen Electrolysis -- Wastewater to Green Hydrogen will look to reduce the cost of hydrogen production by tackling the real-world operational constraints of electrolytic production, specifically the need for high purity water, by utilising less pure/wastewater sources to reduce demand on pure mains water, passing cost savings to end consumers.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to have met the Eligibility Criteria because the Project was considered to have the potential to deliver resilience and resilience benefits in terms of feedstock requirements for hydrogen production and additional resilience and robustness from wastewater treatment. This was considered to be aligned with one of the Innovation Challenge's aims, which is to improve the understanding of robustness in future energy system configurations and develop solutions to improve and strengthen it.

However, it was also noted by one Expert Assessor that the Application could have more clearly outlined how it meets the Innovation Challenge. Specifically it was noted that a stronger case could have been made between the Project's proposed innovation and how, if successful, it would result in resiliency and robustness in the energy system.

Overall, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The majority of Expert Assessors considered this Project to have clearly identified potential to deliver a net benefit to electricity consumers through the potential to increase utilisation of electricity from wind generation by reducing constraints on its output at times of grid-system stress. This was considered to represent the potential to deliver carbon reductions arising from natural gas usage, financial benefits from reduced system costs and increased efficiency through the ability to deliver green hydrogen to remote areas.

It was noted that even though the Application clearly identifies a potential benefit to energy consumers, the benefits for gas consumers in particular could have been more clearly communicated.

Overall, the majority of Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The majority of Expert Assessors considered this Project to involve network innovation because there is a potential for green hydrogen use in the gas grid, and noted the intention of the project to use generated green hydrogen locally for industry in rural settings. This was considered to involve network innovation because it could reduce the carbon content of the gas being transmitted in the network.

Whilst gas network injection has the potential to be a use case and is mentioned briefly under route-to-market, it was noted that the innovation proposed by the Project could have been closely tied to the gas network in the Project.

Overall, however, the majority of Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors did not consider this Project to be undermining the development of competitive markets because it has the potential support the development of hydrogen markets, improving the potential to produce and supply green hydrogen in areas remote from significant clean water infrastructure. This was considered by the Expert Assessors to be promoting the development of competitive markets, and the Project was therefore considered to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

All Expert Assessors considered the Project to be innovative and risky because it proposed exploring next generation hydrogen production processes, using bio-ionic electrolytes, which was considered an innovative and risky energy technology because it is not yet fully developed for network use. One Expert Assessor also noted that the Project's use of waste water was novel. The Expert Assessors therefore considered this Project to be innovative.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered this Project to include participation from a sufficient range of stakeholders for the Discovery Phase activities set out. This was considered because the Project includes an experienced technology provider

and several energy network partners, which are being led by gas but also with electricity network involvement.

It was noted that it may be beneficial if the Project Partners had a more even split of effort in the Project. It was also noted that the Application would have been stronger with the involvement of innovation support organizations with direct experience of moving technology from innovation to business-as-usual, as well as an academic or other research support to help quantify wider benefits.

Overall, the Expert Assessors considered this Project to have met the Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

All Expert Assessors considered the Project to be delivering value for money and as being costed competitively because the day rates proposed by the Project Partner are sufficient for the activities described and the potential benefits outweigh the costs of the Project. One Expert Assessor did note that value for money could be improved if the Application outlined the area of network innovation and corresponding benefits for consumers with more clarity.

This Project was considered by the Expert Assessors to have met the Eligibility Criteria.

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.

Eligibility Criterion met

The Expert Assessors considered the Project to have a robust methodology which gives confidence that it will be capable of progressing in a timely manner because the methodology is appropriate and appears to have considerable thought for the Discovery Phase. It was noted that the plans for the Discovery Phase were clearly communicated, including the Project plan and risks.

The Expert Assessors noted that the Application could have been stronger if it included more consideration of how the Project would move through later stages

into business as usual. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

NO

No regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase.

Recommendation to the Gas & Electricity Markets Authority

FUND

The majority of Expert Assessors have recommended this Project for SIF Funding and consider the Project to have innovative aspects and the potential to provide benefits to the overall energy system and wider national infrastructures. It was also considered by the majority to demonstrate value for money, to be costed competitively and to be investigating a novel, risky and innovative area.

It was noted by that the Project could have articulated the innovation in regard to the gas network with more detail. Furthermore, the Expert Assessor noted that the benefits can be extracted for the consumer, but the Application could have provided more details on these as well.

Recommended Project specific conditions

Prior to the end of the Discovery Phase, the Funding Party must engage with the SIF Projects 'Electrolyser Improvements driven by Waste Heat Recovery', 'Shifting Currents' and 'Connectrolyser' to discuss potential areas of overlap. As part of this, the Funding Party must provide a summary of these engagements to the monitoring officer prior to the end of the Discovery Phase.

5.1.24 10061243, CommsConnect, Initial Net Funding Requested £110,138

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
UK POWER NETWORKS (OPERATIONS) LIMITED	18,000	12,238	5,762

UNIVERSITY OF STRATHCLYDE	104,376	0	104,376
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Submitted Project description

The project addresses the challenge of providing reliable and resilient high-quality communications for future grid operations at lower capital and operational costs by combining public and private communication networks.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Expert Assessors considered the Project to have met this Eligibility Criteria because telecoms resilience is justifiably a key area of resilience for smart grids and energy networks more generally. This was considered to be directly related to the Innovation Challenge's aim of incorporating resilience and robustness as a key and measurable considerations into future multi-energy system design. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Project was considered to have clearly identified potential net benefits that may be delivered through the provision of suitably resilient communications infrastructure at the least cost to electricity consumers. The potential benefits were considered to have been described well. Provision of new services and an enabling ability to deliver infrastructure at lowest cost were considered clear. The impacts on consumers are implied rather than directly considered, and the justification of how carbon emissions savings will be achieved directly as a result were clear but high level. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors all considered the Project to involve network innovation because it is focussed on electricity network control systems and communications technologies which the Expert Assessors considered to be increasingly important in a more distributed and intermittent energy system. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors did not consider the Project to be undermining the development of competitive markets because the Project is looking to make best use of commercially available technologies to allow electricity networks to utilise competitive markets to deliver resilient control systems in the most affordable manner. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The proposed optimisation of telecoms network assets across different service providers was considered novel and innovative in comparison to current practices, approaches and processes. It was also noted that the Project's proposed solution of being able to switch between communications systems was innovative. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered the Project to have met this Eligibility Criteria because the Project includes a suitable range of stakeholders for the Discovery Phase activities set out. It was noted that the Project includes wide participation across energy, networks, and digital communications. However, it was also noted that participation from commercial telecoms operators and demand side technology providers/ aggregators would have strengthened the Application.

The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Expert Assessors considered the Project to have met this Eligibility Criteria. It was noted that the costs and distribution amongst Project Partners were considered appropriate for the Discovery Phase activities set out. It was also noted that the Project represents potential benefits greater than the cost of the Project, thereby providing value for money. However, it was also noted that stronger quantified evaluation of the value that interventions would have strengthened the Application. However, overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The Expert Assessors considered this Project to be well thought through, with a sufficiently robust methodology for the Discovery Phase which gave them confidence that will be capable of progressing in a timely manner in the Discovery Phase. The Expert Assessors considered the Application to be robust and well thought through, with milestones and deliverables clearly set out. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

NO

No regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase.

Recommendation to the Gas & Electricity Markets Authority

FUND

All the Expert Assessors recommended the Project for SIF Funding. The Expert Assessors considered the Project to have set out a clear need to develop a

strategy for delivering suitably resilient communications systems to manage electricity network systems. The Project was considered to have highlighted the issues (and merits) of using wider public telecoms to respond to outage situations, and considered the Project's approach to involve network innovation. The Expert Assessors also considered the participation from the Project Partners and stakeholders to be sufficient for the Discovery Phase activities set out and had confidence that the Project will be capable of progressing in a timely manner due to the clearly outlined milestones and deliverables.

The Expert Assessors noted that greater development of the potential benefits and value for money would have strengthened the Application.

Overall, all the Expert Assessors recommended the Project for SIF Funding.

Recommended Project specific conditions

The Funding Party must provide to the monitoring officer, prior to the end of the Discovery Phase, a summary of whether the Project will be seeking additional Project Partners or wider participation in the Project from commercial telecom operators and demand-side providers or aggregators.

The Funding Party must provide to the monitoring officer prior to the start of the Discovery Phase kick-off clarification around the resourcing levels at the University of Strathclyde and how they align with the work packages and deliverables allocated to the Project Partner.

5.1.25 10061245, WARN (Weather Alerts and Risk analysis for Network operators), Initial Net Funding Requested £109,647

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
UK POWER NETWORKS (OPERATIONS) LIMITED	14,200	12,183	2,017
UNIVERSITY OF READING	107,630	0	107,630

Submitted Project description

The WARN project aims to develop and test an integrated digital solution to monitor weather and climate-related asset vulnerabilities and enable Distribution Network Operators (DNO) to better respond to weather shocks, improve operational preparedness, make better decisions, and inform planning that will improve the robustness and resilience of distribution networks and their operations to future climate change.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Expert Assessors considered this Project to have addressed the Innovation Challenge because it mitigates the impacts of weather (and vegetation) on distribution networks to make the network more resilient. This was considered to have addressed the Innovation Challenge as it aligns with the Innovation Challenge's aim of improving the understanding of robustness in future system configurations and is proposing a solution to improve and strengthen it. The Expert Assessors all considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Expert Assessors considered this Project to have clearly identified potential to deliver a net benefit to electricity consumers because the application demonstrates that the Project will deliver a reduction in customer interruptions and customer minutes lost due to adverse weather conditions. In addition, protecting vulnerable customers from service disruption was considered an important challenge for networks and this Project proposes a solution for this.

One Expert Assessor did note that benefits could be enhanced by including other network operators. However, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

All Expert Assessors considered this Project to involve network innovation because it is examining opportunities for solutions which seek to mitigate the impacts of increasingly adverse weather on the reliability and resilience of networks. This focus on improving the network resiliency and opportunities for mitigating the impacts of adverse weather were considered network innovation because it would increase the networks overall resiliency.

The Expert Assessor also noted the Application could have been strengthened with clearly considered open design options available currently rather than deciding ahead of the Discovery Phase which option to take forward.

Overall, all Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

All Expert Assessors did not consider this Project to be undermining the development of competitive markets because the Project could create new opportunities for markets and the Application has demonstrated how users can access the output tools through the licensing mechanism. This was not considered by the Expert Assessors to be undermining the development of competitive markets.

The Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Expert Assessors considered the Project to be innovative and novel because it focusses on how distribution networks are impacted by weather and outside events. One Expert Assessor noted the quantity of potential input data from this Project represents a risk to the Project as there may be additional variables and inputs which the Project was unaware of and thereby making this Project's idea risky. The Project was also considered to be innovative as it could advance understanding and monitoring of asset data for distribution network operators.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The majority of the Expert Assessors considered this Project to include participation from a sufficient range of stakeholders for this Eligibility Criteria to be met because the Project Partners were considered sufficient for the works set out for the Discovery Phase.

It was noted that the Application would have been strengthened with a commitment to engage additional stakeholders outside of the Project Partners to ensure the solutions proposed and inputs are transferrable.

However, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Expert Assessors considered the Project to be delivering value for money and to be costed competitively because they considered the response to be detailed and clear on how the Applicant intends to keep costs under control. Justification for labour rates was made and the balance of costs between Project Partners were considered reasonable considering that most of the scope lies with the academic Project Partner.

This was considered by the Expert Assessors to have met the Eligibility Criteria.

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.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to have a robust methodology which gives confidence that it will be capable of progressing in a timely manner because they considered there to be clear milestones and a clear Project plan. It was also noted favourably that the Project has clear allocation of roles and responsibilities.

It was noted by one Expert Assessor considered the Project's methodology may not have sufficiently considered all options and plans available, including consideration for instances where other networks have examined this topic.

However, overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

NO

No regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase.

Recommendation to the Gas & Electricity Markets Authority

FUND

The Expert Assessors recommended this Project for SIF Funding. They considered the Project to have addressed one of the main aims of the Innovation Challenge.

The Expert Assessors considered the approach to be innovative and novel, and to involve network innovation. They have confidence that the Project will be capable of progressing in a timely manner because of the clearly articulated Project plan, milestones and roles. The Expert Assessors also noted that the Project has the potential to deliver consumer benefits through increased network resilience and response times. The Expert Assessors also noted that the Project has been costed competitively for the activities set out and represents value for money with its proposed solution.

It was noted that greater consideration of the solution, including consideration for how other networks are approaching this topic area would have strengthened the Application.

Recommended Project specific conditions

Prior to the end of the Discovery Phase, the Funding Party must engage with the other weather-based Projects participating in round 2 of the SIF to discuss potential areas of overlap and how learnings can best be shared. As part of this, the Funding

Party must provide to the monitoring officer a summary of these engagements prior to the end of the Discovery Phase.

Prior to the end of the Discovery Phase, the Funding Party must provide to the Expert Assessor a justification as to whether additional electricity network licencees (either transmission or distribution licence holders) will be brought into the Project as a stakeholder or Project Partner.

5.1.26 10061343, Connectrolyser, Initial Net Funding Requested £118,525

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
UK POWER NETWORKS (OPERATIONS) LIMITED	20,850	13,169	7,681
NATIONAL GRID GAS PLC	1,111	1,110	1
HYDROGENUS LTD	117,560	6,717	110,843

Submitted Project description

Connectrolyser aims to scale hydrogen electrolyser hub development by developing a novel electricity connection agreement and flexibility product to expedite new connections and support the societal and industrial hydrogen demand to achieve net zero while minimising impact of the network.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

All Expert Assessors considered the Project to have addressed the Innovation Challenge. It was noted that the Project has the potential to facilitate the straightforward connection of electrolysers to the distribution network, which could support increased resilience and robustness, and was related to one of the aims of the Innovation Challenge. The Expert Assessors also noted that greater details on whether the flexibility proposed by the solution would deliver similar levels of resilience to a firm connection would have strengthened the Application.

Overall, the Project was considered by all the Expert Assessors to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

All Expert Assessors considered the Project to have identified a potential to deliver a net benefit to electricity consumers. This is because the Project could reduce the losses on the distribution system while optimising the systems utilisation. The Project has identified benefit for electricity consumers through the potential to reduce the socialised costs of operating the distribution system, thereby resulting in a financial benefit. Additionally, the Project was considered to also potentially result in a reduction of carbon emissions arising from distribution network operations, resulting in an environmental benefit. Overall, the Project was considered to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to involve network innovation because the Project examines the possibility of introducing 'smart' connections for hydrogen electrolyzers, which was considered to involve network innovation. More specifically, the 'smart' connection was considered to involve network innovation because it could result in more effective load management of the distribution network. It was noted that the Application would have been strengthened by providing greater details on how flexible connections will interface with the technical and commercial requirements of electrolyzers. On balance, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

All Expert Assessors did not consider the Project to undermine the development of competitive markets. This is because the Project will work to reduce costs and the barriers to entry into the green hydrogen sector. It was also noted that should the Project's proposed solution be successful, it could enhance competition rather than inhibit it. The technological advancements made by the Project would be shared with other distribution network operators as to minimise any operator from having a competitive advantage. Overall, the Project meets this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to be innovative and novel. The Project was considered innovative due to the technology involved which will facilitate electrolyser connections to the electricity supply. As electrolysers are likely to be high energy users, they will provide additional burden and constraint onto the network, however the flexibility solution proposed by the Project was considered innovative and novel by the Expert Assessors. As noted above, the Expert Assessors suggested that greater details on how flexible connections will be interfacing with the technical and commercial requirements of electrolysers would have strengthened the Application. However, on balance, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Project was considered to include participation from a sufficient range of stakeholders for the Discovery Phase. This is because the Project includes an electricity network, a gas transmission network and will bring together organisations with expertise in hydrogen electrolysis as well as potential users of the hydrogen produced. One Expert Assessor commented favourably that the Project Partners represent the key components of a future green hydrogen sector. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

All Expert Assessors considered the Project to be providing value for money and to be costed competitively. This was because the Project was considered to have presented significant contributions from the Project Partners. The Expert Assessors considered that the overall costs appear appropriate for work set out for the Discovery Phase. Additionally, the Project Partners are in excess of the minimum contribution requirement, which was noted positively by two Expert Assessors as providing value for money. Overall, the Project was considered to have met this Eligibility Criteria.

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.

Eligibility Criterion met

All Expert Assessors considered the Project to be well thought through and to have a robust methodology which gives confidence that it will be capable of progressing in a timely manner. This is due to the detailed consideration that the Project Partners have submitted to the construction of the work packages and associated interdependencies. The Expert Assessors also noted positively the level of detail in the work plans. Overall, all the Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified**NO**

No regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase.

Recommendation to the Gas & Electricity Markets Authority**FUND**

The majority of the Expert Assessors recommended this Project for SIF Funding. The Expert Assessors noted that the Project addresses the Innovation Challenge and was considered to examine an important problem in the decarbonisation of

the UK energy system. The Expert Assessors noted that the Project was well thought out with a strong team of project stakeholders.

The Expert Assessors noted that the Project's focus on using flexibility with hydrogen electrolyzers was novel and involved network innovation. It was noted that greater details on how it will interface specifically with the electrolyser requirements would have strengthened the Application. The Expert Assessors had confidence that the Project will be capable of progressing in a timely manner because of its clearly articulated activities for the Discovery Phase. The Project was also considered to be providing value for money and as being costed competitively due to the contributions made to the Projects overall costs.

Overall, this Project was considered by the majority of the Expert Assessors to have met all the Eligibility Criteria and was therefore recommended for SIF Funding.

Recommended Project specific conditions

The Expert Assessors have not recommended any Project-specific conditions for this Project.

5.1.27 10061355, Trinity, Initial Net Funding Requested £134,793

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
UK POWER NETWORKS (OPERATIONS) LIMITED	59,500	14,977	44,523
UNIVERSITY OF STRATHCLYDE	55,270	0	55,270
GE DIGITAL UK LIMITED	40,000	5,000	35,000

Submitted Project description

By determining and then implementing the requirements, specifications and architecture for control room simulator facilities, Trinity seeks to address the increasing complexity facing control room staff and systems that is being driven by the Net Zero transition. If successful, it will enhance DNOs' abilities to handle conflicts between different priorities and parties, better manage uncertain levels of demand and generation, maintain system resilience, develop DSO capabilities, and

test and exercise innovative solutions ahead of implementing into the production system.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

All Expert Assessors considered the Project to have addressed the Innovation Challenge. This is because the Project is centred around a tangible solution that is directly aimed at improving the resilience of network operation for increasingly complex distribution systems. This was noted to be directly aligned with one of the Innovation Challenge's aims of improving the understanding of robustness in future energy system configurations and to develop solutions to improve and strengthen it. It was noted that the Project could advance the transition of DNOs into DSOs, which was considered critical for secure and flexible operation of future distribution networks.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

All Expert Assessors considered that this Project has identified potential to deliver a net benefit to electricity consumers. This is because the Project was considered to have the potential to reduce the costs for the electricity network with more efficient use of flexibility resources on the grid which would lead to a financial benefits for electricity consumers. It was also noted that the Project has the potential to reduce the risk of system failure, over-design and over-resourcing, further contributing to saved costs for consumers. The Project was therefore considered to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

All Expert Assessors considered the Project to involve network innovation. This is because the Project is centred around developing a control room simulator, a new technology which will allow operators to analyse system performance and

behaviour under a variety of simulated conditions and scenarios. This was considered to involve network innovation as the new technology proposed has the potential to enable control rooms to be better prepared to operate the future system and to optimise systems to reduce costs and maximise performance. This technology was considered to represent the potential to advance network operation practices to better utilise the data available to them in relation to network conditions and flexibility providers. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

All Expert Assessors considered that this Project does not undermine the development of competitive markets. The Expert Assessors commented that the Project may assist with the visibility of the grid among low-carbon technologies and that this could reduce barriers to connection and enhance competition. It was noted that the simulator proposed by the Project would be available to technology providers, which could support competition amongst the technology providers. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

All Expert Assessors considered the Project to be innovative and risky. The Project was considered innovative because this technology is new and a simulation system for a complex distribution environment has not yet been developed or trialled. It was also noted that the Project is ambitious with risks, as the scope of the proposed solution is broad and covers multiple low carbon technology options.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

All Expert Assessors considered that the Project includes participation from a sufficient range of stakeholders for the Discovery Phase. This is because the consortium includes a distribution network operator, a system provider, an academic body, and other stakeholders with key roles to play in the design, development, use and exploitation. It was noted that wider engagement with the Electricity System Operator would have strengthened the Application in order to incorporate the ESO's viewpoint and expertise. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

All Expert Assessors considered the Project to be delivering value for money and to be costed competitively. It was noted that the Project has the potential to have considerable impact and benefits to consumers and therefore represents value for money as these benefits are greater than the costs of the Project. The Expert Assessors also considered the Project to have costs appropriate for the Discovery Phase activities set out. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

All Expert Assessors considered Project to be well thought through with a robust methodology, capable of progressing in a timely manner. The Expert Assessors considered the division of work into packages, milestones, deliverables and individual partner responsibilities to be clear, giving them confidence that the Project will progress effectively. The Project was also considered to have a clear, well informed risk assessment which the Expert Assessors considered to be well presented and clearly explained. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

NO

No regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase.

Recommendation to the Gas & Electricity Markets Authority

FUND

All Expert Assessors recommended this Project for SIF Funding. The Application was considered to address an important aspect of future network operation directly addressing the Innovation Challenge, and its successful implementation could help with the transition of DNO to DSO. The Project was considered to involve network innovation, as well as being costed competitively and to represent value for money. The Expert Assessors also noted the Project's potential to deliver a net benefit to electricity consumers through increased system efficiency and management. The Expert Assessors have confidence that the Project will be capable of progressing in a timely manner because of the clearly articulated Project plan, roles, deliverables and risk register. Overall, the Expert Assessors considered the Project to have met all the Eligibility Criteria and have recommended it for SIF Funding.

Recommended Project specific conditions

Prior to the end of the Discovery Phase, the Funding Party must engage with the projects REALISE and PowerON to discuss potential areas of overlap and to avoid duplication between the projects. As part of this condition, the Funding Party must provide to the monitoring officer a summary of these engagements prior to the end of the Discovery Phase.

5.1.28 10061439, Looking-Glass, Initial Net Funding Requested £88,007

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
SOUTHERN GAS NETWORKS PLC	13,056	0	13,056
DELTAFLARE LIMITED	105,500	30,550	74,950
UK MOD	1	0	1

Submitted Project description

Project Looking-glass will provide real-time assessment of Network Operator's resilience and robustness through big data analysis of infrastructure and security data, ensuring the Networks are secure during the Net Zero transition.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Expert Assessors considered this Project to have addressed this Innovation Challenge because it proposes to explore cybersecurity threats and to identify areas where a lack of resilience and robustness could create very large impacts. The proposed approach was considered to have the potential to lead best practice in this area for network operators. This was considered to have addressed the Innovation Challenge as it directly relates to one of its aims, which is to improve the understanding of robustness in future energy system configurations and develop solutions to improve and strengthen it. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Expert Assessors considered this Project to have clearly identified potential to deliver a net benefit to gas consumers through enhancements of existing practices which could meaningfully reduce the risk of supply outages. This was considered to represent a potential reduction in the costs of cybersecurity provision and was considered to represent a financial benefit. All Expert Assessors considered that the potential benefits have been clearly described and quantified.

The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered this Project to involve network innovation because it proposes to explore a core activity of gas network operators, the

provision of cybersecurity and the management of digital and physical assets in ways that protects them against external threats. The Application describes the current state of practice across the industry, notes limitations of the current approach, and proposes novel ways of improving it. This solution proposed by the Project was considered to involve network innovation because it examines an advancement of current network practices and preparation. It was noted that the Application would have benefited from including greater detail on the types of threats faced by users/operators and their potential impacts on the gas network. Overall, the Expert Assessors considered this Project to have met the Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors did not consider this Project to be undermining the development of competitive markets as the project has potential to develop and share best practices across the energy network sector, which could lead to a clearer definition of the services required. If successful, the Project was considered to represent the potential to increase competition by providing improved information to the marketplace which includes the services or tools which will be required. It was noted that greater details on the proposed sharing of the solution would have strengthened the Application. Overall, however, all the Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Expert Assessors considered the Project to be innovative and risky because it proposes to develop new ways to measure and manage cyber and digital security. The Expert Assessors considered the Project's focus on cyber security and protection from external threats to be innovative to the energy network sector and other providers of essential services because it goes beyond existing practices. It was also noted that the risk for the Project is in the contingency of the development for this type of universal assessment approach for multiple users.

The Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered this Project to have met this Eligibility Criteria due to the participation from a sufficient range of stakeholders. This is because the Project Partners include a lead network operator, a cybersecurity technology provider and the Ministry of Defence (MoD) as a non-funded advisor. The Discovery Phase activities set out were considered to be clearly aligned with the stakeholders' areas of expertise. It was noted that another service provider, such as another energy network or other critical network infrastructure provider, would have strengthened the Application. Overall, the Expert Assessors considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

All Expert Assessors considered the Project to deliver value for money and to be costed competitively because it provides a well-designed, competitively costed, and clear Project plan. The strong in-kind support from the Project Partners was considered to further improve the value for money. It was also noted that the contribution of funding by one of the Project Partners also lowers the effective day rates.

The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The Expert Assessors considered the Project to have a robust methodology which gives confidence that it will be capable of progressing in a timely manner because the Project plan and milestones were communicated clearly. Furthermore, the

risk register is both clearly bespoke to the Project and has details of mitigation actions.

It was noted however that greater details in the technical methodology would have strengthened the Application. Overall, all the Expert Assessors considered this Project to have met this Eligibility Criteria.

Regulatory barriers identified

NO

No regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase.

Recommendation to the Gas & Electricity Markets Authority

FUND

All Expert Assessors considered the Project to have met each of the Eligibility Criteria and all recommended this Project for SIF Funding.

The Application was considered to have addressed the Innovation Challenge as the cybersecurity challenge identified was considered to be directly related to the aims of the Innovation Challenge which involves network innovation because it goes beyond existing practice. It was also noted that the proposed solution is applicable across energy networks and the application suggests that it can lead to improvements to best practices across energy and other essential services, which the Expert Assessors did not consider undermining the development of competitive markets.

The Expert Assessors considered the Project to have participants from a sufficient range of stakeholders but noted that perspectives from outside the energy sector would have strengthened the Application. The Expert Assessors also had confidence that the Project would be capable of progressing in a timely manner due to the clearly articulated plan, milestones, and risks. The Expert Assessors considered the Project to provide value for money and as being costed competitively due to the value the Project presents and the contributions from the Project Partners.

Recommended Project specific conditions

Prior to the end of the Discovery Phase, the Funding Party must provide to the monitoring officer a summary of the Project's Intellectual Property Rights approach and how outputs of the Project will be aligned with chapter 9 in the SIF Governance Document, or if alternative arrangements will be required.

5.1.29 [REDACTED]

5.1.30 10061719, Digital Inspector, Initial Net Funding Requested £47,600

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
CADENT GAS LIMITED	3,141	315	2,826
TWI LIMITED	18,038	0	18,038
NATIONAL GRID GAS PLC	1,290	0	1,290
TRITON ELECTRONICS LIMITED	16,152	2,663	13,489
UNITED LIVING GROUP LIMITED	14,620	2,663	11,957

Submitted Project description

Digital Inspector will be a complete ecosystem for monitoring and managing welding being undertaken across multiple different locations by connecting procedure approval and welder approval databases to real time weld data acquisition. The project is designed to be scalable to include NDT digital data and connect to other SaaS systems such as Building Information Management (BIM) software. Successful delivery of the overall project concept will improve energy system resilience and robustness through early identification of fabrication issues and non-conformances, reducing down time and requirements for later stage rework.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Expert Assessors considered the Project to have addressed the Innovation Challenge because it has potential to increase system robustness and traceability of faults through greater digitisation of the welding process and welds of gas system pipeline assets. This was considered to be directly aligned with one of the

Innovation Challenge's main aims, which is to improve the understanding of robustness in future energy system configurations and develop solutions to improve and strengthen it. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to have identified potential to deliver a net benefit to gas consumers through increasing productivity and traceability in the gas sector. This was considered to represent a net benefit to gas consumers through lowering costs on a regulated asset, thereby resulting in a financial benefit. While the Expert Assessors considered the Project to have identified a potential to deliver a net benefit to consumers, it was noted that the Application would have been strengthened by providing greater details on how the Project's focus area would lead to lower costs for consumers.. The majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered the Project to have met this Eligibility Criteria because it examines how to increase the productivity and digitisation of welds and components in the gas sector. It was noted that this digitalisation focus has the potential to improve the resiliency of the gas network through activities which go beyond business-as-usual activities and therefore demonstrate network innovation. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Project is not considered by any of the Expert Assessors to undermine the development of competitive markets. By focusing on innovating part of the supply chain, the Project was considered to represent the potential to enhance competition in the welding market. The Expert Assessors did note that there could have been more clarity in the description and narrative around how the outputs from the Project would be communicated to wider industry, and how to best ensure that competition was maintained. Overall, however, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Expert Assessors have on balance, considered the Project to have met this Eligibility Criteria. Although focused on utilising relatively mature technological approaches, the Expert Assessors considered the Project to be innovative and risky because it proposes combine different elements of the required digital quality assurance and record keeping methods in the energy network sector. This was considered innovative because it would represent a change in current operational approaches and could support the sharing of best practices. It was considered to be risky because it is not an approach which has been attempted at this level before. The majority of the Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Project was considered to include participation from a sufficient range of stakeholders for the Discovery Phase because the Project Partners include the gas networks, industrial partners with capability in supply chains, industry bodies and SME organisations. These were considered to be necessary Project Partners and stakeholders for the proposed activities in the Discovery Phase. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met
<p>The Expert Assessors considered the Project to be delivering value for money. They considered that the Project's potential benefits would outweigh the costs of the Project. The Expert Assessors also considered the requested SIF Funding as being proportionate to the activities that were described and as necessary to fulfil the Discovery Phase. They also considered the split between Project Partners to be appropriate for the activities. However, it was noted by one Expert Assessor that additional detail on the milestones and roles would have strengthened the Application. Overall, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.</p>

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.
Eligibility Criterion met
<p>The Project was considered by the majority of the Expert Assessors as having met this Eligibility Criteria. The majority of the Expert Assessors considered the Project plan to have been logically presented, addressing the major risks and giving confidence that the Project will progress in a timely manner. It was noted that the core team have expertise in the proposed innovation area, which also gives confidence that the Project will progress auspiciously. It was noted that the Application could have been strengthened with greater detail on the timelines and activities specifically. However, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.</p>

Regulatory barriers identified
NO
<p>No regulatory barriers were identified by the Project or the Expert Assessors for the Discovery Phase.</p>

Recommendation to the Gas & Electricity Markets Authority
FUND
<p>The majority of the Expert Assessors recommended this Project for SIF Funding. The proposed Project's focus area was considered to have genuine potential to</p>

increase productivity by bringing better or best practice on welding processes and supply chain management of welds and components to the gas sector.

All Expert Assessors recognised that weld quality management and construction risk is a genuine issue and considered the Project to represent network innovation with an innovative and risky approach. The Expert Assessors noted that the Project Partners and stakeholders were suitable for the Discovery Phase activities set out and considered the Project to represent value for money. The Expert Assessors also noted that the Project was costed competitively for the activities set out. The Expert Assessors did not consider the Project to represent the potential to undermine the development of competitive markets. It was however noted that the Project could have provided additional details in its planning for the Discovery Phase, which would have strengthened the Application.

Overall, the majority of the Expert Assessors recommended this Project for SIF Funding.

Recommended Project specific conditions

The Funding Party must provide to the monitoring officer an updated Project plan, which provides greater clarity on the Project timelines, activities, dependencies, and which covers the risks to the Project in more detail prior to the Discovery Phase kick-off.

6 SIF Round 2 Discovery Phase – Preparing for a net zero power system

A key policy commitment within the UK government's net zero strategy is to fully decarbonise the power system by 2035, subject to security of supply considerations²¹.

This has made Great Britain the fastest decarbonising power system in the world. As of 2020, around 40% of installed capacity and 30% of generation output came from fossil fuels, these may need to be replaced by renewables, nuclear and other low carbon sources prior to 2030. Particularly, significant increases in deployment of offshore wind (supported by a policy commitment of 50 GW by 2030²²), onshore wind, and solar PV (five-fold increase by 2035) are expected.

Operating a power system safely and securely with high levels of renewables will bring novel challenges and require new approaches. As noted in the Operability of High Renewable Electricity Systems Report by the National Infrastructure Commission (NIC) and the System Operability Framework by the Electricity System Operator (ESO)²³, aspects including inertia, short circuit level, voltage control, system Restoration, loss of mains protection and fault ride through will need to be met to operate a safe and secure system.

Traditional synchronous generators²⁴ provide a lot of the system needs outlined above and this creates a challenge as the nature of the energy generation mix moves primarily towards renewables by 2035. In addition, the deployment of large nuclear plants and increases in interconnector capacity could also further impact system operability due to increase in largest in-feed loss²⁵ and current non-provision of system services respectively.

While such challenges exist, developments in digitalisation and decentralisation creates a significant opportunity to reimagine and deliver future system operation for net zero. Research from the Energy Systems Catapult²⁶ highlights some of these opportunities including – using demand side flexibility to support system operation, more real time, and dynamic approaches to manage risks and constraints, distributed

²¹ <https://www.gov.uk/government/publications/net-zero-strategy>

²² <https://www.gov.uk/government/publications/net-zero-strategy>

²³ <https://nic.org.uk/studies-reports/operability-highly-renewable-electricity-systems/>

²⁴ Fossil fuel generators producing electricity for the grid have spinning parts – they rotate at the right frequency to help balance supply and have stored energy allowing them to carry on spinning/slow down even when the system frequency changes.

²⁵ Largest infeed loss is set typically based on largest single generator exporting power to the grid at the time to help hold sufficient reserves to cover this loss.

²⁶ <https://es.catapult.org.uk/report/zero-carbon-energy-system-the-operability-challenge/>

intelligence and control systems and regional system operation with national coordination.

Unlocking these opportunities will require innovation across technology (including control systems), markets and standards and must take place in the wider context of local energy systems, cyber security, Distribution System Operator (DSO) transition²⁷, and new challenges to energy security.

6.1 SIF Discovery Phase – preparing for a net zero power system – Summary

This section covers the assessment of round 2 Discovery Phase Applications received into the 'preparing for a net zero power system' Innovation Challenge²⁸.

For the Discovery Phase, 10 Applications were submitted to Innovate UK through the Innovation Funding Service (IFS) portal by the closing deadline of 11am 23rd November 2022 and are listed below. In order to protect the early-stage innovation and IPR, unsuccessful Projects have been redacted from final published version.

Project reference number	Project name	Funding licensee	Total Project costs (£)	Total Project contribution (£)	Total SIF Funding requested (£)	Recommended for funding (Yes/No)
10051585	INSIGHT (Innovative Network Status Intelligence Gathered by Holistic use of Telemetry and Simulation)	SCOTTISH HYDRO ELECTRIC TRANSMISSION PLC	98,245	14,730	83,515	Yes
10052878	Electrolyser Improvements	NATIONAL GRID GAS PLC	110,349	14,635	95,714	Yes

²⁷ <https://www.energynetworks.org/creating-tomorrows-networks/open-networks/distribution-system-operation-transition>

²⁸ <https://www.ofgem.gov.uk/publications/strategic-innovation-fund-round-two-innovation-challenges>

	driven by Waste Heat Recovery					
[REDACTED]						
10059797	Shifting Currents	NATIONAL GRID ELECTRICITY DISTRIBUTI ON	151,798	52,758	99,040	Yes
10060432	Hybrid Storage Systems for site safety and efficiency	NATIONAL GRID GAS PLC	150,507	16,851	133,656	Yes
10060474	Powering Wales Renewably	NATIONAL GRID ELECTRICITY SYSTEM OPERATOR LIMITED	155,791	20,300	135,491	Yes
10061137	Diversified Flexible Queue Manageme nt	NORTHERN POWERGRID (NORTHEAST) PLC	162,910	15,759	147,151	Yes
10061160	Artificial Forecastin g	NORTHERN POWERGRID (NORTHEAST) PLC	159,500	32,778	126,722	Yes
10061242	Power Block	UK POWER NETWORKS (OPERATION S) LIMITED	51,755	9,400	42,355	Yes
10061340	CReDo+ Climate Resilience Demonstr ator (extension to new climate risks)	UK POWER NETWORKS (OPERATION S) LIMITED	143,586	31,302	112,284	Yes

6.2 Evaluation of Applications

6.2.1 10051585, INSIGHT (Innovative Network Status Intelligence Gathered by Holistic use of Telemetry and Simulation), Initial Net Funding Requested £83,515

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
SCOTTISH HYDRO ELECTRIC TRANSMISSION PLC	33,576	3,358	30,218
NATIONAL GRID ELECTRICITY SYSTEM OPERATOR LIMITED	7,741	7,740	1
UNIVERSITY OF STRATHCLYDE	56,928	3,632	53,296

Submitted Project description
INSIGHT seeks to understand, classify, predict and define actions to manage potential new forms of electrical network instability (e.g. voltage/ frequency/ power oscillations) on a Net Zero system.

Eligibility Criterion 1: Projects must address the Innovation Challenge set by Ofgem.
Eligibility Criterion met
The Expert Assessors considered the Project to have addressed the 'preparing for a net zero power system' Innovation Challenge through its proposal to investigate novel ways to manage power system stability brought about by the proliferation of power electronics and intermittent renewables on the system. This was considered by the Expert Assessors to have addressed the Innovation Challenge because the Project's proposed solution was considered to demonstrate a facility that supports preparation for a net zero power system. In the opinion of all the Expert Assessors, this Project met this Eligibility Criteria because of this focus.

Eligibility Criterion 2: Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers
Eligibility Criterion met
The Project seeks to establish cost effective mechanisms for management of electrical network instability including voltage, frequency, and power oscillations. This was considered by the Expert Assessors to present the potential to deliver a

net benefit via cost savings to electricity consumers and could enable faster penetration of power electronics based renewable technologies which aligns to key net-zero commitments. The Expert Assessors considered the Project has met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered this Project to be focussed upon network innovation because it plans to develop a proactive means of identifying and categorising new and existing types of system oscillations on the network and then defining actions to mitigate against them. This was considered by the Expert Assessors as being a part of the electricity networks responsibilities in delivering a net zero power system and the Project was therefore considered to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Project is not considered by the Expert Assessors to be undermining the development of competitive markets because it is delivering learning which can be made available and utilised by all interested parties. Learnings will be developed and applied to grid codes and energy supply standards which are publicly accessible. Any prospective tenders in later Project Phases will be competitively procured. As a result of this, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Expert Assessors considered the Project innovative and risky because it plans to develop a new approach and tools that proactively identify and classifies oscillation risks. This will inform planning, operation, and mitigation strategies. The Expert Assessors considered the Project to have provided sufficient

justification for how existing tools do not provide an adequate solution to the problem of oscillations due to power electronics-based renewables. The proposal explains how the Project extends the knowledge gained from previous projects or other work streams currently in progress, making it novel.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Project Partners were considered sufficient for the Project by the Expert Assessors because they are representative of the stakeholders for this particular problem i.e. the system operator, a transmission network company and academia. Although the benefits extend to others not in the Project, the consortium was considered to have enough of a mixture of skills and contributions to solve the Problem in the Discovery Phase. The Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Expert Assessors considered the Project costs and the costs of Project Partners to provide value for money and being costed competitively because the estimated cost to the consumer of doing nothing was considered significantly more than the expected cost of completing the Project, both in terms of financial cost and environmental impacts. The Expert Assessors recognised that the Funding Party is contributing additional costs in addition to the minimum mandatory requirement and the breakdown of costs were considered reasonable. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The Expert Assessors considered the Project plan to be sufficiently detailed and robust to meet this Eligibility Criteria. The Expert Assessors had confidence that the Project would be capable of progressing in a timely manner because the work packages were defined with the responsible Project Partner for each work package having sufficient experience and skills in delivering the work package. In addition, the milestones, the Project plan and risk register aligned and were considered to be complimentary to each other.

Regulatory barriers identified

No

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority

FUND

The Expert Assessors have recommended this Project for SIF Funding as it has identified a clear technical challenge that will require novel, and risky approaches to be developed for the delivery of a net zero power system. The Expert Assessors considered the Project Partners as suitable and capable for the scope of work. The Expert Assessors recognised that the likelihood and severity of system oscillations is likely to increase as more non-conventional forms of generation (wind, solar, battery electric storage) and high voltage direct current is connected to the electricity grid. Developing testing and implementing solutions to energy system design through grid code and standard was considered by the Expert Assessors as offering good prospects for delivering both carbon and cost savings to electricity consumers.

Recommended Project specific conditions

In the Discovery Phase, the Funding Party must engage with and disseminate findings to stakeholder groups that may form part of the supply chain for future solutions, including technology vendors for control systems and power electronics

asset managers, to help build their understanding and requirements into the Project as potential key users. The Funding Party must provide to the monitoring officer prior to the end of the Discovery Phase a summary of the stakeholder groups it engaged with during the Discovery Phase.

6.2.2 10052878, Electrolyser Improvements driven by Waste Heat Recovery,
Initial Net Funding Requested £95,714

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
NATIONAL GRID GAS PLC	16,317	10,635	5,682
HYDROGENUS LTD	6,750	0	6,750
UK POWER NETWORKS (OPERATIONS) LIMITED	2,001	2,000	1
ALFA LAVAL AALBORG OY	28,500	0	28,500
CERES POWER LIMITED	26,125	0	26,125
CARDIFF UNIVERSITY	28,655	0	28,655
ANGLIAN WATER SERVICES LIMITED	2,001	2,000	1

Submitted Project description

The Electrolyser Improvements driven by Waste Heat Recovery Project looks to demonstrate efficiency improvements in hydrogen production through the use of waste heat produced in the transportation of network gases.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Project was considered to addresses the Innovation Challenge because it has the potential to increase the efficiency of hydrogen production and has the potential to reduce the carbon footprint of the national transmission stations. These activities are aligned with the Innovation Challenge as the Project proposes a novel way to reliably support low stability systems through the use of waste heat for hydrogen production. This would make the production of green hydrogen less reliant on renewable energy sources, thereby providing reliable support for low stability systems. The Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met
<p>The Project was considered to have clearly identified potential to deliver a net benefit to gas consumers primarily through improving the efficiency of hydrogen production to be used in turbines to power gas compressor stations. The Application articulates the benefit of recovering heat that otherwise would have been lost from the gas turbines to increase the efficiency of hydrogen production. The improved efficiency represents a reduction in the costs of operation, which would then be passed on to gas consumers. The Expert Assessors consider the Project to have met this Eligibility Criteria.</p>

Eligibility Criterion 3: Projects must involve network innovation.
Eligibility Criterion met
<p>The Expert Assessors considered this Project to involve network innovation because it will support the operation of gas and turbines that power the compressor stations in the National Transmission System (NTS) using 100% hydrogen, rather than natural gas. This was considered to involve network innovation as it will be required for a future hydrogen-based NTS and will need to be investigated as part of this transition.</p> <p>Additionally, the Project was considered to involve network innovation because it is focusing on using waste heat from compressor stations to improve the efficiency of solid oxide electrolyzers (SOEC), which is a relatively low technology readiness level electrolysis method and demonstrates network innovation in the efficiency and operation of the network and electrolysis. The Expert Assessors thereby considered this Project to have met this Eligibility Criteria.</p>

Eligibility Criterion 4: Projects must not undermine the development of competitive markets.
Eligibility Criterion met
<p>The Expert Assessors consider the Project to have met this Eligibility Criteria because the Project does not undermine the development of competitive markets. The Project aims to support the development of SOECs for which there are alternative suppliers in the market. Through this activity, the Project was</p>

considered to support the development of a new market for this method of electrolysis which will ultimately help grow the hydrogen economy.

It was noted that greater detail could have been provided in the Application on the commercial comparison of the proposed solution against other alternatives available, and that the Application could have more clearly articulated how the proposed solutions fit with the National Transmission System's (NTS) transition for hydrogen.

However, overall, all the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Project was considered by the Expert Assessors to be innovative, novel and risky. It proposes the use of waste heat in combination with SOECs, which is not a mature technology and uses an energy source (waste heat from compressor turbines) that has not been previously exploited. This approach was considered to be innovative, novel and risky as a result by the Expert Assessors.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Project Partners and wider consortium were considered by the Expert Assessors to have a suitable range of stakeholders for the Project. The Project includes network providers, both SME and large industrial organisation and research capability provided via Cardiff university. The expertise covers a range of disciplines from technical assessments to commercial benefit case development. The Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Expert Assessors considered the Project to be costed competitively and the contribution put forward by the Funding Party and Project Partner is in line with the requirements. The Expert Assessors also noted that the costs, the balance of resources and the combined value of resources are all suitable for the activities proposed for the Discovery Phase. The Expert Assessors also considered the prices to be in line with typical market rates for such activities.

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.

Eligibility Criterion met

The Project has a robust methodology which gives confidence to the Expert Assessors that the Project will be capable of progressing in a timely manner. The Expert Assessors agree that the tasks, deliverables, and milestones are sufficiently detailed and aligned to the Project objectives. The Expert Assessors have also noted that the Gantt chart has sufficient detail, and that the project risks are well articulated. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

No

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority

FUND

The Expert Assessors recommend this Project for SIF Funding because it was considered highly innovative and has identified an opportunity to reduce energy waste and provide a more efficient service for customers, which could result in a net benefit for consumers. The Project has assembled a strong consortium for delivery and scale up and represents the potential to deliver a net benefit to gas

consumers. The Expert Assessors consider the Project to be costed competitively and represent value for money.

Recommended Project specific conditions

Prior to the completion of the Discovery Phase, the Funding Party must provide to the monitoring officer an assessment of alternative solutions (such as drawing gas from the grid or using the heat for alternative applications) and include as part of this a commercial comparison with the proposed solution.

Prior to the completion of the Discovery Phase, the Funding Party must engage with the team behind the existing SIF Project HyNTS Compression to discuss how the proposed solution fits with its project and the wider NTS compressor station, including how SOEC can be integrated with modified compressor designs and implications of heat recovery on the compressor upgrades proposed in the HyNTS Compression Project. The Funding Party must provide a summary of this engagement and its findings to the monitoring officer prior to the completion of the Discovery Phase. Innovate UK can facilitate an introduction if necessary.

Prior to the completion of the Discovery Phase, the Funding Party must provide to the monitoring officer an updated and more detailed 'route to market' question for the Project's proposed solution and considering for how the Funding Party plans on transitioning the Project to business as usual.

6.2.3 [REDACTED]

6.2.4 10059797, Shifting Currents, Initial Net Funding Requested £99,040

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
NATIONAL GRID ELECTRICITY DISTRIBUTION	8,178	818	7,360
UK POWER NETWORKS (OPERATIONS) LIMITED	4,450	445	4,005
SEVERN TRENT PLC	2,880	1,440	1,440

ANGLIAN WATER SERVICES LIMITED	1,530	765	765
PENNON GROUP PLC	7,500	3,750	3,750
SMART GRID CONSULTANCY LIMITED	127,260	45,540	81,720

Submitted Project description

Shifting Currents will investigate how flexibility can be embedded in the operations of the drinking and wastewater networks of water utilities, to deliver whole systems benefits to customers of reduced carbon intensity of water and electricity networks and cost-effective management of electrical capacity.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Project addresses the Innovation Challenge because it takes a whole system approach that creates a novel method to manage demand and identifies a national source of flexibility from the water sector which could be a strong pathfinder for other flexible demand. The Expert Assessors also considered this Project to align well with the decarbonisation of the energy sector, as it is well understood that this will require flexibility across the electricity grid. The Expert Assessors considered this Project to have met the Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Expert Assessors considered this Project to have met this Eligibility Criteria as the Project has a clearly identified potential to deliver a net benefit to electricity customers and to the whole system as the Project explores novel ways to reduce their usage through the interoperability of electricity and water networks. The Application articulates that there is potential for directly reducing the carbon footprint of the customers (water utilities who have committed to Net Zero by 2030) which could lead to a more cost-effective approach to managing the

network as well as stacked financial benefits - given that most consumers pay for both water and electricity services.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered this Project to demonstrate network innovation through its focus on novel technical and commercial arrangements between DNOs and water companies, which could enable more efficient network operation and potentially avoid reinforcements which may occur under business-as-usual practices. The Expert Assessors also considered this Project to potentially bring forward significant flexibility opportunities, which could be used to unlock additional network capacity for future renewable generation and reduce peak time demand. This was considered by the Expert Assessors to involve network innovation and the Expert Assessors considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors did not consider this Project to undermine competitive markets. The facilitation of more sources of demand side flexibility should strengthen existing and future markets. The Project has also articulated that it is aware of potential regulatory and competition risks and its intention to engage the two regulators to ensure there is no detriment to the competition in this area. A Project-specific condition has been recommended for the Project team to engage with the water regulator and for the Project to consider the changing landscape of the electricity market.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Expert Assessors considered the Project to be innovative and risky because it proposes new and innovative technical and commercial arrangements between

DNOs and water companies as well as establishing novel improved commercial flexibility frameworks. None of these are currently used as standard industry practice, which the Expert Assessors also considered to be risky.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered the Project Partners to be sufficient for the Project as the range of stakeholders bring applicable and relevant skills and knowledge. Where there are particular skills required e.g. knowledge of the water sector, multiple water utilities have been included. The Project also intends to engage with the regulators and consumer groups to ensure wide project impact. This was considered by the Expert Assessors to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Expert Assessors considered this Project to be costed competitively and provide value for money as the Project Partners are providing significant in-kind contributions. The Expert Assessors also considered the potential scale of demand flexibility, its replicability and demand-side decarbonisation benefits the Project and represents an additional avenue for value for money. The Application references benchmarking of costs and the Expert Assessors considered the costs to be appropriate for the activities set out. The Expert Assessors considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The Project has a robust methodology which gives confidence to the Expert Assessors that the Project will be capable of progressing in a timely manner. The Expert Assessors considered the Project to have presented a clear structure of its activities and milestones, and to have clearly demonstrated the risks and

responsibilities of different parties. The Expert Assessors considered there to be adequate expertise among Project Partners and the allocated resources are appropriate for the Project scope. The Expert Assessors considered this Project to have met this Eligibility Criteria.

Regulatory barriers identified

No

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority

FUND

The Expert Assessors considered this Project to have met all the Eligibly Criteria and therefore recommend this Project for SIF Funding because the solution proposed has potential to stretch across company and sector boundaries requiring both technical and commercial development. The Project identifies a source of flexibility through the water sector and this Project could be a pathfinder for other flexible demands and to deliver a potential net benefit to electricity users. There is a clear approach to delivery and a strong case for SIF Funding has been submitted.

The Expert Assessors considered this Project to have a well thought through work plan, with adequate resources and expertise from a wide range of Project Partners.

Recommended Project specific conditions

Prior to the completion of the Discovery Phase, the Funding Party must provide to the monitoring officer a summary of considerations for how the Projects fits in the wider market developments occurring as part of the Review of Electricity Market Arrangements (REMA) as time of use consumption may be driven both by local flexibility markets and wider time of use markets.

Prior to the end of the Discovery Phase, the Funding Party must make reasonable endeavours to engage with the Ofwat Innovation Fund to discuss the applicability of its proposed solution to the water industry. The Funding Party must provide a summary of this engagement to the monitoring officer prior to the end of the Discovery Phase. Innovate UK can facilitate an introduction if necessary.

Prior to the end of the Discovery Phase, the Funding Party must engage with the SIF Project 'NextGen Electrolysis – Wastewater to Green Hydrogen' to discuss areas of commonality and of potential overlap. The Funding Party must provide to the monitoring officer prior to the end of the Discovery Phase a summary of any engagement with this other Project. Engagement with other water and flexibility projects.

6.2.5 10060432, Hybrid Storage Systems for site safety and efficiency, Initial Net Funding Requested £133,656

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
NATIONAL GRID GAS PLC	16,317	14,851	1,466
MANUFACTURING TECHNOLOGY CENTRE	56,328	0	56,328
H2GO POWER LTD	49,970	0	49,970
UK POWER NETWORKS (OPERATIONS) LIMITED	2,001	2,000	1
WALES & WEST UTILITIES LIMITED	6,139	0	6,139
UNIVERSITY OF NOTTINGHAM	19,752	0	19,752

Submitted Project description

The Hybrid Storage System will enable safe and efficient storage of hydrogen on operational sites using an optimised approach to hydrogens physical state against production and demand profiles.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met
The Expert Assessors agreed that the Project met this Eligibility Criteria because it seeks to demonstrate a secure supply of hydrogen to the gas grid as an enabler for progressing to the net zero by 2050 decarbonisation challenge for the UK. This is aligned with one of the aims of the Innovation Challenge, which is to develop novel ways to reliable support low stability systems.

Eligibility Criterion 2: Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers
Eligibility Criterion met
The majority of the Expert Assessors considered this Project to have identified the potential to deliver a net benefit to gas consumers. However, it was also noted by one Expert Assessor that the scale up of this technology has not yet been shown to be cost effective and that wider analysis of counter factual options outside the Project should be considered by the Project. Overall, the majority of the Expert Assessors considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 3: Projects must involve network innovation.
Eligibility Criterion met
<p>The majority of the Expert Assessors considered this Project to involve network innovation. One Expert Assessor noted that the Project involves network innovation because it is examining how to overcome the current limitations of solid-state hydrogen storage by combining it with compressed gas storage. This was considered to involve network innovation because it could increase the efficiency and effectiveness of gas storage in the transition to net zero.</p> <p>Another Expert Assessor noted that the Project’s focus was considered to involve network innovation because the Project is examining the use of a novel hydrogen storage means which could provide a hydrogen system methodology to cover all eventualities.</p> <p>One Expert Assessor noted that the Project could have more clearly demonstrated with quantification metrics how and the extent to which it could be effective.</p>

Overall, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The majority of the Expert Assessors considered this Project to not undermine the development of competitive markets. This was because the Project deals with assessing a method of storage which will not adversely impact price or availability, and other solutions will remain available. The Project was therefore considered by the Expert Assessors to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The majority of the Expert Assessors considered this Project to be innovative and risky and therefore considered this Eligibility Criteria to have been met. This is because the Project's focus requires a guaranteed supply of hydrogen and there has been limited research to date into hybrid storage solutions for energy, in comparison to other industries such as transport and aerospace.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered the Project to include participation from a sufficient range of stakeholders for the activities described in the Discovery Phase. The Expert Assessors commented that the Project involves Ofgem licensees, an RTO, a university, and a system supplier. The Project partners were considered to be equipped with sufficient expertise and complimentary skills concerning the technologies involved and the activities set out. Overall, the Expert Assessors considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 7: Projects must provide value for money and be costed competitively.
Eligibility Criterion met
<p>The majority of the Expert Assessors considered the Project to have met this Eligibility Criteria and provide value for money and is costed competitively. It was noted that the Project proposed multiple deliverables from an extensive scope of work, with contribution requirements being met. The majority of the Expert Assessors considered the Project costs to be appropriate for the proposed Project.</p> <p>One Expert Assessor noted that the Project needed further quantification and comparison with alternative solutions to bolster the needs case. It was however acknowledged that this would be further explored in the Discovery Phase. Overall the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.</p>

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.
Eligibility Criterion met
<p>The majority of the Expert Assessors considered the Project to meet this Eligibility Criteria and be sufficiently robust methodology, therefore capable of progressing in a timely manner. The Expert Assessors considered the Project plan was well communicated and realistic, and the risk register captured a wide range of potential risks. It was noted that the Project had clearly thought through its Project plan and risk register, as they considered them to be comprehensive and with sufficient detail for them to have confidence that the Project will be able to mitigate risks which may arise.</p>

Regulatory barriers identified
No
<p>The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.</p>

Recommendation to the Gas & Electricity Markets Authority

FUND

This Project was recommended for funding by the majority of the Expert Assessors. Two Expert Assessors cited the breadth of experience and complimentary expertise of the Project team and stakeholders involved as reasons why this Project was innovative and fit for SIF Funding. Two Expert Assessors also considered the Project's focus on hybrid compressed gas and solid state hydrogen storage as innovative. The potential benefits surrounding future supply of low carbon gas were also cited.

The Project clearly communicated a budget and timescale which gave the majority of the Expert Assessors confidence that the Project is delivering value for money and is costed competitively and would be able to deliver as described. Additionally, an Expert Assessor noted that the proposal would benefit from additional detail on the outcome of prior work that would support the concept, and quantified targets or benefits.

Recommended Project specific conditions

Prior to the completion of the Discovery Phase, the Funding Party must provide to the monitoring officer a wider analysis of the counterfactual options outside of the proposed solution by the Project, such as with making and storing hydrogen compared with storing electricity.

Prior to the completion of the Discovery Phase, the Funding Party must provide an explanation to the monitoring officer as to how previous work on the concept is informing this proposed solution, and an explanation of the potential benefits of this solution if progressed into business as usual.

6.2.6 10060474, Powering Wales Renewably, Initial Net Funding Requested £135,491

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
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NATIONAL GRID ELECTRICITY SYSTEM OPERATOR LIMITED	33,388	3,339	30,049
NATIONAL GRID ELECTRICITY DISTRIBUTION (SOUTH WEST) PLC	5,152	515	4,637
NATIONAL GRID ELECTRICITY TRANSMISSION PLC	6,725	673	6,052
CGI IT UK LIMITED	105,426	10,673	94,753
WELSH GOVERNMENT	5,100	5,100	0

Submitted Project description

Using the whole electricity system approach, local Government and network operators will collaboratively identify innovation priorities to progress Welsh decarbonisation plans and increase renewable electricity hosting capacity whilst delivering net benefits to Wales's citizens and their communities.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Expert Assessors considered the Project to have met the Innovation Challenge because it focusses on a whole power system approach (transmission, distribution and system operation) to facilitating key aspects needed to deliver net zero, using Wales as an at-scale geographic location for primary investigation.

The Expert Assessors noted key areas that demonstrate how the Projects meets the Innovation Challenge as including;

- Establishing Wales' first whole electricity system model, enabling Wales to reach its full Renewable Energy (RE) potential and reduce carbon emissions.
- Accessing novel system support by enabling flexibility coordination across the whole electricity system, reducing RE curtailment and facilitating constraint management.
- Enabling electricity system integration through additional connections, increased outputs, and access to low carbon technologies for flexibility services.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Expert Assessors considered the Project to have identified potential to deliver a net benefit to electricity consumers through the delivery of cost and emissions benefits by facilitating swifter deployment of renewables and other connections for low carbon technologies across Wales. This represents the potential to reduce costs and emissions for electricity consumers. The Expert Assessors considered the Project as having realistic opportunities to deliver multiple benefits including cost savings, carbon reductions, and increasing the deployment of new products, processes, and services. The Expert Assessors considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Project is considered to involve network innovation because it is focusing on developing a digital twin of the whole electricity system across both transmission and distribution networks. The Expert Assessors acknowledged that the Project will facilitate improvements in network services provision to solve traditional network development challenges, and this was considered as involving network innovation. The Expert Assessors considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Project was not considered by the Expert Assessors to be undermining the development of competitive markets because the approach being taken will enable a more holistic and collaborative approach to the energy market. Rather, the Expert Assessors considered this Project to have the potential in the long-term to stimulate a more competitive market, benefiting consumers. Furthermore, the Project's emphasis on the use and dissemination of open data,

and the implicit expectation that the project outputs will be provided for federation across wider industry users and platforms was considered by the Expert Assessors as offering opportunities for a wide range of stakeholders including developers and generators. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Project was considered innovative and risky by the Expert Assessors because it seeks to develop a first of its kind innovative digital twin of a whole country's energy network, including transmission and distribution. The Expert Assessors considered this to be novel in the scale of its ambition, beyond similar projects. It was noted that the extent of collaboration and co-ordination across multiple stakeholders to realise the vision introduces inherent risks that warrant innovation support. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Project Partners were considered to be sufficient by the Expert Assessors for the Project and work described for the Discovery Phase because the transmission and distribution companies are included, together with a company with the capability to develop the technology and the support of the devolved government which represents all the major relevant stakeholders. A key part of the project is also to seek the views of all stakeholders that may be impacted by final outcomes. The Expert Assessors considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Project was considered to be delivering value for money by Expert Assessors and as being costed competitively through its appropriate cost allocation across the partners, use of SME expert resources, and contributions in kind from lead partners. One Expert Assessor noted that more quantitative market information would have strengthened the value for money case further. However, all Expert Assessors considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The Expert Assessors considered the Project to have a robust methodology which gives them confidence that it will be capable of progressing in a timely manner. The Project plan was considered as agile and clearly set out through 5 themed work packages, with costs, leads and objectives for each. The risk register covers the key risks that could be expected, with appropriate mitigation measures. The approach to project management and risk management is sound and should ensure a well-run project. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

No

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority

FUND

The Expert Assessors considered this to be a strong Project proposal as it meets all of the Eligibility Criteria and takes an innovative approach to whole energy systems thinking at scale. While each Expert Assessor considered the Project to have met each of the Eligibility Criteria, it was noted by some that the Application would have been strengthened with additional detail around how the output

might align with or be integrated into other digital twin tools. This includes with Open Energy Systems models being used by network participants across the country.

The Expert Assessors also identified a clear similarity with other digital twin initiatives, including the Virtual Energy System programme. These have been referenced in the proposal as initiatives to align and coordinate with. However, the Project could more clearly articulate the boundaries of outputs and responsibilities between those Projects. A Project-specific condition has been recommended for the Funding Party to provide a summary of how other digital twin projects are informing this Project by the completion of the Discovery Phase. Benefits realisation, project management and risks were all sufficiently described. This Project was considered by the Expert Assessors as having potential to deliver value to the Welsh government energy strategy and ultimately benefit consumers.

Recommended Project specific conditions

Prior to the completion of the Discovery Phase, the Funding Party must provide to the monitoring officer a summary of how the other digital twin projects (such as those referenced in the Virtual Energy System programme, and other SIF Projects like the two Digital Twins from round 1 of the SIF) are informing this Project and how the Funding Party is ensuring no duplication of work between this Project and those Projects and programmes already underway.

6.2.7 10061137, Diversified Flexible Queue Management, Initial Net Funding Requested £147,151

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
NORTHERN POWERGRID (NORTHEAST) PLC	15,200	15,199	1
WSP UK LIMITED	142,097	0	142,097
NATIONAL GRID ELECTRICITY SYSTEM OPERATOR LIMITED	5,613	560	5,053

Submitted Project description

Accelerating decarbonisation by the considering diversity and flexibility of already connected large assets and those within the connection queue.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Project was considered by the Expert Assessors to have addressed the Innovation Challenge as it is proposing a solution that could make it easier for renewables and flexibility providers to connect to the electricity grid with lesser delays and at lower reinforcement costs. This was considered to be aligned to the 'preparing for a net zero power system' Innovation Challenge as the Project has the potential to make better use of network capacity to enable these technologies to connect, thus supporting supply and demand matching, which addresses the Innovation Challenge.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Project was considered by the Expert Assessors to have clearly identified potential to deliver a net benefit to electricity consumers. The Project has identified this benefit via faster connection times and reducing/deferring reinforcements by better utilising diversity and flexibility, ultimately leading to lower bills and a financial benefit for consumers. One Assessor has additionally noted that the proposed solution could enable the electricity system to be operated at lower costs through improved use of connected resources. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Project was considered by the Expert Assessors to involve network innovation as it is proposing to improve the connection arrangement process to allow more renewables and flexible resources to connect to the grid faster. This was considered a key aspect of the transition to net zero. Additionally, the Project involves improved use of data to determine the ability to connect and make use of existing and future network, this was considered to be a key part of a future open digitalised energy system and was considered to involve network innovation. The Expert Assessors therefore considered the Project to meet this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Project was not considered by the Expert Assessors to be undermining the development of competitive markets. The Project will enable more efficient connection to the network through increased data transparency. If successful, this will enhance the competition in provision of flexibility services via an easier access to the grid. Additionally, this increased data transparency for improving grid connections should increase the opportunity for competitive or commercial services to develop. The Expert Assessors therefore considered the Project to meet this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Project was considered innovative and novel by the Expert Assessors because it explores a new way of dealing with customer connection requests through better use of data, which goes well beyond business as usual practice and could unlock benefits across all Distribution Network Operators (DNOs). The Expert Assessors also noted that the approach of data analysis is also risky because it may not reveal additional benefits and that the approach to queue management was novel.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to have participation from a sufficient range of Project Partners to carry out the activities for the Discovery Phase, including networks and an organisation with expertise in data. It was noted that greater detail could have been provided on other key stakeholders and the Project's engagement plan with them in the Discovery Phase. However, overall, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Expert Assessors considered this Project to be providing value for money with the networks requesting very small funding and the expertise of the Project Partners were deemed to be at a reasonable cost. One Expert Assessor highlighted that the value for money, focus and deliverability could have been improved if the Project tested the data driven approach on a Grid Supply Point (GSP) with known challenges. A Project-specific condition was recommended as a result. Overall, the Expert Assessors consider the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The majority of the Expert Assessors agreed that the proposed method and the work plan were well thought through and robust enough to deliver the proposed scope of work. One Expert Assessor, however, noted that the methodology is only set out at a high level, and this does not provide high confidence for delivery in time. A Project-specific condition has been added to help mitigate this concern from the Expert Assessors.

Regulatory barriers identified
No
The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority
FUND
The majority of the Expert Assessors recommended the Project for funding due to the relevance of the issue it seeks to address the potential benefit of accelerating the connection of renewables and flexible resources which is well aligned to the transition of the power system to net zero. One Expert Assessor has however noted while the issue and challenge area are important and worthy of research, the Project structure of the Discovery Phase could have included greater detail. However, the majority of the Expert Assessors recommended this Project for SIF Funding.

Recommended Project specific conditions
Prior to the completion of the Discovery Phase, the Funding Party must provide a justification to the monitoring officer as to why the Project has not chosen to undertake Project testing at a grid supply point with known challenges.
Prior to the completion of the Discovery Phase, the Funding Party must provide to the monitoring officer an explanation on how the outputs and learnings from the Project will be shared with and made available to other network users, such as other networks and smaller network users.

6.2.8 10061160, Artificial Forecasting, Initial Net Funding Requested £126,722

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
NORTHERN POWERGRID (NORTHEAST) PLC	15,000	14,999	1

UK POWER NETWORKS (OPERATIONS) LIMITED	3,700	3,699	1
FACULTY SCIENCE LIMITED	140,800	14,080	126,720

Submitted Project description

Harnessing the power of machine learning and readily available data to develop the dynamic load forecasts and predictive modelling approaches that an active low carbon DSO network requires.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Expert Assessors considered this Project to have met the Innovation Challenge because it seeks to investigate the prospects for using innovative Artificial Intelligence (AI) based approaches to augment short-term load forecasting capability. In turn, flexibility will become more realistic as a reinforcement option, and the available capacity in the network for new low-carbon loads will expand, increasing the speed, and lower the cost, of decarbonisation. This was considered by the Expert Assessors as being directly related to the aims and objectives of the 'preparing for a net zero power system challenge' and therefore met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Expert Assessors considered the Project to have sufficiently identified potential to deliver a net benefit to electricity consumers in line with the SIF objectives. Broadly, these have been identified as net benefits to the cost of delivering a reliable network, with the prospects of emissions benefits by improving the connections and utilisation of low carbon technologies connecting to the network. This will be achieved by improving load forecast capabilities. However, it was noted by one Expert Assessor that the benefits case should be further developed during the Discovery Phase, with more detailed explanation of how the methodologies under investigation will manifest themselves in direct

benefit to the system and consumers. Despite this, overall, all Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Project was considered by all Expert Assessors to involve network innovation because it seeks to take a new AI-driven approach to forecasting across the network and beyond existing forecasting methods. This forecasting approach was considered to involve network innovation because it has the potential to support more efficient and effective network planning. Additionally, the Project's focus on training and testing machine learning algorithms to produce reliable load forecasts at EHV-to-HV transformation points, suitable for the shorter-term forecasting DSO systems will require, was considered to involve network innovation. The Expert Assessors all considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Project was not considered by the Expert Assessors to undermine the development of competitive markets, particularly as a range of DNOs are involved which should facilitate the development of common approaches and delivery across different regional geographies. The Expert Assessors have noted that the Project has prospects of stimulating a more competitive market by enhancing the assessment of energy network load requirements and making this information available to others. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Expert Assessors considered the Project to be innovative and have the potential use of Artificial Intelligence techniques in a novel way to solve a real-

world problems. However, the fine details of the Artificial Intelligence techniques to be deployed was only discussed at a fairly high-level. The Expert Assessors considered this level of detail to be sufficient for it be considered to have met this Eligibility Criteria but noted that clearer communication of the techniques that the Project is using would have strengthened the Application. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered the Project to include participation from a sufficient range of stakeholders for delivery of the Discovery Phase. Notably because the Project has the core users of the product (two distribution network operators, covering multiple licensees, and the technology developer) on board. There is some description of a wider range of stakeholders who will be engaged through the Project that should be exploited to realise the full potential of load forecasting for customers of the networks, in addition to the core network functions themselves. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Project was considered by the Expert Assessors to deliver value for money with the costs savings described. The Expert Assessors also considered the Project to be costed competitively and appropriately for the works described in the Discovery Phase.

The Expert Assessors did note that the costs of developing and implementing the AI techniques compared to counterfactual approaches has been mentioned in relation to the business as usual approach presently used (engineering resources), but that the Project should also make assessment of any novel counterfactual approaches that could be used ahead of presuming the preferred solution. A Project-specific condition has been recommended for the Project to

include this analysis by the end of the Discovery Phase, and all Expert Assessors considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The Project was considered by the Expert Assessors as having a robust methodology which gives confidence that it will be capable of progressing in a timely manner because the Project plan is clearly set out with three work packages defined with costs, leads and objectives. Milestones were identified and costed. The approach to Project management and risk management was considered clear and should ensure a well-run project. The Expert Assessors did consider that more detailed explanation of the AI techniques to be investigated would have enabled better assessment of whether the full scope of work was achievable with the given time and resources. However, all Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

No

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority

FUND

The majority of the Expert Assessors consider the Project to be reasonably compelling. As low carbon technologies connect to low voltage system, there is the need to extend existing load forecasting methods for improved accuracy and to support flexible dispatch, the subject of the project therefore merits investigation. The need and benefits case has been identified reasonably well, although at high level.

The Expert Assessors noted that the Application could have more clearly articulated what is meant by the application of AI methods (which covers a very wide range of approaches). The details of the AI technique (such as Neural Network, Genetic Algorithm, Expert Systems, Fuzzy Logic etc) to be investigated were not mentioned specifically, which could have an impact on costs and value of the solution.

Overall, the Expert Assessors considered it to be directly related to the Innovation Challenge and considered Eligibility Criteria 1 to have been met because it is examining opportunities to augment short-term load forecasting capability, which could increase the use of flexibility in the transition to net zero. This was considered by the Expert Assessors to be network innovation and to have clearly identified a potential to deliver a net benefit to electricity consumers through a reduction in reinforcement costs and improved network efficiency. The Expert Assessors considered the Project to have participation from a sufficient range of stakeholders for the Discovery Phase. The Expert Assessors also considered the Project to have been costed competitively and to be providing value for money.

Recommended Project specific conditions

Prior to the completion of the Discovery Phase, the Project must submit to the monitoring officer a description of the various AI techniques under consideration, along with their strengths and limitations compared to other potential novel counterfactual approaches.

6.2.9 10061242, Power Block, Initial Net Funding Requested £42,355

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
UK POWER NETWORKS (OPERATIONS) LIMITED	22,800	4,706	18,094
NORTHERN POWERGRID (NORTHEAST) LIMITED	2,000	1,999	1
GRID EDGE LIMITED	26,955	2,695	24,260

Submitted Project description

Commercial buildings are currently an untapped source of energy flexibility for the networks. This project looks to unlock the value and increased participation of commercial buildings in the flexibility market.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Expert Assessors considered the Project to have addressed the Innovation Challenge and therefore meeting this Eligibility Criteria because it aims to develop a new flexibility service which is tailored to commercial buildings. To date, commercial premises have not been used for this purpose and the Expert Assessors considered this to be an untapped source of flexibility. The Expert Assessors also considered this Project to support a potential decarbonisation solution without the need for significant reinforcement. Therefore, the Expert Assessors considered this Project to have addressed the accessing grid or system support from novel supply and demand side source's theme of the Innovation Challenge.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Project was considered by the majority of the Expert Assessors to have identified potential to deliver a net benefit to electricity consumers in lower system costs through reduced network investment and then some financial savings to targeted commercial buildings.

However, it was noted by one Expert Assessor that the benefits case would have been strengthened with more ambitious benefits and greater detail on how this Project would provide additionality over current projects and/or services or how the associated benefits from the creation of new services could have the potential to deliver a net benefit to electricity consumers. It was also noted that there are other benefits which the Project did not cover which would have strengthened the

benefits case for the Project, e.g. the potential revenues generated from providing flexibility services. Whilst the benefits could have been more clearly described, the majority of Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered this Project to involve network innovation because it explores novel interaction between DNOs and commercial customers through flexibility arrangements. This was considered to involve network innovation because the Project is examining ways commercial flexibility can be unlocked as well as the creation of new flexibility markets, which were considered to be key aspects of a net zero power system.

One Expert Assessor noted that the application could have provided a clearer justification in simpler terms to support the Application.

As a result, the Expert Assessors considered this Project to have met the Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors did not consider this Project to be undermining the development of competitive markets because it supports the development and integration of commercial demand side response into the market. This was considered to represent the potential to stimulate competitive markets. One Expert Assessor noted that greater detail on how the Project is contributing more broadly to the development of new knowledge and markets would have strengthened the Application.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

Two of the Expert Assessor considered this Project to be innovative and novel. These two Expert Assessors considered the Project innovative and novel because demand side response is difficult to integrate into existing regulatory grid management processes and the Project proposes a potential solution to do this.

One Expert Assessor did note that the Application does not provide a strong justification for why the project is risky and highly innovative and did not consider the Project to have met this Eligibility Criteria. This Expert Assessor considered the Application to lack sufficient detail on how the buildings will be controlled and noted that there are aggregators already active in the GB market today that actively control commercial loads to provide flexibility services.

However, the majority of Expert Assessors considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered this Project to include participation from a sufficient range of stakeholders for this Eligibility Criteria to be met because it includes two Distribution Network Operators (DNOs) and a commercial partner who are energy efficiency-focused organisations. One Expert Assessors stated that the Application would have been strengthened by the inclusion of a specialist delivery partner (e.g. a relevant consultancy) to better guide/inform the Project.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

Two of the Expert Assessors considered the Project to provide value for money because the overall project costs were considered appropriate and reasonable for the Discovery Phase. These Expert Assessors also noted the benefits of the Project's proposed solution as outweighing the costs of the Project. It was also noted that the costs for the Project Partners were appropriate for the Discovery Phase activities.

One of the Expert Assessors questioned the likelihood of new learnings from the Project and, as a result, did not consider the Project to have met this Eligibility Criteria because they considered the value for money to be limited.

However, the majority of Expert Assessors considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The Expert Assessors considered the Project's methodology to be sufficiently robust and to provide confidence that it will be capable of progressing in a timely manner because the Project provided a high-level breakdown of the work package structure and risks for the Discovery Phase, which provided an overview of the work planned for the Discovery Phase. The Expert Assessors noted the outputs could be provided in greater detail but still considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

NO

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority

FUND

The majority of the Expert Assessors agreed this Project be recommended for SIF Funding. The Expert Assessors considered the Project to be examining a new innovative area for distribution network operators and the integration of commercial demand side response into energy markets. The Expert Assessors overall considered the Project to be an innovative and novel project which is costed competitively and offers value for money. The Expert Assessors also

considered the Project plan to be well articulated and had confidence that the Project would be able to deliver in the Discovery Phase.

However, it was noted by one Expert Assessor that the Application could have been more clearly articulated, specifically around the benefits for consumers and where the innovations within the Project are.

Overall, the majority of the Expert Assessors considered the Project to have met the Eligibility Criteria and have therefore recommended the Project for SIF Funding.

Recommended Project specific conditions

Prior the completion of the Discovery Phase, the Funding Party must engage with Innovate UK's Net Zero Heat and Transforming Construction funding programmes to discuss how learnings from projects within those programmes can help inform the Project. Innovate UK can facilitate an introduction if necessary.

6.2.10 10061340, CReDo+ Climate Resilience Demonstrator (extension to new climate risks), Initial Net Funding Requested £112,284

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
UK POWER NETWORKS (OPERATIONS) LIMITED	20,200	10,232	9,968
STFC - LABORATORIES	31,000	6,200	24,800
COMPUTATIONAL MODELLING CAMBRIDGE LIMITED	36,075	3,608	32,467
CONNECTED PLACES CATAPULT	56,311	11,262	45,049

Submitted Project description

CReDo+ (Climate Resilience Demonstrator - extension to new climate risks) is a development on the original CReDo decision support tool by incorporating newly developed models of DNO asset failure risk under extreme weather conditions. This

will enhance the ability of network operators and wider connected asset owners to build systemic climate resilience.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Expert Assessors considered this Project to have addressed the Innovation Challenge and therefore met this Eligibility Criteria because it has the potential to support network asset management and replacement decision making to enhance resilience in extreme weather conditions. The Project was considered to align with the Innovation Challenge's focus on supporting system integration, including digital interfaces, through the development a digital twin of the energy system to explore how infrastructure interdependencies impact system resilience, and how data sharing can improve overall system resilience.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Expert Assessors considered this Project to have identified a clear benefit for electricity consumers through lower capital and operating costs due to better resource allocation during extreme weather events. The ability to predict asset upgrades more accurately taking into account the changes from the climate was considered by the Expert Assessors to be of real value and demonstrate a potential to deliver savings and greater reliability to the network. The Expert Assessors considered more efficient operations to lead to reduced system costs for consumers, demonstrating a financial benefit. In addition, there are clear social benefits associated with consumers receiving better warning of extreme weather events. The Expert Assessors therefore considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered the Project to involve network innovation which builds on learnings from previous projects. This Project proposes developing a tool and modelling scenarios which assess network asset failure risk against new climate risks. The implementation of the risk models in the CReDo digital twin would provide better predictability, robustness, and quantification of uncertainties under a variety of extreme weather conditions. This was considered to involve network innovation because it's an approach to network management which would allow for more efficient planning, use and operation of the network ahead of and during extreme weather conditions, which would benefit consumers. The Expert Assessors considered this to be network innovation, thereby fulfilling this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors considered this Project to have met this Eligibility Criteria and therefore not undermine the development of competitive markets. This is because the Project has stated that it will make the solution developed by the Project available to other utilities to make their own implementation decisions. We agree that the Project demonstrates a potential to improve the overall resilience of the system, which the market is a part of, and represents opportunities for the development of competitive markets.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Project was considered by the Expert Assessors to be innovative and novel as it is exploring the impact of a changing climate which is not in scope for current or traditional network planning and operating approaches. Furthermore, the Project will be developed to connect a digital twin across all infrastructure networks to model impacts which is ambitious and risky and requires innovation. The Expert Assessors therefore considered this Project to be innovative and novel, thereby meeting this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered the Project to include participation from a sufficient range of stakeholders because the expertise is suitable for developing the modelling functionality and the Project Partners demonstrate knowledge in climate characteristics and asset management. The Expert Assessors therefore also considered the consortium formation to be ideally suited to deliver a project of this nature.

The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Expert Assessors considered the Project to be appropriately costed and to provide value for money with competitive rates quoted, therefore meeting this Eligibility Criteria. The Expert Assessors also considered value for money to be demonstrated because the Project Partners are providing significantly above the required 10% compulsory contribution. In addition, the Project has communicated its intention for the tool to be made open source, creating an additional opportunity for the Project to provide value for money.

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.

Eligibility Criterion met

The Expert Assessors considered the Project to have a robust methodology which gave them confidence that it will be capable of progressing in a timely manner because there is a well-defined and coherent Project plan in place. The Project is also bringing an already established partnership format and is focusing on an area which is an extension of the scope of existing piece of work which mitigates some development risks and risks of establishing a new partnership. The Expert Assessors consider the Project to have provided a robust Project plan with clearly

defined work packages, highlighting key objectives, success criteria and costs. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

No

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority

FUND

The Expert Assessors considered this Project to have met all Eligibly Criteria and therefore recommend for funding as it will enable exploration of new and credible climate change conditions on existing network assets and enable decision making for appropriately scoped design requirements for new assets and materials and operational approaches. The consortium formation is well suited to deliver the project, and the benefits of the solution could be significant. Willingness to share the outcomes with other utilities like water was welcomed by the Expert Assessors and demonstrated positive whole systems thinking. The Project was also considered to be costed competitively, to provide value for money and a clearly identified potential to deliver a net benefit to electricity consumers. The Expert Assessors also have confidence that the Project will be capable of progressing and delivering its planned outputs in the Discovery Phase.

Recommended Project specific conditions

Prior to the end of the Discovery Phase, the Funding Party must engage with the Ofwat Innovation Fund to discuss the applicability of its proposed solution to the water industry. The Funding Party must provide a summary of this engagement to the monitoring officer prior to the end of the Discovery Phase. Innovate UK can facilitate an introduction if necessary.

7 SIF Round 2 Discovery Phase – Accelerating decarbonisation of major demands

Decarbonisation of heat and transport, at the pace required by the net zero commitment and the sixth carbon budget, is a significant challenge. For example, fewer than 30,000 heat pumps were installed in 2020, rapid scale up of deployment is needed to get to the government target of 600,000 installations by 2028²⁹. While this is a national target, there are more aggressive targets at the devolved level, such as in Scotland where by 2030 at least 1 million homes must convert to zero emissions heating³⁰. Similarly, in terms of heat networks which deliver c. 2% of total heat demand currently, this needs to scale rapidly to be low-carbon and distributing a fifth of the heat demand by 2050³¹.

On the transport decarbonisation front, the current Electric Vehicle (EV) cars as a proportion of total sales was c. 12% at the end of 2021³². Rapid increase in this figure is required to meet the policy commitment of ending new petrol and diesel cars and vans by 2030³³. There are similar accelerated efforts required for heavy good vehicles (HGVs) and for decarbonising the maritime and aviation sectors.

Whilst there are several dimensions to help reach these policy commitments, including reducing relative cost of technology, improving supply chain readiness and more consumer focused business models, this challenge is particularly focused on the effective connection, integration, and energy system operational aspects of these major energy demands.

Research by the Scottish Government on network constraints³⁴ highlights the scale of the connection and integration challenge. It shows that peak load increases for new developments from switching to a heat pump and having EV charging can be 4-5 times the current peak estimates. This could lead to increased costs for network reinforcement and delays to connection times, depending on the level of network constraint in each area.

A smarter and more flexible approach to integrating decarbonised heat and transport technologies has been analysed extensively. Whole systems modelling by the Carbon

²⁹ <https://www.gov.uk/government/publications/heat-and-buildings-strategy>

³⁰ <https://www.gov.scot/publications/heat-buildings-strategy-achieving-net-zero-emissions-scotlands-buildings/pages/3/>

³¹ <https://www.gov.uk/government/news/uk-government-announces-major-expansion-of-heat-networks-in-latest-step-to-power-homes-with-green-energy>

³² <https://www.zap-map.com/ev-market-statistics/>

³³ <https://www.gov.uk/government/publications/transport-decarbonisation-plan>

³⁴ [Supporting documents - Electricity network constraints and the 2024 New Build Heat Standard: research - gov.scot \(www.gov.scot\)](#)

Trust and Imperial College³⁵ estimate that integrating flexibility across heat (including in heat networks), power and transport can reduce the cost of meeting net zero by up to £16bn a year by 2050. In addition to flexibility, the value of energy efficiency is also documented- Imperial College for the Committee on Climate Change³⁶ estimate that this can save up to an additional £6bn a year across the system.

There has been increased activity in smart, efficient, and flexible systems, including via local area energy planning, data driven and digitalised demand planning, demand side flexibility development (both technology and market approaches), building retrofits, behavioural change, and planning for heat network zoning. Whilst these activities are important individually, it is critical for these to work together in a coordinated, sequenced and consumer focused manner for the deployment targets outlined above to be met cost effectively. This is the key focus of this challenge.

Energy networks are well placed to innovate collaboratively on these aspects given their key role in enabling the effective connection and integration of these demands.

7.1 SIF Discovery Phase – accelerating decarbonisation of major demands - Summary

This section covers the assessment of round 2 Discovery Phase Applications received into the 'accelerating decarbonisation of major demands' Innovation Challenge³⁷.

For the Discovery Phase, 18 Applications were submitted to Innovate UK through the Innovation Funding Service (IFS) portal by the closing deadline of 11am 23November 2022 and are listed below. In order to protect the early stage innovation and IPR, unsuccessful Projects have been redacted from final published version.

Project reference number	Project name	Funding licensee	Total Project costs (£)	Total Project contribution (£)	Total SIF Funding requested (£)	Recommended for funding (Yes/No)
10055401	RetroMeter	ELECTRICITY NORTH WEST LIMITED	164,877	16,796	148,081	Yes
10058729	LEO-N	SOUTHERN ELECTRICITY	157,506	15,750	141,756	Yes

³⁵ <https://publications.carbontrust.com/flex-gb/report/>

³⁶ <https://www.theccc.org.uk/wp-content/uploads/2018/06/Imperial-College-2018-Analysis-of-Alternative-UK-Heat-Decarbonisation-Pathways.pdf>

³⁷ <https://www.ofgem.gov.uk/publications/strategic-innovation-fund-round-two-innovation-challenges>

		POWER DISTRIBUTION PLC				
10059404	Tyseley Environmental Enterprise District	NATIONAL GRID ELECTRICITY DISTRIBUTION (SOUTH WEST) PLC	404,629	259,413	145,216	Yes
10060736	Planning Regional Infrastructure in a Digital Environment (PRIDE)	NATIONAL GRID ELECTRICITY DISTRIBUTION	145,159	14,518	130,641	Yes
10061146	Inform	NORTHERN POWERGRID (NORTHEAST) PLC	144,506	21,310	123,196	Yes
10061241	Integrated Hydrogen Transport Hubs	WALES & WEST UTILITIES LIMITED	150,189	15,020	135,169	Yes
10061292	Proportional Investment Of Networks in Energy Efficiency Retrofit (PIONEER)	NATIONAL GRID ELECTRICITY DISTRIBUTION	143,179	17,733	125,446	Yes
10061308	Park & Flex	UK POWER NETWORKS (OPERATIONS) LIMITED	121,500	12,946	108,554	Yes
[REDACTED]						
10061338	Indus	UK POWER NETWORKS (OPERATIONS) LIMITED	171,417	30,068	141,349	Yes
10061339	Heatropolis	UK POWER NETWORKS (OPERATIONS) LIMITED	177,993	31,798	146,195	Yes
10061341	Full Circle	UK POWER NETWORKS (OPERATIONS) LIMITED	122,574	14,121	108,453	Yes

10061544	Watt Heat	UK POWER NETWORKS (OPERATION S) LIMITED	109,160	22,463	86,697	Yes
10061568	Lightspeed	UK POWER NETWORKS (OPERATION S) LIMITED	170,290	29,738	140,552	Yes
10061572	Heat Risers	UK POWER NETWORKS (OPERATION S) LIMITED	123,080	30,739	92,341	Yes
10061578	Calfacto Latent Energy	SOUTHERN GAS NETWORKS PLC	91,893	9,424	82,469	Yes
10061606	Net Zero Community Energy Hubs	SOUTHERN GAS NETWORKS PLC	90,603	9,288	81,315	Yes
10061608	Carnot Gas Plant	SOUTHERN GAS NETWORKS PLC	104,793	10,841	93,952	Yes

7.2 Evaluation of Applications

7.2.1 10055401, RetroMeter, Initial Net Funding Requested £148,081

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
ELECTRICITY NORTH WEST LIMITED	42,132	4,639	37,493
ENERGY SYSTEMS CATAPULT LIMITED	59,170	5,917	53,253
ENERGYPRO LIMITED	43,200	4,320	38,880
THE SOCIETY FOR THE REDUCTION OF CARBON LIMITED	19,200	1,920	17,280
MANCHESTER CITY COUNCIL	1,175	0	1,175

Submitted Project description
RetroMeter will provide and demonstrate a consistent methodology to accurately measure the energy and cost savings of retrofit energy efficiency measures,

unlocking pay-for-performance financing, increasing uptake and leading to reduced costs for consumers and additional flexible services for the DNO.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

All Expert Assessors considered the Project to address the Innovation Challenge set by Ofgem. This is because it aims to provide an innovative operational template for the upgrading of the national housing stock in a diverse population of homeowners, renters, private landlords, housing associations, councils and others. The Project involves the innovative use of data to establish efficacy and financial reward and so it motivates implementation. Smart meter retrofit was cited by one Expert Assessor as being one of the challenges to decarbonisation in the UK. Additionally, it was noted has the potential to reduce customer load and input into DNO investment decision making. This was considered to be aligned with the Innovation Challenge's aims of demonstrating coordination between flexibility and energy efficiency. Overall, the Project was considered to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

All Expert Assessors considered that the Project has clearly identified a net benefit to electricity consumers. It was noted that these will be in the form of reduced bills and/or improved comfort through enabling energy efficiency upgrades for residential consumers in addition to unlocking new funding for retrofit opportunities. This was considered as a potential financial benefit. Overall, the Project was considered to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

All Expert Assessors considered the Project to involve network innovation. This is because it will provide the proven financial and operational framework for networks to use, it will feed new data into grid reinforcement and has a new

approach to retrofit which may reduce overall demands on the grid. This was considered to involve network innovation because it could feed new data into grid reinforcement decision and could reduce overall demands on the network. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

All Expert Assessors considered this Project to not undermine the development of competitive markets because it aims to enable energy efficiency measures to be undertaken more easily and efficiently and does not create a new market. The Expert Assessors did not consider there to be any distortion of the market proposed by the solution and the Project has communicated it will share its findings with other networks. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

All Expert Assessors considered the Project to be innovative, novel and risky. The approach to energy efficiency performance proposed by the Project was considered new. Feeding retrofit information into or linking it to Distribution Network Operator decision-making was considered novel. Two Expert Assessors noted that similar attempts have been made previously in this area and have proved unsuccessful. Therefore, the project was considered by the Expert Assessors to involve risk. Overall, the Project is considered to have innovative aims and the difficult nature of retrofit and attributing energy reductions to retrofit was noted. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

All Expert Assessors considered that the Project to include participation from a sufficient range of stakeholders for the Discovery Phase. This is because a

network operator, a data expert, an energy efficiency promoter and a council are involved. It was noted that the consortium has the appropriate composition, and skill sets required for the Project. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

All Expert Assessors considered the Project to provide value for money and as being costed competitively. This is because the Expert Assessors considered the Project's objectives to be clearly outlined and that the Project demonstrated potential for benefit by both networks and consumers.. All Expert Assessors commented that costs were reasonable for the Project scope and the ambitiousness of the Project, as was the allocation to each Project Partner. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

All Expert Assessors considered the Project to be well thought through with a robust methodology which gave them confidence that it will be capable of progressing in a timely manner. This is because the work plan was considered well designed and achievable and the risks well mitigated. It was also noted that the Project milestones were well defined and the majority of the work is front loaded in the Phase which provides the Project with some flexibility. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

NO

The Project nor the Expert Assessors identified regulatory barriers which could impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority

FUND

All Expert Assessors recommended this Project for SIF Funding. The Project was considered an opportunity to design a framework and methodology for the nationwide implementation of energy efficiency improvements in the housing stock. It was considered to have the added benefit of opening up the retrofit market and to provide a robust and data-based financing method via energy suppliers so that consumers pay for the measures through savings in their energy bills.

The Project was considered to be clearly defined with milestones and outputs clearly articulated and to represent a net benefit to electricity consumers. The Project team was considered to have a good mix of skills relevant to the delivery of the Project. It was noted that providing further detail on how the DNO might utilise this information would have strengthened the Application, as well as how consumer behavioural responses may impact this Project. Overall, the Project was recommended for SIF Funding by all the Expert Assessors.

Recommended Project specific conditions

Prior to the end of the Discovery Phase, the Funding Party must provide to the monitoring officer consideration as to how consumer behavioural responses may inhibit or impact the implementation of this Project and how the Project plans on responding to them.

Prior to the end of the Discovery Phase, the Funding Party must provide to the monitoring officer consideration for how the DNO might utilise or leverage the information gained as part of this Project to increase network efficiency. For example, to fund strategic retrofit projects or integrating the data into reinforcement decisions.

7.2.2 10058729, LEO-N, Initial Net Funding Requested £141,756

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
SOUTHERN ELECTRICITY POWER DISTRIBUTION PLC	23,154	15,750	7,404
THE LOW CARBON HUB IPS LTD	47,281	0	47,281

UNIVERSITY OF OXFORD	32,728	0	32,728
OXFORDSHIRE COUNTY COUNCIL	7,257	0	7,257
BARINGA PARTNERS LLP	39,981	0	39,981
OXFORD CITY COUNCIL	7,105	0	7,105

Submitted Project description

LEON is looking at how careful coordination of a new approach to decarbonising homes and businesses combined with coordinated local energy planning can accelerate net zero.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Expert Assessors considered this Project to have addressed the Innovation Challenge through the optimisation of supply and demand at the local, low voltage network level. It was considered that this could engage more consumers in proactively decarbonising and optimising existing infrastructure and reducing reinforcement costs. This was considered to be aligned with one of the aims of the Innovation Challenge which is to demonstrate coordination between flexibility, energy efficiency and regional/local planning activities. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

All Expert Assessors considered this Project to have clearly identified potential to deliver a net benefit to electricity consumers by reducing their energy demand, sharing resources at community level, and reducing the need for network reinforcement. Opportunities for participation in flexibility and other services were also considered by the Expert Assessors. This Project also looks to explore new funding and financing options and focuses on developing new tools for community trading and sharing of energy. These approaches were considered to represent financial benefits to consumers, which were considered to have been well articulated with sufficient metrics.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

All Expert Assessors considered this Project to involve network innovation because of its focus on the low voltage network level at the community level and getting better use of existing infrastructure through flexibility responses to shifts in consumption patterns. This was considered to demonstrate network innovation in its approach of focusing on aggregating demand, making better use of local generation, flexibility trading, and reducing peak demands on the network through building fabric changes.

The Expert Assessors considered this Project to have met the Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

All Expert Assessors did not consider this Project to be undermining the development of competitive markets because it is developing new products and services for a nascent market which could play a role in the low carbon transition. The Project was also considered to have the potential to enhance the number of market actors by enabling more communities to trade with the network and with each other, whether for flexibility or capacity, leading to more competition.

The Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

All Expert Assessors considered the Project to be innovative and risky because it takes an innovative systems approach at the low voltage level to investigate and identify potential solutions that will help de-risk the net zero transition for consumers. It also aims to build new institutional arrangements. Both aspects of the Project were considered innovative. The Project was also considered risky as it challenges existing network planning and requires changes in the approaches of both DNOs and local Authorities to achieve success.

The Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered the Project Partners to be sufficient for the Discovery Phase activities because the expertise is suitable for developing the idea articulated, and includes a distribution network operator, energy system experts, a local community focused energy company, two local authorities and market experts. These were considered to all be stakeholders required to fully explore the problem space and delivery solutions in the Discovery Phase.

This was considered by the Expert Assessors to have met the Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

All Expert Assessors considered the Project to be delivering value for money and be costed competitively because the funding was considered well balanced between Project Partners and appropriate and consistent with the scope of the Project. One Expert Assessor noted that day rates of one Project Partner were at the high end of expectations, however they still considered the Project to be delivering value for money and as being costed competitively due to the subject matter expertise of the Project Partner. The Project also achieves the minimum contribution from the Project Partners and the costs were considered appropriate and good value for the proposed scope.

This Project was considered by the Expert Assessors to have met the Eligibility Criteria.

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.

Eligibility Criterion met

The Expert Assessors considered the Project to have a robust methodology which gives confidence that it will be capable of progressing in a timely manner because the milestones have been well developed and the steps outlined are clear and

flow logically. The risk register highlights many risks with mitigation showing the Project has been well thought through.

The Project was considered to be well constructed and planned. Resources have been identified and allocated appropriately to the various work packages.

The Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

NO

The Project nor the Expert Assessors identified regulatory barriers which could impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority

FUND

All Expert Assessors have agreed that this Project meets all eligibility criteria, and all have recommended this Project for funding. The application is relevant to the 'Accelerating decarbonisation of major demands' challenge as it explores building and community level decarbonisation pathway optimisation through a systems approach. This Project does not undermine the development of competitive markets. The Project Partners are considered to be sufficient for the Project because they hold the expertise for developing idea. The Project is also deemed good value for money and has given all Expert Assessors confidence that it can be delivered in a timely manner.

Recommended Project specific conditions

The Expert Assessors have not recommended any Project-specific conditions.

7.2.3 10059404, Tyseley Environmental Enterprise District, Initial Net Funding Requested £145,216

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
NATIONAL GRID ELECTRICITY DISTRIBUTION (SOUTH WEST) PLC	13,248	1,325	11,923
NATIONAL GRID ELECTRICITY SYSTEM OPERATOR LIMITED	4,785	478	4,307
UNIVERSITY OF BIRMINGHAM	269,444	245,895	23,549
PINNACLE POWER LIMITED	29,750	2,975	26,775
SSE UTILITIES SOLUTIONS LTD	31,302	3,130	28,172
TYSELEY ENERGY PARK LIMITED	20,400	2,040	18,360
EQUANS SERVICES LIMITED	35,700	3,570	32,130

Submitted Project description
<p>This project is an investigation of how a complex, multi-vector energy system with significant local generation and storage can be developed to be optimally resilient and deliver best value to a mixed local community of industry and domestic consumers, alongside ongoing regeneration of the area.</p>

Eligibility Criterion 1: Projects must address the Innovation Challenge set by Ofgem.
Eligibility Criterion met
<p>All Expert Assessors considered the Project to have addressed the Innovation Challenge set by Ofgem. The Expert Assessors considered the multi-vector approach to be directly relevant to the Innovation Challenge because it addresses the difficult questions about routes to decarbonising major energy demands and focuses on regional and local energy planning activities. The Project was considered to be able to potentially provide valuable lessons for integration across heat, power, storage and transport at local scale. This could optimise infrastructure investments, improve flexibility in supply and increase efficiency. Overall, the Project was considered to have met this Eligibility Criteria.</p>

Eligibility Criterion 2: Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers
Eligibility Criterion met

The majority of Expert Assessors considered the Project to have identified a net benefit to electricity consumers. It was considered that the Project will provide benefits to heat and electricity consumers through a more effective use of existing resources, including assessment of options for heat network infrastructure using waste heat sources. The Expert Assessors believe that the Project could provide a potential financial benefit to a wide range of consumers including fuel-poor households, local businesses and the general benefit of enhanced opportunity for economic growth in the green business space. Overall, the Project was considered to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

All Expert Assessors considered the Project to involve network innovation. This is because the Project is examining the integration of heat, power and potentially hydrogen at local scale with the aim of improving resilience, affordability and assisting in decarbonisation. The Project is centred in an area with grid constraints which could be alleviated to some extent by improved flexibility. This Project could contribute to improved flexibility through making best use of local power generation, hydrogen, storage, and heat network potentials. Overall, the Expert Assessors considered the Project to have met this eligibility criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

All Expert Assessors considered the Project to not be undermining the development of competitive markets. It was noted that the Project could potentially open up new market opportunities for systems' technology components and competitive local services, as well as those for new clean business developments. Overall, the Project was considered to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

All Expert Assessors considered the Project to be innovative novel and risky. The Project is considered innovative, because it seeks to integrate energy vectors and network infrastructures at local scale to capture system efficiencies and to provide affordable, clean energy services. It is considered novel in organising practical collaboration between a wide range of cross-sector interests with necessary expertise in network operations, energy supply, academic knowledge of energy systems and scenario modelling, and local authority planning and development. It was considered risky because there have been numerous projects proposed in the privatised energy industry (e.g. large-scale combined heat and power) which have struggled because of the difficulties in obtaining agreement between the necessary participants required to make the scheme successful. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

All Expert Assessors considered the Project to include participation from a sufficient range of stakeholders. This is because the Project includes those needed for effective sharing and generation of knowledge about progressing from components of a potential decarbonised system to integrated solutions. Notably, it combines the expertise and project management skills of network operators with that of the local authority in urban development and regeneration, as well as the University of Birmingham and commercial operators' energy systems and markets expertise. Overall, the Project was considered to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

All Expert Assessors considered the Project to provide value for money and as being costed competitively. The Expert Assessors noted that the Project represents value for money because it is focusing on an area of considerable difficulty in energy decarbonisation for heat and transport where the benefits would outweigh the costs of the Project. The costs were considered as reasonable

relative to the range, and scale, of tasks to be completed. The Project was considered as being costed competitively because it is expecting to employ wide-ranging knowledge from across the business and local government in addition to the inclusion of the free-of-cost academic involvement. Overall, the Project was considered to have met this Eligibility Criteria.

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.

Eligibility Criterion met

All Expert Assessors considered the Project to have a robust methodology which gave confidence that it will be capable of progressing in a timely manner. This is because the Project plan demonstrates a breakdown of tasks with clear assignment of responsibilities to each Project Partner. The Expert Assessors noted that the consortium should be capable of progressing in a timely manner, given the specified work packages against the timetable for completion, and consideration of risks and risk mitigation associated with the short timescales. Overall, the Project was considered to have met this Eligibility Criteria.

Regulatory barriers identified

NO

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority

FUND

All Expert Assessors recommended the Project for SIF Funding. This is because the Project brings forward cross-sector collaboration in the Tyseley area where there are difficult technical, environmental and social challenges affecting the energy system. The challenges of grid constraints and fuel poverty in the area were noted by the Expert Assessors and the Project addresses the Innovation Challenge through local systems integration which was also considered innovative and risky. The Project has potential to impact an area of the city where solutions could generate meaningful new investment and regeneration, delivering a net

benefit to consumers, and its focus was considered to involve network innovation. Overall, the Project was recommended for SIF Funding.

Recommended Project specific conditions

The Expert Assessors have not recommended any Project-specific conditions for this Project.

7.2.4 10060736, Planning Regional Infrastructure in a Digital Environment (PRIDE), Initial Net Funding Requested £130,641

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
NATIONAL GRID ELECTRICITY DISTRIBUTION	30,176	3,018	27,158
NATIONAL GRID ELECTRICITY SYSTEM OPERATOR LIMITED	8,097	808	7,289
ADVANCED INFRASTRUCTURE TECHNOLOGY LTD	57,600	5,760	51,840
WEST MIDLANDS COMBINED AUTHORITY	49,286	4,932	44,354

Submitted Project description
PRIDE examines how using a digital twin to visualise and model changes to electricity, heat, gas, transport, digital and water infrastructure, can make interdependencies, market opportunities and business cases more visible, therefore ensuring the investment decisions enabling decarbonisation of major loads are efficient and optimised.

Eligibility Criterion 1: Projects must address the Innovation Challenge set by Ofgem.
Eligibility Criterion met
The Expert Assessors considered the Project to have addressed the Innovation Challenge because it was considered to have the potential to deliver a holistic solution for decarbonisation at large public sector sites and at a lower cost to consumers. The Project was considered to be aligned with the Innovation Challenge's focus of more efficient and effective integration of technologies. The Expert Assessors considered the Project to have met the Eligibility Criteria.

Eligibility Criterion 2: Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers
Eligibility Criterion met
The Expert Assessors considered the Project to have clearly identified a potential to deliver a net benefit to electricity consumers via financial benefits. It was

noted that the Project has the potential to bring overall costs down for consumers as the solution proposed by the Project could reduce the need for network reinforcement. This was considered to represent a clearly identified potential to deliver a net benefit to electricity consumers via financial benefits. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered the Project to involve network innovation because the Project is reimagining the process for new connections using an innovative approach. Its approach to the development of a digital twin was considered to be additional to the existing process and this focus was considered to involve network innovation. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors did not consider the Project to be undermining the development of competitive markets because the Expert Assessors considered the Project's approach to the development of a digital twin for various networks and utilities to be encouraging competitive markets and market opportunities. Furthermore, it was also noted that the proposed solution will likely be replicable with other networks, which could lead to additional market opportunities. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Expert Assessors considered the Project to be innovative and risky because the Project's approach of developing a digital twin for various utilities and networks for the identification of interdependencies, market opportunities and business cases has not been attempted before and it relies on the cooperation of

a wide range of stakeholders. This approach was considered by the Expert Assessors to be innovative and risky. It was also noted that the Project was novel as it alters the consideration and processes for network connection applications. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered the Project to have participation from a sufficient range of stakeholders for the activities described in the Discovery Phase. The Expert Assessors noted especially the commitment to receiving other stakeholder feedback via events and the participation of the NHS and York City Council as being beneficial for the Project as its users viewpoints can be received and that large site users are involved. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Expert Assessors considered the Project's costs to be providing value for money and as being costed competitively because the costs provided by the Funding Party and Project Partners were within a suitable range for the activities proposed for the Discovery Phase. Furthermore, the Expert Assessors considered the Project's potential to deliver benefits to consumers as providing value for money against the current approach. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The Expert Assessors considered the Project to have a sufficiently robust methodology for it to be able to progress in a timely manner in the Discovery Phase. The deliverables and Project plan for Discovery Phase were considered to

be clearly presented and demonstrated a reasonable approach to the activities set out for the Discovery Phase. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

NO

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority

FUND

All the Expert Assessors recommended this Project be approved for SIF Funding. They considered the Project to be investigating a problem which has the potential to reduce costs for consumers and users of the network. The Project's approach was considered to involve network innovation and also involve novel and risky approaches. Furthermore, the Project Partners were considered to be reputable and experienced, and with the Project plan, provided the Expert Assessors with confidence that the Project would be able to progress in a timely manner in the Discovery Phase. The Project was also considered to represent a potential net benefit to consumers, costed competitively and represent value for money.

Recommended Project specific conditions

The Expert Assessors have not recommended any Project-specific conditions for this Project.

7.2.5 10061146, Inform, Initial Net Funding Requested £123,196

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
NORTHERN POWERGRID (NORTHEAST) PLC	12,000	1,200	10,800
ENERGY SYSTEMS CATAPULT LIMITED	60,603	11,257	49,346
EA TECHNOLOGY LIMITED	70,053	7,005	63,048

CITY OF YORK COUNCIL	600	599	1
THE NEWCASTLE UPON TYNE HOSPITALS NHS FOUNDATION TRUST	1,250	1,249	1

Submitted Project description

Inform provides an automated energy use and connections estimator to accelerate the decarbonisation of larger sites/non-domestic buildings. This better informs initial scheme development planning.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Project was considered by the Expert Assessors to have addressed the Innovation Challenge because it has the potential to accelerate and support major site installations for low carbon technologies (LCTS) and gain connections faster whilst minimising costs. This was considered by the Expert Assessors to align with one of the aims of the Innovation Challenge which is to develop approaches which reduce overall costs and reduce timescales related to decarbonised heat and transport. The Project was therefore considered to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

All Expert Assessors considered this Project to have clearly identified potential to deliver a net benefit to electricity consumers and gas consumers because the proposed solution could reduce the need for network reinforcement, particularly given the overall assessment of the estate which is looking at demand as well as supply. This could result in system cost savings for consumers.

The financial and environmental benefits were considered to be clearly outlined. It was noted that a greater detail in the quantification of the potential benefits would have strengthened the Application. It was also noted that the ability to speed up network connections and operational benefits were clearly stated,

however it may be beneficial for the Project to also investigate the potential for bottlenecks in the overall analysis process for network upgrades.

Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered this Project to involve network innovation because it explores how to enhance existing connection processes to facilitate larger sites and non-domestic buildings with more informed network connection data and energy use requirements during the development and planning stage. It was noted that this Project's focus demonstrates network innovation because it re-imagines the process for gaining connections and proposes potential improved efficiencies. It was noted that the Application could have been strengthened by providing additional details on the overall size of the target market.

However, all the Expert Assessors considered this Project to have met the Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors did not consider this Project to be undermining the development of competitive markets because it was considered to have the potential to facilitate new markets and outcomes which will likely be applicable to other distribution network operators. It was noted that the Project's approach could result in the facilitation of new competitive markets. The Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Expert Assessors considered the Project to be innovative and novel because it is exploring a more holistic and informed connection process for the development

of larger energy sites. In addition, the Expert Assessors considered that the Project's innovative focus could provide more network efficiency in the network connection process. The Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered this Project to include participation from a sufficient range of stakeholders for this Eligibility Criteria to be met. The Expert Assessors noted that the Project Partners and stakeholders were sufficient for the range of activities set out for the Discovery Phase. The Expert Assessors noted favourably the partnership between York City Council and NHS. The Project has also detailed their engagement with other stakeholders via two events, which was also welcomed. The Project was considered by the Expert Assessors to have met the Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Expert Assessors considered the Project to be delivering value for money and be costed competitively because labour costs are fair with some being higher than average but still within reasonable bounds compared to industry norms. The Expert Assessors also considered the Project to have the potential to deliver significant benefits which outweigh the costs of the Project and, as such, represent value for money. The Project was considered by the Expert Assessors to have met the Eligibility Criteria.

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.

Eligibility Criterion met

The Expert Assessors considered the Project to have a robust methodology which gives confidence to the Expert Assessors that it will be capable of progressing in a timely manner. This is because the work packages and associated deliverables

within the plan are clear and the consortium has a good reputation for project execution. The risk management approach is appropriate but additional details would have strengthened the Application.

Regulatory barriers identified

NO

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority

FUND

All Expert Assessors recommended this Project for SIF Funding. The Application was considered to have addressed the Innovation Challenge as it proposes to improve data availability to support quicker and more efficient decisions for large energy sites during the development stage, a key focus of the Innovation Challenge. The Project has outlined how it will provide additionality to existing work in this space, thereby reducing duplication and providing value for money and has the potential to deliver both financial and environment benefits to end users.

The Project was also considered to be good value for money and gave all Expert Assessors confidence it can be delivered in a timely manner.

Recommended Project specific conditions

The Expert Assessors have not recommended any Project-specific conditions for this Project.

7.2.6 10061241, Integrated Hydrogen Transport Hubs, Initial Net Funding Requested £135,169

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
WALES & WEST UTILITIES LIMITED	10,092	1,009	9,083
RWE GENERATION UK PLC	2,124	213	1,911

GUIDEHOUSE EUROPE LIMITED	132,600	13,260	119,340
PEMBROKESHIRE COUNTY COUNCIL	957	96	861
NATIONAL GRID ELECTRICITY DISTRIBUTION (SOUTH WEST) PLC	4,416	442	3,974

Submitted Project description

The Integrated Hydrogen Transport Hubs project will identify opportunities for the co-location of electrolytic hydrogen refuelling stations and heat demand, where the cost-benefit of waste heat will be assessed in order to minimise the levelized cost of hydrogen for consumers.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

All Expert Assessors considered this Project to have addressed the Innovation Challenge because it seeks to demonstrate the potential of co-locating hydrogen electrolyzers close to potential sites for district heating where there are current issues with constrained renewable generation. This was considered to be directly related to the aims of the Innovation Challenge because the Project focuses on reducing the costs of connecting and operating decarbonised heat. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

All Expert Assessors considered this Project to have clearly identified potential to deliver a net benefit to gas consumers because the outcomes could lead to a reduced requirement to build new network infrastructure which would result in cost savings by consumers. This was considered to represent a financial benefit. There could also be a reduction in the costs of hydrogen production through reduced curtailment costs and environmental benefits by using waste heat, which represents the potential to deliver financial and environment benefits to consumers.

The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

All Expert Assessors considered this Project to involve network innovation because it examines the use of localised hydrogen production for multiple uses, as well as electrolyser waste heat to provide district heating and thus increases the availability and reduces the cost of hydrogen supply to the consumer. This was considered to involve network innovation because it could improve the utilisation of existing network infrastructure and reduce the requirement for new network infrastructure build while improving the efficiency of operation. The Expert Assessors considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

All Expert Assessors did not consider this Project to be undermining the development of competitive markets because the proposed model draws together different energy vectors which do not currently compete with one another. This was considered to represent potential for the development of new competitive markets. It was noted that greater details on how future revenues could be accessed by the proposed solution would have strengthened the Application. However, all Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

All Expert Assessors considered the Project to be innovative and risky because the Project must overcome barriers in developing the district heating element of the Project, which was considered still in development in the UK. The Project's approach also assumes a reasonable uptake of local hydrogen powered vehicles

which is currently not assured, demonstrating a further element of risk.. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The majority of the Expert Assessors considered this Project to include participation from a sufficient range of stakeholders for this Eligibility Criteria to be met because it includes energy distributors, a local authority, and an energy consultancy. These were all considered to have a range of skills which are complementary to the Projects aims and will help to ensure a successful delivery.. It was noted that the wide-ranging Project Partners will also be able to provide valuable insight across the energy, heat, transport and housing sector. One Expert Assessor noted there was limited input from most Project Partners and the critical end user community could have been better represented. Overall, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to be delivering value for money and as being costed competitively because the allocation of costs across Project Partners was considered appropriate with the activities set out. It was noted that day rates from one Project Partner were higher than anticipated and overall distribution could have been more balanced, but that the Project Partner in question was also contributing towards the cost of the Project. Overall, the majority of the Expert Assessors considered this Project to have met the Eligibility Criteria.

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.

Eligibility Criterion met

The Expert Assessors all considered the Project to have a robust methodology which gives confidence that the Project will be capable of progressing in a timely manner due to the strength of the Project management information provided. The gantt chart was considered to provide clarity over the relevant milestones and deliverables. The Expert Assessors also noted that the Project Partners have strong track records in project delivery. It was noted that a more granular description of the tasks under each work package and greater details of the Project against counterfactuals would have strengthened the Application.

Regulatory barriers identified

NO

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority

FUND

The majority of the Expert Assessors have recommended this Project for SIF Funding. The application was considered to have addressed the Innovation Challenge as it describes a novel approach to reduce renewable curtailment by co-locating hydrogen electrolyzers near to sources of district heating demand. The potential cost savings of reduced renewable curtailment and reduced network infrastructure build was considered to have the potential to provide financial and environmental benefits to consumers. The Project is considered to be of reasonable value for money despite some day rates of Project Partners being higher than industry norms. The work packages provided were clear and provided the majority of Expert Assessors with confidence that it will be capable of progressing. However the Project would have been strengthened by additional detail.

The Project should consider how it can gain input from all Project Partners and the critical end user community to support the outcome, and as a result, a Project-specific condition has been recommended.

Recommended Project specific conditions

Prior to the end of the Discovery Phase, the Project must provide to the monitoring officer justification for whether representation from the end user community, such as from hydrogen and heat consumers organisations, will be added to the Project.

7.2.7 10061292, Proportional Investment of Networks in Energy Efficiency Retrofit (PIONEER), Initial Net Funding Requested £125,446

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
NATIONAL GRID ELECTRICITY DISTRIBUTION	15,456	2,010	13,446
CARBON TRUST ADVISORY LIMITED	60,600	5,600	55,000
FRONTIER ECONOMICS LIMITED	63,630	6,630	57,000
WEST OF ENGLAND COMBINED AUTHORITY	1,063	1,063	0
DEVON COUNTY COUNCIL	2,430	2,430	0

Submitted Project description

The project aims to develop commercial models by which the DNOs can provide funding for thermal energy efficiency (EE) measures and to demonstrate through pre and post retrofit monitoring the impact these measures have on network loads.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Project has been viewed by the majority of Expert Assessors to have met the Eligibility Criteria as it investigates how energy efficiency measures can be coordinated alongside flexibility measures to accelerate the decarbonisation of heating demands.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to have met this Eligibility Criteria on the basis that the Project demonstrates potential for energy network companies to support lower energy consumption by consumers for heating, and thereby reduce consumer bills and entire system costs.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Project has been determined by Expert Assessors to have met Eligibility Criteria 3 as it will investigate novel commercial arrangements for energy networks to better enable energy efficiency measures to be valued as a flexibility measure.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The majority of the Expert Assessors did not consider this Project to be undermining the development of competitive markets because it aspires to enable a wider range of technologies to actively participate in demand side flexibility, as an alternative to network reinforcement.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The majority of Expert Assessors consider the Project as innovative and risky as there are presently limited opportunities for network companies to invest in energy efficiency as a validated alternative to network investment. The route to market and impact of investments in energy efficiency at scale need to be quantified, alongside development of commercial and technological innovation, which this Project will provide.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered the Project to have representation from a sufficient range of stakeholders and Project Partners for the Discovery Phase. The Project describes direct participation from consultancies, with relevant expertise and experience, local authorities, and the energy network. Furthermore, an engagement list of additional stakeholders that may be needed at later stages has been provided, which includes installers of energy efficiency measures.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to be delivering value for money and as being costed competitively because costs allocated between Partners are reasonable for the scope of work to be carried out and very significant system wide potential benefits have been identified - by greater incentivisation of energy efficiency alongside domestic heat decarbonisation.

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.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to have a robust methodology which gives confidence that it will be capable of progressing in a timely manner due to the strength of the Project management information provided. In particular the articulation of the milestones and risks indicate that the Project should progress in a timely manner.

Regulatory barriers identified**NO**

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Discovery Phase of the Project.

Recommendation to the Gas & Electricity Markets Authority**FUND**

The majority of the Expert Assessors recommended this Project for SIF Funding and the majority of Expert Assessors have suggested that the Project has met all

the Eligibility Criteria. Overall, the Project was considered to describe a novel approach to valuing and incentivising the deployment of energy efficiency measures. The Project was viewed by Expert Assessors to be well defined, with sufficient opportunities for commercial innovation to offer reasonable prospects to capture some of the significant cost benefits identified. Furthermore, the approach described offers prospects for consumers to realise these savings themselves through lower energy bills.

Recommended Project specific conditions

Prior to the end of the Discovery Phase, the Funding Party must provide to the monitoring officer consideration and justification for if and how the end-user community will be involved in the Project.

7.2.8 10061308, Park & Flex, Initial Net Funding Requested £108,554

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
UK POWER NETWORKS (OPERATIONS) LIMITED	9,750	9,749	1
BARINGA PARTNERS LLP	89,950	1,000	88,950
GREATER LONDON AUTHORITY HOLDINGS LIMITED	200	199	1
FERMATA ENERGY LLC	21,600	1,998	19,602

Submitted Project description

Park & Flex will explore the current and future opportunity for the provision of flexibility services from V2X enabled EVs in car parks and the EV and network infrastructure required to do so -- working with stakeholders to develop and test real-world flexibility products and customer propositions. The outcome will be a roadmap showing who is best placed to address any barriers to unlocking the untapped potential of this resource.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

All Expert Assessors considered the Project to have met the Innovation Challenge. This is because it will contribute to insight on the acceleration the decarbonisation of major energy demands and preparing for a net zero power system through the deployment of V2G in public car parks and exploring how these can be used to test flexibility products and customer propositions, which the Expert Assessors considered to be directly related to one of the aims of the Innovation Challenge and therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

All Expert Assessors considered the Project to deliver a net benefit to electricity consumers because it will contribute primarily towards a reduction in cost of reinforcement and more efficient network operation due to more flexibility. The expectation is that this should result in lower bills compared to the counterfactual by potentially reducing network costs through reduced spending on reinforcement, thereby resulting in a financial benefit. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

All Expert Assessors considered the Project to involve network innovation. This is because the Project is examining how providing additional flexibility resources to enable system operators to effectively facilitate, manage, and integrate multiple demands and demand-side solutions. It addresses the provision of flexibility from electrified car parks, which requires novel technical and commercial arrangements that have not been developed before, which was considered to involve network innovation. Overall, the Project meets this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

All Expert Assessors considered the Project to not be undermining the development of competitive markets because it has stated that it will disseminate data and insights of the Project's outputs. The Project may contribute to enhanced local flexibility markets and thereby increase competition in the market due to the dissemination of data and insights of the project outputs. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

All Expert Assessors considered the Project to be innovative, novel and/or risky because it will develop insights and access to a novel new form of demand side response and develop new flexibility products and market mechanisms to access this resource, which was considered innovation beyond business as usual. Two Expert Assessors noted that there has not been a study of this kind undertaken in the United Kingdom to date and thereby representing a novel and risky approach by the Project. Overall, the Project meets this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

All Expert Assessors considered that the Project includes participation from a sufficient range of stakeholders for the Discovery Phase. This is because the Project was considered to have the appropriate experience for Project delivery, including V2X technology providers, specialist energy sector consultants, local government to provide insight into London's Park operators and a DNO. Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

All Expert Assessors considered the Project to provide value for money. This is because it has the potential to unlock flexibility, open up new revenue streams and reduce network costs. The Expert Assessors also considered the Project to be costed competitively, although it was noted that the costs were tilted towards one

Project Partner. The costs of this Project Partner, however, were aligned with industry norms and gave confidence to the Expert Assessors. As a result, the Project was considered to have met this Eligibility Criteria.

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.

Eligibility Criterion met

All Expert Assessors considered the Project to be well thought through with a robust methodology that gives confidence that it will be capable of progressing in a timely manner because a clear Project plan has been provided, outlining major activities, milestones, and deliverables, which have been appointed to key resources. It was noted that interdependencies and risks have also been considered and that the set of deliverables and milestones should allow for efficient progress monitoring. Overall, the Project was considered to have met this this Eligibility Criteria.

Regulatory barriers identified

NO

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority

FUND

The Expert Assessors considered the Project to have the potential to unlock value and result in financial benefits for a variety of customers and stakeholders including car park operators, local authorities, energy networks, car park users and energy customers. The Project was considered to involve network innovation because it addresses the provision of flexibility from electrified car parks, which requires novel technical and commercial arrangements that have not been developed before. This approach was also considered to be innovative, novel and risky because it focuses on an area which has not been well explored in the UK to date.

The Expert Assessors also considered the Project to have been costed competitively because the funding requested, although unbalanced towards one Project Partner, was aligned with industry norms. The Expert Assessors also noted that they had confidence the Project would be capable of progressing in a timely manner because the Project plan, milestones, and risks were clearly articulated and well thought through.

Recommended Project specific conditions

Prior to the completion of the Discovery Phase, the Funding Party must provide to the monitoring a summary with consideration for how smart charging could be utilised by the Project.

7.2.9 [REDACTED]

7.2.10 10061338, Indus, Initial Net Funding Requested £141,349

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
UK POWER NETWORKS (OPERATIONS) LIMITED	20,750	15,000	5,750
M3MAS LIMITED	24,960	2,496	22,464
CAMIRUS LIMITED	34,872	3,488	31,384
CR PLUS LIMITED	24,986	2,499	22,487
AMERESCO LIMITED	25,000	2,500	22,500
GUIDEHOUSE EUROPE LIMITED	30,000	3,000	27,000
PETERBOROUGH CITY COUNCIL	10,849	1,085	9,764

Submitted Project description

Indus builds on the successful concept development project in the Black Country and will develop and deploy a network-led commercial business model that optimises the energy use of mid-sized industrial parks, making electrification of industrial heat more economic and optimising the use of flexibility and onsite generation thus accelerating decarbonisation of this significant source of heat and energy demand.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The majority of the Expert Assessors considered this Project to have addressed the Innovation Challenge because it has the potential to reduce demand for increased network capacity by considering network impacts from approaches to effectively facilitate, manage, and integrate multiple demands and demand-side solutions. This was considered to align with one of the aims of the Innovation Challenge, which is to integrate energy efficiency together with flexibility to reduce costs of heat demands. It was noted by one Expert Assessors that the Project could have better articulated how it is meeting the Innovation Challenge. However, overall, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The majority of the Expert Assessors considered this Project to have clearly identified potential to deliver a net benefit to electricity consumers through the potential reduction in costs for network capacity building and maintenance, more effective use of existing network capacity and more effective management and integration of multiple demands and demand-side solutions in an industrial site. This was considered to offer potential financial benefits to consumers.

It was noted that the Project would have benefited by providing more evidence on the difference and advantage to the existing solution during the Discovery Phase.

It was also noted by this Expert Assessor that the potential to deliver a net benefit to electricity consumers could have been clearer and the Application would have benefited from the inclusion of more quantitative metrics.

Overall, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

All Expert Assessors considered this Project to involve network innovation because it provides a new approach to network capacity allocation and aims to develop approaches to effectively facilitate, manage, and integrate multiple demands and demand-side solutions whilst considering the impacts on the networks. This was considered to involve network innovation because the new approach proposed by the Project is more proactive and possibly more efficient than existing planning approaches. The Expert Assessors considered this Project to have met the Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The majority of the Expert Assessors did not consider this Project to be undermining the development of competitive markets because it provides a new approach to network capacity allocation and aims to develop options which consider network impacts to effectively facilitate, manage, and integrate multiple demands and demand-side solutions. The Project was considered to have the potential to facilitate new markets especially for industrial site development and its outcomes will likely be applicable to other network operators. It was noted that the Project could have better articulated how its proposed solution will impact or interact with the current practices for network planning. However, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to be innovative and risky because the network-focused approach to industrial site development was considered to be novel and innovative. In addition, the Expert Assessors did not consider there to be any attempts by a network operator to take the approach set out by the Project.

One Expert Assessor did note that the Project is not incorporating any new technology, devices, mechanism or methods, and considered the innovation to lay more with the various stakeholders working together for the first time.

Overall, the majority of the Expert Assessors consider the Project to have met this Eligibility Criteria because of its focus on a new approach to network planning.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to have participation from a sufficient range of Project Partners and stakeholders for the Discovery Phase because of the inclusion of a local authority, an industrial park infrastructure specialist as well as other expertise which will support the delivery.

It was noted by one Expert Assessor that greater participation from local authorities and commercial parties would have strengthened the Application. However, overall, the majority of the Expert Assessors considered the Project to have met the Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to be delivering value for money and be costed competitively because the Project costs were appropriate for the Discovery Phase activities set out. The balance of costs among Project Partners was also considered reasonable and it was noted that the potential cost savings with the proposed solution could be significant. It was noted that the Application could have been enhanced by providing more information about alternative approaches being considered. The Project was considered by the majority of the Expert Assessors to have met this Eligibility Criteria.

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.

Eligibility Criterion met
<p>The majority of the Expert Assessors considered the Project to have a robust methodology which gives confidence that it will be capable of progressing in a timely manner because the Project plan and the associated resource expertise and requirements have been well thought through and are clearly articulated. The plan and major constraints were clearly described. The Project plan and risk register were considered to clearly align and complement each other and give confidence that will delivered in a timely manner. Milestones are shown on the Gantt chart but could have been discussed in more detail in the Application.</p> <p>One Expert Assessor noted that the Project could have better articulated how it would address the commercial mechanisms which currently have a large role in determining network planning.</p> <p>Overall, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.</p>

Regulatory barriers identified
NO
The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority
FUND
<p>The majority of the Expert Assessors recommended this Project for SIF Funding as the majority of the Expert Assessors considered the Project to have met each of the Eligibility Criteria. The Project proposes to explore a new approach to network capacity allocation and aims to develop methods for flexibility and demand side response, which was considered by the Expert Assessors to involve network innovation, be innovative and novel. The Project was also considered by the majority of the Expert Assessors to represent good value for money as it has been costed reasonably and presents the potential for significant benefits for consumers. The proposal was considered to be well presented, and the proposed methodology was considered to be clearly articulated by the majority of the Expert Assessors.</p>

Recommended Project specific conditions

Prior to the end of the Discovery Phase, the Funding Party must provide to the monitoring consideration for how the Project plans to support the commercial implementation of its findings and whether additional Project Partners will be necessary in the Project to implement these commercial considerations.

7.2.11 10061339, Heatropolis, Initial Net Funding Requested £146,195

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
UK POWER NETWORKS (OPERATIONS) LIMITED	21,450	16,244	5,206
METROPOLITAN INFRASTRUCTURE LIMITED	80,208	8,021	72,187
PASSIV UK LIMITED	75,335	7,533	67,802
CAMDEN COUNCIL	1,000	0	1,000

Submitted Project description

The Heatropolis project aims to accelerate the decarbonisation of existing heat networks by developing, deploying, and testing a data-driven framework that will deliver a smarter, more flexible, and integrated energy system. The framework will maximise the use of existing electricity network capacity while minimising the need for network reinforcement, the curtailment of renewable generation, and cascading costs to customers.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Expert Assessors considered this Project to have addressed the Innovation Challenge because it proposes to analyse heat network transitions from fossil fuel gas to electricity through coordinated planning. This will improve load management on electricity networks which will reduce costs and carbon emissions. The Expert Assessors considered the Project to have the potential to contribute to more effective and efficient green heat network development with lower whole system costs. This was considered to align with one of the aims of

the Innovation Challenge which is focused on developing approaches to integrated planning and connecting decarbonised solutions which reduce overall costs and timescales. As a result, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Expert Assessors considered this Project to have clearly identified potential to provide a net benefit to electricity consumers because it could deliver more efficient and affordable planning for development and re-fit of heat networks at lower overall system costs. This would benefit electricity consumers through potentially more affordable heat services, resulting in a financial benefit for consumers and vulnerable households. It could also contribute to managing network constraints, optimising the use of renewable power and minimising power cuts in areas with heat networks, which could result in financial benefits from more effective network management. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered this Project to involve network innovation because it investigates the impact of smart controls and flexibility to reduce potential network constraints or congestion arising from decarbonising heat networks. It brings network developers and operators in heat and power sectors together to solve problems of uncoordinated planning, of which typically give rise to higher costs and less secure services. This network innovation was considered notable in its proposed use of digital control systems to plan network investments for greater efficiency, and to ensure greater visibility of network flows, and cross-network coordination in operations.

The Expert Assessors considered this Project to have met the Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

All Expert Assessors did not consider this Project to be undermining the development of competitive markets because there currently isn't a market-based framework which facilitates long term electricity network infrastructure planning coupled with the decarbonisation of heat networks. The learnings from the Project were considered to have potential to lead to the development of new products and services to support the creation of mature, low carbon heat markets. In addition, the Project states that findings, frameworks, connection services and incentives arising from and specified through the Project will be available to all market participants. This is intended to support adoption of the promised methodology into business as usual.

All Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

All Expert Assessors considered the Project to be innovative and risky because it aims to develop new technical-economic methods and multi-party coordination to co-optimize heat network and electricity distribution network planning, investment and operation. It was considered to be innovative in consideration of the network capacity constraints as well as working in collaboration with the distribution network operator planners and the local authority. The use of new low carbon heat network assets and smart controls in the design to optimise the design to the user needs and network constraints was considered to add a high level of technical risk. In addition, the development of commercial models which can support the decarbonisation of major energy demands will rely on multiple forecasting techniques and algorithm developments which were also considered risky.

The Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

All Expert Assessors considered this Project to include participation from a sufficient range of stakeholders because the stakeholders listed have direct experience of operating electricity networks, heat networks and developing smart control techniques to improve the efficiency of heat networks. The participation of the relevant local government organisation provides confidence in the provision of place-based guidance and local engagement and was noted favourably. The Project stakeholders were considered to have a strong track record of project delivery as well.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Expert Assessors considered the Project to be delivering value for money and be costed competitively because the costs for each Project Partner were detailed in relation to the main division of responsibilities and deliverables, including sub-contracting and risk management. The costs were considered reasonable in relation to industry norms and for the activities set out, with considerably more than the minimum additional contribution for the Discovery Phase.

This was considered by the Expert Assessors to have met this Eligibility Criteria.

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.

Eligibility Criterion met

All Expert Assessors considered the Project to have a robust methodology which gives confidence to the Expert Assessors that it will be capable of progressing in a timely manner because there is a clear work plan, allocating specific tasks and costs to each Project Partner against necessary deadlines. The associated risk register was considered appropriate for the work set out, and mitigating actions were stated clearly. It was also noted that each Project Partner has specific skills and expertise needed to maximise the chances of Project delivery.

Regulatory barriers identified

NO

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority

FUND

All Expert Assessors considered the Project to have meet all Eligibility Criteria, and all have recommended this Project for SIF Funding. The Application is relevant to the Innovation Challenge as it has clear objectives to accelerate decarbonisation of heat through innovation in integrated heat and power network planning and operation. The Project has identified an innovative approach to tackling the decarbonisation of a major energy demand while seeking to achieve socialised cost savings and financial benefits for consumers. It was not considered to undermine the development of competitive markets and has the potential to encourage additional competition. The Project plan was considered well thought through, structured and brings together a strong group of relevant stakeholders. The Project was also considered to represent good value for money and as being costed competitively relative to the activities set out for the Discovery Phase and the costs for the Project Partners.

Recommended Project specific conditions

Prior to the end of the Discovery Phase, the Funding Party must make engage with the SIF Project 'Carnot Gas Plant' to examine areas of potential overlap and duplication, and how the two Projects could inform each other on their findings.

7.2.12 10061341, Full Circle, Initial Net Funding Requested £108,453

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
UK POWER NETWORKS (OPERATIONS) LIMITED	27,425	12,050	15,375
OVE ARUP & PARTNERS LIMITED	72,946	0	72,946
SGN COMMERCIAL SERVICES LIMITED	20,703	2,071	18,632
WANDSWORTH BOROUGH COUNCIL	1,500	0	1,500

Submitted Project description

Full Circle aims to make low-carbon heating affordable for vulnerable and hard to reach customers by developing a commercial and operational framework for heat network developers, property developers and ESCos to recover low-grade waste heat from DNO transformers to improve the efficiencies of their heat networks and reduce their costs.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Expert Assessors considered this Project to have addressed the Innovation Challenge because it proposes an investigation into the use of low grade waste heat from transformer sites as a source of energy for heat networks in dense, urban areas. A specific use case for low income/vulnerable consumers has been proposed. The Project's focus the integration of heat networks into supporting wider network management was considered to align with one of the aims of the Innovation Challenge and the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

All Expert Assessors considered this Project to have clearly identified potential to deliver a net benefit to electricity consumers because the Project focuses on utilising excess heat from DNO substations in heat networks to consumers. The provision of this heat was considered to represent the potential to reduce consumer bills thereby delivering a potential financial benefit. In addition, there are other benefits associated with reduction in grid reinforcement by reducing electricity demand from heat networks, such as a reduction in operational and maintenance costs through life extension of transformer assets by better heat management. This was also considered to represent a potential net benefit through financial benefits for consumers.

It was noted that the Application would have been strengthened by including details on the potential number of sites across the UK where this approach could be implemented.

However, all Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

All Expert Assessors considered this Project to involve network innovation because it plans to undertake a real-life assessment of the feasibility of utilising excess transformer heat into a heat network. In addition, this was considered to provide innovation in both the heat network design and operation and in the management of transformer sites and network reinforcement. All Expert Assessors considered this Project to have met the Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

All Expert Assessors did not consider this Project to be undermining the development of competitive markets because it will explore the utilisation of excess transformer heat and how it can be fed into heat networks. The Project's proposed solution was considered to have the potential to open a new market for this kind of heat being utilised. It was also noted that the approach could be replicable across other network operators and there is intent to disseminate all learnings. The Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

All Expert Assessors considered the Project to be innovative and novel through the use of low-grade waste heat and the development of a replicable commercial and cooperative framework. This was considered to require new commercial and operational frameworks to be established across multiple stakeholder boundaries

and was considered innovative in its approach. The Project has both technical and commercial risk and would not form part of business-as-usual activities for the networks, which further demonstrates innovation. The Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

All Expert Assessors considered this Project to include participation from a sufficient range of stakeholders for this Eligibility Criteria to be met because it includes a DNO, an engineering consultancy, a gas distribution network, a heat network developer and a council. In addition, a subcontractor is involved who has heat network expertise. Together, the Expert Assessors considered these Project Partners and stakeholders to be sufficient for the Discovery Phase activities set out. The Expert Assessors therefore considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Expert Assessors considered the Project to be delivering value for money and as being costed competitively because overall Project costs are justified with day rates being at fair market value. The split of costs between the Project Partners was considered mostly consistent with the Project delivery plans but it was noted that the funds for one Project Partner were higher than anticipated without justification. The Expert Assessors also noted positively the contributions from the Project Partners. Overall, the Expert Assessors considered the Project to have met the Eligibility Criteria.

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.

Eligibility Criterion met

The Expert Assessors considered the Project to have a robust methodology which gives confidence to the Expert Assessors that it will be capable of progressing in a

timely manner because the Project plan was considered to be well thought through to enable delivery during the Discovery Phase. All required resources have been identified and were considered clear.

The Expert Assessors considered this Project to have met this Eligibility Criteria.

Regulatory barriers identified

NO

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority

FUND

All Expert Assessors have agreed that this Project meets all Eligibility Criteria, and all have recommended this Project for SIF Funding. The Application was considered relevant to the Innovation Challenge as it aims to establish the feasibility of utilising low-grade waste heat from transformer sites to reinforce large heat networks in dense urban environments. This was also considered to involve network innovation with a novel and risky approach. It was recognised that the Project could open a new market for this kind of heat being utilised and would therefore not be undermining the development of competitive markets.

The Project plan was considered well-constructed to enable delivery of the Project to a good standard. The Project includes a sufficient range of stakeholders and is also deemed good value for money with Project Partners costs costed competitively.

Recommended Project specific conditions

Prior to the end of the Discovery Phase, the Project must make engage with the SIF Project 'Carnot Gas Plant' to discuss potential areas of overlap and duplication, and how the learnings from both Projects can be shared.

7.2.13 10061544, Watt Heat, Initial Net Funding Requested £86,697

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
UK POWER NETWORKS (OPERATIONS) LIMITED	18,965	18,964	1
BARINGA PARTNERS LLP	79,670	1,000	78,670
TEPEO LTD	3,750	0	3,750
GREATER LONDON AUTHORITY HOLDINGS LIMITED	2,500	2,499	1
PASSIV UK LIMITED	4,275	0	4,275

Submitted Project description

Watt Heat aims to accelerate the decarbonisation of residential heat and reduce costs for all by stimulating the market for greater demand flexibility through heat storage -- working with market participants, investors, and stakeholders to develop the flexibility products required to share the benefits that these technologies can deliver.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The Expert Assessors considered the Project to have addressed the Innovation Challenge because it examines the potential role of heat storage assets to provide flexibility within domestic settings and support networks. This was considered to have addressed the Innovation Challenge because the Project's focus on flexibility could help in the decarbonisation of major demands and is directly related to one of the Innovation Challenge's main aims of integrating energy efficiency with flexibility. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The Expert Assessors considered the Project to have clearly identified the potential to deliver a net benefit to electricity consumers via financial benefits as the Project's focus on flexibility could reduce the need for network reinforcement

and introduce new revenues through time-of-use tariffs. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered the Project to involve network innovation because the Project was considered to focus on an innovative and progressive approach to current network practice (technical solutions for flexibility in shifting the heat load to avoid congestion on the network at peak times). The Project's focus on this area of reducing peak and load congestion was considered to involve network innovation and the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors did not consider the Project to be undermining the development of competitive markets because the Expert Assessors considered the Project's focus on flexibility to have the potential to introduce new market incentives and revenue streams. It was also noted that the roll-out of heat flexibility solutions will be open to markets. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Expert Assessors considered the Project to be innovative, novel, and risky. One Expert Assessor noted that the Project was innovative and novel because it examines a topic which presents an opportunity to stimulate market demand for flexibility through heat storage. Furthermore, the Expert Assessors did not consider there to be other Projects currently assessing the value of this kind of flexibility. Another Expert Assessor noted that Project was considered risky because the technical solutions have not yet been deeply examined or

demonstrated and the Project represents a first of its kind approach. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

The Expert Assessors considered the Project to have participation from an appropriate range of stakeholders for the Discovery Phase. The Expert Assessors noted that primary delivery of the Project would be from an energy consultancy and noted that more leadership from the Funding Party would have strengthened the Application. The Expert Assessors still considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Expert Assessors considered the Project's overall costs to be reasonable for the Discovery Phase activities set out and considered the Project to provide value for money in its proposed solution. While the Expert Assessors noted that the costs for one of the Project Partners was higher than anticipated, they also positively recognised the contribution from the Funding Party and considered this to give confidence that the Project is costed competitively. The Expert Assessors all considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The Expert Assessors considered the Project to have a sufficiently robust methodology which gave the Expert Assessors confidence that the Project will be capable of progressing in a timely manner. The Expert Assessors were confident in the Project plan and the milestones. It was noted that additional detail on stakeholder engagement work packages would have strengthened the Application, however the Expert Assessors all considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified
NO
The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority
FUND
The Expert Assessors considered the Project to examine a problem directly related to the Innovation Challenge and the approach articulated by the Project was considered innovative, novel and risky. The Project was also considered to have a sufficiently robust methodology which gave the Expert Assessors confidence that the Project would be capable of progressing. The Expert Assessors also considered the Project to be providing value for money and that it was costed competitively. They noted positively the contribution from the Funding Party. The Expert Assessors did mention that the Application would have been strengthened by more detail on how other related approaches were informing this Project. However, the Expert Assessors considered the Project to have a sufficiently detailed Project plan and methodology to have confidence that it can progress in a timely manner.

Recommended Project specific conditions
The Expert Assessors have not recommended any Project-specific conditions.

7.2.14 10061568, Lightspeed, Initial Net Funding Requested £140,552

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
UK POWER NETWORKS (OPERATIONS) LIMITED	58,250	14,000	44,250
SCOTTISH POWER ENERGY NETWORKS	2,140	2,139	1
OTASKI ENERGY SOLUTIONS LTD	108,300	12,000	96,300
BRIGHTON & HOVE CITY COUNCIL	1,600	1,599	1

Submitted Project description

To help with the rapid increase in the UK's public EV charging infrastructure that is required to meet expected consumer demand, especially for the 40% of customers without a driveway, this solution aims to develop a bidirectional lamppost-based EV charging solution that would support both smart charging and V2G capabilities, while providing faster EV charging at 7 -- 22 kW, without requiring major network upgrades.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

All Expert Assessors considered this Project to have addressed the Innovation Challenge because it has the potential to accelerate the deployment of fast, on-street, smart charging infrastructure and facilitate increased EV adoption for those without off-street parking where access to a charger is a barrier to adoption. This was considered to be directly related to one of the aims of the Innovation Challenge, which is focused on developing approaches to the planning and connection of decarbonised transport that reduces costs and timescales. The Expert Assessors considered this to be directly related to the Innovation Challenge and therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

All Expert Assessors considered this Project to have clearly identified potential to deliver a net benefit to electricity consumers through reduced costs associated with infrastructure roll-out, reduced network costs, and providing charging infrastructure for potential EV users who do not have off-street charging. This was considered to have the potential to result in lower network costs due to more efficient network management, but also in supporting wider integration of renewables in the overall energy system. This was considered to represent financial benefits. It was noted that the Application could have been enhanced by proposing a method for tracking the benefits of this Project. However, all Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

All Expert Assessors considered this Project to involve network innovation because it explores the development of a DC converter at the point of connection which would enable the roll-out of fast, on-street charging with minimal network reinforcement. This would facilitate dynamic power and energy management and enable flexibility services. This was considered to involve network innovation because it is not part of usual network planning. It was also noted that the Application would have been strengthened if it could clearly articulate whether the proposed solution would also entail installing dedicated battery storage and the cost implications of this process.

All Expert Assessors considered this Project to have met the Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors did not consider this Project to be undermining the development of competitive markets because the Expert Assessors considered the Project to have the potential to unlock additional flexibility resources that would improve competition in flexibility markets. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Project was considered by the Expert Assessors to be taking a novel approach to installing EV chargers in lampposts, which the Expert Assessors considered to be innovative. It was also recognised that there is risk involved with respect to the technical and commercial aspects of the solution that is yet to be developed. The Project also involves the adaptation of existing infrastructure to house a novel DC to DC system that could be widely included in the network, demonstrating innovation. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

All Expert Assessors considered this Project to include participation from a sufficient range of stakeholders for this Eligibility Criteria to be met because the Project Partners that were listed include relevant and diverse opportunities for stakeholder input, including technology and customer representation alongside the local authority. There are also provisions in the work plan to further engage with other stakeholders including EV owners who would be the ultimate users of the new technologies. This was noted favourably by the Expert Assessors and the Expert Assessors considered the Project to have met the Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

All Expert Assessors considered the Project to be delivering value for money and to be costed competitively because there is a good balance of resources across different Project Partners and work packages along with partner contributions. The Project costs were also clearly linked to deliverables and were considered reasonable for the activities set out compared to industry norms. This was considered by all of Expert Assessors to have met the Eligibility Criteria.

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.

Eligibility Criterion met

All Expert Assessors considered the Project to have a robust methodology which gives confidence that it will be capable of progressing in a timely manner. This is because the Project has identified key milestones and deliverables, as well as highlighting risks in timescales along with mitigation measures suggested. The scale of innovation was considered to be suitably matched to the resources and schedule for the Discovery Phase.

It was noted that the Application could have been enhanced by including additional detail of any interdependencies between tasks, deliverables or work packages and outlining any technology risks.

However, all Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

NO

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority

FUND

All Expert Assessors have recommended this Project for SIF Funding. All Eligibility Criteria has been met. The Application was considered relevant to the Innovation Challenge as it aims to explore the facilitation of rapid roll out of on-street smart charging infrastructure, with minimal network reinforcements. This would provide significant benefits to networks and would also remove a barrier for EV adoption to those who do not have access to off-street parking. The Project's proposed solution and focus was also considered to involve network innovation due to the focus on including bi-directional charging solutions, which was also considered to be innovative and risky.

The Application was considered to be well thought through with clearly outlined deliverables and the Project brings together a strong group of relevant stakeholders. The Project was also considered to represent good value for money and was considered to have been costed competitively.

Recommended Project specific conditions

The Expert Assessors have not recommended any Project-specific conditions for this Project.

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
UK POWER NETWORKS (OPERATIONS) LIMITED	28,740	28,739	1
DG CITIES LIMITED	7,145	0	7,145
BARINGA PARTNERS LLP	79,670	1,000	78,670
PASSIV UK LIMITED	4,275	0	4,275
ROYAL BOROUGH OF GREENWICH	3,250	1,000	2,250

Submitted Project description

Heat Risers aims to accelerate the decarbonisation of multi-occupancy buildings and reduce costs for all using whole building solutions -- working with market participants, investors, and stakeholders to develop viable routes to market, and investigate the incentives and funding mechanisms required.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

All Expert Assessors considered this Project to have addressed the Innovation Challenge because it has potential to deliver a novel approach to reducing connection costs and timescales for decarbonised whole building solutions. Multiple occupancy buildings can be retrofitted more easily and more effectively when considered as a whole building solution rather than individual dwellings. The Funding Party wants to explore novel network incentives and potential new services that favour the uptake of whole-building solutions. It could result in lower energy demand per consumer and less network impact and disruption.

This was considered to be aligned with two of the main aims of the Innovation Challenge and was therefore considered by the Expert Assessors to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

All Expert Assessors considered this Project to have clearly identified potential to deliver a net benefit to electricity consumers because it was considered to have the potential to reduce connection costs associated with a whole building decarbonisation solution. The solution is seeking to support the delivery of more efficient, low-carbon heat solutions which could reduce electricity consumers bills, thereby resulting in a financial benefit to consumers.

It was noted that the effectiveness of the Project's proposed solution and the benefits tied to it rely on there being no delay in upgrading some properties by ensuring the latter is attractive enough to customers and the network is capable of delivering equitably. It was noted that greater consideration of this dependency and the timescales associated with the proposed solution would have strengthened the Application.

Overall, the Expert Assessors considered the Project to have addressed this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The majority of the Expert Assessors considered this Project to involve network innovation because it seeks to enable an improved electricity connection process for whole building solutions. This was considered by the majority of the Expert Assessors to involve network innovation and to be a novel approach because retrofit decarbonisation efforts are normally undertaken on an individual premise-by-premise approach in comparison to a whole-building approach.

It was noted that the Application could have been strengthened by providing greater evidence of how the Project's proposed solution will lead to the network innovation being incorporated in business-as-usual.

Overall, the majority of the Expert Assessors considered this Project to have met this Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

All Expert Assessors did not consider this Project to be undermining the development of competitive markets because the dissemination of the outcome was considered to enable the development of a competitive market. The Project has outlined how the development of a whole building decarbonisation connection solution could stimulate the market for whole building low carbon heat solutions.

The Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

All Expert Assessors considered the Project to be innovative and risky because of the complexities associated with the ownership framework for multi-occupancy buildings (MOB) and the challenges associated with designing whole building solutions in comparison to individual premise solutions. The Expert Assessors also noted there are additional challenges associated with potentially migrating decision-making processes away from individual households and towards a centralised decision-making body. It was noted that the Application could have been strengthened by providing additional evidence of the different barriers and solutions most likely for sub-sets of MOB.

Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

All Expert Assessors considered this Project to include participation from a sufficient range of stakeholders because there is representation from local government with a direct interest in multi-occupancy buildings, technical expertise in low carbon heat control and energy programme delivery experience. The stakeholders selected provide confidence in Project delivery.

It was noted that the stakeholders would have been strengthened with the inclusion of a service supplier and legal representatives in the consortium as they will be the ones liaising and interfacing with consumers.

However, all Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

All Expert Assessors considered the Project to be delivering value for money because the overall Project costs were considered justified for the activities in the Discovery Phase and the benefits of the proposed solution would outweigh the costs of the Project. The Expert Assessors noted that one Project Partner's costs and day-rates were higher than anticipated but noted positively the contributions from the Funding Party. The Expert Assessors considered the Project to be costed competitively overall because of the contribution provided by the Funding Party.

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.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to have a robust methodology which gives confidence to the Expert Assessors that it will be capable of progressing in a timely manner because the stakeholders selected have strong track records in project delivery. The Project management methods referenced are robust and the risk register provided is thorough.

The Expert Assessors recommended that work package 5 and work package 6 are combined so that solutions are developed to account for the barriers and enablers.

One Expert Assessor considered the Project's methodology is not sufficiently robust and does not provide confidence that it will be capable of progressing in a timely manner because one Project Partner (not the Funding Party) is responsible for a very large proportion of Project resource, and that the Funding Party are managing the Project. The proposal would be strengthened by providing a detailed description of project management and governance approaches.

Overall, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified
NO
The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority
FUND
<p>The majority of the Expert Assessors recommended this Project for SIF Funding. Overall, the Project was considered novel and addresses a complex and sizeable market. Multiple-occupancy buildings can be retrofitted more easily and more effectively when considered as a whole building solution rather than as individual dwellings. The distribution network operator will explore novel network incentives and potential new services. It could result in lower energy demand per consumer and less network impact and disruption. Overall, the Project management methods referenced are robust and the Expert Assessors had confidence that the Project offers value for money and is costed competitively.</p> <p>One Expert Assessor did not recommend the Project for SIF Funding due to the justification of why the Projects fit with the SIF programme being limited and noted that the Application would have been strengthened from a more distributed involvement or leadership amongst the Project Partners and Funding Party.</p>

Recommended Project specific conditions
Prior to the end of the Discovery Phase, the Funding Party must provide to the monitoring officer a consideration for whether the Project will be seeking to engage organisations which represent consumers, whether additional regulatory participation or support will be required, and whether a supply chain Project Partner will be required.

7.2.16 10061578, Calfacto Latent Energy, Initial Net Funding Requested £82,469

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)

SOUTHERN GAS NETWORKS PLC	653	652	1
IMPERIAL COLLEGE LONDON	19,360	0	19,360
UNIVERSITY OF BIRMINGHAM	15,880	0	15,880
VITAL ENERGI SOLUTIONS LIMITED	36,905	6,455	30,450
SGN COMMERCIAL SERVICES LIMITED	16,975	1,698	15,277
GLASGOW CITY COUNCIL	1,500	0	1,500
WEST DUNBARTONSHIRE COUNCIL	620	619	1

Submitted Project description

This project is to the efficiency of hybrid heat pumps when coupled with thermal stores through an innovative heat exchanger design.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

All Expert Assessors considered this Project to have addressed the Innovation Challenge because it is seeking to provide a whole system solution to heat decarbonisation. By coupling gas networks to heat networks with links to electricity networks, it has the potential to be an innovative approach to enabling access to low-cost decarbonised heat. This was considered to align with one of the aims of the Innovation Challenge which is to develop technical approaches to decarbonised heat that reduces overall costs and timescales. The Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

All Expert Assessors considered this Project to have clearly identified potential to deliver a net benefit to gas consumers through reducing network infrastructure costs, particularly if the gas networks transition to hydrogen. It was also noted that the proposed solution could result in similar benefits (reduced reinforcement requirements) for electricity network consumers as more hybrid heat pumps are

deployed. The cost reductions and financial benefits should be provided through lower standing charges due to more effective network sizing and utilisation.

It was noted that the Application could have been strengthened by providing a stronger argument for the environmental benefits proposed by this project. It would also be strengthened by a clear explanation as to how the reduction in gas demand leads to a beneficial reduction in hydrogen supply and how this will be dependent upon the ratio of green to blue hydrogen.

Overall, the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

All the Expert Assessors considered this Project to involve network innovation because it examines the impacts of coupling gas networks with heat networks to enable consumers to access lower-cost decarbonised heat. The studies undertaken will provide insight into the future sizing and capacity requirements of gas networks. The proposal to directly integrate the hybrid heat pump (HHP) with the phase change material using the HHP liquid was considered to involve network innovation and to have the potential to significantly reduce the operational costs associated with phase change material.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

All Expert Assessors did not consider this Project to be undermining the development of competitive markets. This is because the Project was considered to have the potential be part of a low-carbon heating solution and will not preclude other approaches. A commitment has been made by the Project to licence the products developed for use by other gas networks and heat network operators, which may encourage replication. This was considered to remove potential barriers to enabling access to the opportunities to couple gas networks to heat networks in locational zones across the UK.

All Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

All Expert Assessors considered the Project to be innovative and risky because it links hybrid heat pumps with phase change material (PCM) thermal stores. These methods were considered to be previously untested and there are multiple unknown aspects of how effective they will be in practice, demonstrating risk and innovation in the Project. All Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

All Expert Assessors considered the Project Partners to be sufficient for the Project because they were considered to be well equipped to deliver and support the work packages described in the project management documentation. It was noted that the Project has sufficient representation from gas networks, local authorities, commercial and academic partners. The technical capabilities were considered to have been well described and the Project has local stakeholders from the relevant councils on board too.

This was considered by the Expert Assessors to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The Expert Assessors considered the Project to be delivering value for money and be costed competitively because the costs set out are appropriately allocated across the work packages. All day rates were considered to be within a sufficient range for the activities proposed. The Expert Assessors also noted favourably the financial contribution being made by the Project Partners. This was considered by the majority of the Expert Assessors to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to have a robust methodology which gave confidence to the Expert Assessors that it will be capable of progressing in a timely manner. This is because the project management methodology was considered robust, the Project Partners have an established track record of delivery and there are project management controls in place. The work package activities were also considered to have been clearly described.

One Expert Assessor noted that the Project could have more clearly articulated how the work packages will develop an optimised design. It was also noted by this Expert Assessor that the Application could have better articulated the cost, volume capacity, or trade-off between gas network capacity and thermal store sizing for this work package.

Overall, however, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified**NO**

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority**FUND**

The majority of the Expert Assessors recommended the Project for SIF funding. The Project's focus was considered to have addressed the Innovation Challenge. It was noted that it proposes developing innovative methods to the removal of barriers to customers accessing affordable decarbonised heat, which was considered to involve network innovation. Integrating hybrid heat pumps with phase change material should reduce overall operational costs of operating a decarbonised heat solution which should lead to reduced consumer costs. The

majority of the Expert Assessors considered the Project to have a sufficient participation from stakeholders and a robust methodology.

The Expert Assessors noted that the Project could have strengthened the Application by clearly articulating the value of this approach in comparison to alternatives as well as the justification of environmental benefits.

Overall, the majority of the Expert Assessors recommended this Project for SIF Funding.

Recommended Project specific conditions

The Expert Assessors have not recommended any Project-specific conditions for this Project.

7.2.17 10061606, Net Zero Community Energy Hubs, Initial Net Funding Requested £81,315

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
SOUTHERN GAS NETWORKS PLC	653	652	1
IMPERIAL COLLEGE LONDON	19,360	0	19,360
VITAL ENERGI SOLUTIONS LIMITED	43,305	5,500	37,805
SGN COMMERCIAL SERVICES LIMITED	25,165	2,517	22,648
GLASGOW CITY COUNCIL	1,500	0	1,500
WEST DUNBARTONSHIRE COUNCIL	620	619	1

Submitted Project description

Developing models and control systems for co-location of heat networks behind the meter with flexible assets.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

All Expert Assessors considered this Project to have addressed the Innovation Challenge because it seeks to deliver innovative modelling to demonstrate how community energy hubs can enable heat networks and how customers can benefit from access to flexibility markets. The use of novel techno-economic modelling techniques in combination with new control methodologies was considered to have the potential to lead to improved efficiencies between multi-vector heat sources. This was considered to align with one of the aims of the Innovation Challenge which is to demonstrate coordination between flexibility, energy efficiency and regional/local planning activities that reduce costs and improves consumer experience for decarbonisation.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

The majority of the Expert Assessors considered this Project to have clearly identified potential to deliver a net benefit to gas consumers because the Application has articulated the counterfactual in a clear manner. Facilitating a hybrid approach to low carbon heat was considered to have the potential to result in reduced end-costs to consumers as a financial benefit, as well as increased volumes of green heat being provided. The Project was also considered to potentially provide detailed modelling which could provide cost reduction estimates across both fixed and variable elements of gas bills. Providing insight into the opportunities available from energy flexibility markets could create additional supporting evidence of benefits for gas consumers.

It was noted by one Expert Assessor that the Application could have been strengthened by providing more detail on the techno-economic case for including local hydrogen production as well as the costs associated with converting existing assets to hydrogen.

However, the majority of the Expert Assessor considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The majority of the Expert Assessors considered this Project to involve network innovation because it focuses on using existing gas network infrastructure to facilitate the development of novel models of hybrid low carbon heat control and management. Developing new behind-the-meter hardware and software control strategies for a multi-vector low-carbon heating scheme was considered a complex endeavour which, if successful, can deliver consumer value and network efficiencies.

The utilisation of gas network data in combination with hydrogen and heat network data was considered to involve network innovation because it has the potential to provide insight into cost savings which can be achieved without new gas network infrastructure build.

It was noted by one Expert Assessor that the Project involved innovation which focuses on behind-the-meter systems. However, the other Expert Assessors noted that the innovation lay in the Project's approach to district heating and the combination of multiple inputs to generate cost savings and greater network efficiency.

Overall, the majority of the Expert Assessors considered this Project to have met the Eligibility Criteria.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

The Expert Assessors did not consider this Project to be undermining the development of competitive markets because the modelling tools and techniques developed through this Project are intended to be made available to other gas networks and heat network operators. Providing evidence of cost savings to gas customers and heat network customers through the utilisation of multi asset control was also considered to have the potential to open new markets.

The Expert Assessors consider the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to be innovative, novel and risky because it will involve a complex data modelling exercise in combination with the development of new control methods. The Project proposes aid to address the decarbonisation of space and water heating in domestic and commercial settings. The use of community energy hubs was considered novel. The individual technologies are well understood, and the Application attempts to optimise them to provide cross vector energy which was considered novel and risky. One Expert Assessor noted that the Application would have been strengthened by more clearly articulating how the proposed approach would apply to existing heat networks.

Overall, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met

All Expert Assessors considered the Project to have sufficient participation from the Project Partners in the Discovery Phase. This is because the Project includes participation from the relevant specialisms required to deliver the work packages. The inclusion of the two Scottish councils was noted positively as they would be able to provide local place-based insight. The Project Partners were considered to be appropriate for the activities set out and to collect the viewpoints needed to progress the Project.

This was considered by all the Expert Assessors to have met this Eligibility Criteria.

Eligibility Criterion 7:

Projects must provide value for money and be costed competitively.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to be delivering value for money and to be costed competitively because the contribution being made by Project Partners was significant. The day rates quoted were considered competitive and were considered to provide value for money. Overall, the balance of costs between Project Partners was considered sensible and justified by the

proposed scope. Overall, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

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.

Eligibility Criterion met

The majority of the Expert Assessors considered the Project to have a robust methodology which gives confidence that the Project will be capable of progressing in a timely manner because there is a clear schedule of activities and milestones. Each work package was considered well-described with an appropriate lead Project Partner. The ownership structure across the deliverables was clear and the risk register was considered sufficiently detailed for Discovery Phase activities.

It was noted by one Expert Assessor that the Application would have been strengthened by including greater detail on the risks and the outputs the Project plans on delivering in the Discovery Phase.

Overall, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified

NO

The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority

FUND

The majority of the Expert Assessors recommended this Project for SIF Funding. Overall, this Project was considered to be innovative and to have the potential to provide valuable insight into the opportunities created by the control and management of multiple flexible heat assets in community hubs. Enabling more efficient utilisation of such assets could lead to cost savings, thus financial

benefits for consumers. Providing mechanisms for heat consumers to access the benefits of flexibility also aligns with the Innovation Challenge's aims.

The majority of the Expert Assessors considered the Project to be value for money and as being costed competitively. The Project methodology is robust and the majority of Expert Assessors have confidence it will be delivered in a timely manner. It was considered to be well structured and brings together a strong group of relevant stakeholders. It was also not considered to undermine the development of competitive markets.

It was noted in several instances by an Expert Assessor that the Application would have been strengthened by providing greater details on the areas of innovation for the Project and the Project's plan and risks.

Recommended Project specific conditions

Prior to the end of the Discovery Phase, the Funding Party must make engage with the SIF Project 'Calfacto Latent Energy' to discuss potential areas of overlap and duplication, and how the two Projects can share their learnings.

7.2.18 10061608, Carnot Gas Plant, Initial Net Funding Requested £93,952

Project Partner name	Eligible costs (£)	Project contribution (£)	SIF Funding Requested (£)
SOUTHERN GAS NETWORKS PLC	653	652	1
IMPERIAL COLLEGE LONDON	19,360	0	19,360
UNIVERSITY OF BIRMINGHAM	15,900	0	15,900
VITAL ENERGI SOLUTIONS LIMITED	43,700	5,000	38,700
SGN COMMERCIAL SERVICES LIMITED	22,440	3,950	18,490
GLASGOW CITY COUNCIL	1,500	0	1,500
WEST DUNBARTONSHIRE COUNCIL	1240	1239	1

Submitted Project description

The project is to develop a Carnot Gas Plant integrated with a heat network to provide efficiency improvements and cross-vector flexibility.

Eligibility Criterion 1:

Projects must address the Innovation Challenge set by Ofgem.

Eligibility Criterion met

The majority of the Expert Assessors considered this Project to have addressed the Innovation Challenge because it was considered to have the potential to use well-founded technologies, combined in a novel way, to bring about cost reductions in the supply of heat and electricity as well as carbon reductions. It was also noted that the Project examines the integration of heat networks for wider energy network management. The Project aims to deploy a novel Carnot battery arrangement to provide heat and network balancing actions. This aligns with one of the aims of the Innovation Challenge, which is to develop approaches to integrated planning in connecting decarbonised heat which reduces overall costs and timescales.

Overall, the majority of the Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 2:

Projects must have clearly identified potential to deliver a net benefit to gas or electricity consumers

Eligibility Criterion met

All Expert Assessors considered this Project to have clearly identified potential to deliver a net benefit to both gas and electricity consumers because it aims to provide low-cost heat with reduced infrastructure. This was considered to represent potential for a net financial benefit to gas consumers. It was also noted that the Project could benefit other energy systems by providing balancing and peaking options as well as carbon emission savings.

It was noted that the Application's benefits would have been strengthened if they had provided a clearer outline of their assumptions and quantification metrics, and if they were more aligned with existing expectations and projections, such as the Climate Change Committee's projections.

Overall, all Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 3:

Projects must involve network innovation.

Eligibility Criterion met

The Expert Assessors considered this Project to involve network innovation because it introduces relatively novel components and configurations into an energy supply scheme to enhance efficiency and reduce costs. It is also providing balancing and peaking options alongside heat for consumers. The Project was considered to represent potential to provide the innovative use of known equipment and systems, which was considered to involve network innovation.

Eligibility Criterion 4:

Projects must not undermine the development of competitive markets.

Eligibility Criterion met

All Expert Assessors did not consider this Project to be undermining the development of competitive markets because it attempts to demonstrate a technical advance in energy conversion technology which is available to other energy suppliers to adopt free of any patent protection. This was considered to represent the potential to introduce new competitive markets. All Expert Assessors considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 5:

Projects must be innovative, novel and/or risky.

Eligibility Criterion met

The Expert Assessors considered the Project to be innovative and risky due to the Project's focus on introducing cryogenics into a conventional energy conversion technology, coupled with a complex control system. This was considered innovative, and the Expert Assessors noted there is risk in the usage and combination of these technologies while seeking to maximise network and consumer benefits.

Eligibility Criterion 6:

Projects must include participation from a range of stakeholders.

Eligibility Criterion met
The Expert Assessors considered this Project to include participation from a sufficient range of stakeholders because the main Project Partners have relevant expertise in the focus area of the Project. It was also noted that the Project has a sufficient mix of stakeholders to ensure the range of users and applications are credible and applicable. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Eligibility Criterion 7: Projects must provide value for money and be costed competitively.
Eligibility Criterion met
The Expert Assessors considered the Project to deliver value for money and be costed competitively because the day rates proposed by the Project Partners were competitive with industry norms and the Project costs presented are realistic for the activities set out for the Discovery Phase. The contributions from the Project Partners was noted favourably and aligns well with the requirements of the Project. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

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.
Eligibility Criterion met
The Expert Assessors considered the Project to have a robust methodology which gives confidence that it will be capable of progressing in a timely manner. This is because all the work packages are provided with a cost, resources and identified lead. The tasks are provided with a brief but clear description. Milestones and deliverables were considered to be clearly identified. The risk register was considered appropriate for the Discovery Phase. The Expert Assessors therefore considered the Project to have met this Eligibility Criteria.

Regulatory barriers identified
NO
The Project nor the Expert Assessors identified regulatory barriers which will impact the delivery of the Project.

Recommendation to the Gas & Electricity Markets Authority

FUND

The majority of the Expert Assessors recommended this Project for SIF Funding. Overall, the Project was considered to involve network innovation in the deployment and application of heat and network balancing, which was also considered innovative and risky. All stakeholders were considered credible and capable of delivering the activities set out. Project costs were considered to be clearly presented and realistic to achieve the outlined plan and were considered to be competitive, representing value for money. The work packages provided are brief but clearly presented.

It was noted that the Project's benefits and associated assumptions could have been clearly presented and aligned with existing projections.

Recommended Project specific conditions

Prior to the end of the Discovery Phase, the Funding Party must engage with the SIF Projects 'Full Circle', 'Heatropolis' and 'Net Zero Community Energy Hubs' to discuss potential areas of overlap and duplication, and how the Projects can share their learnings.

8 SIF Round 2 Discovery Phase portfolio Gas Sector

Projects - Summary

In summary, based on these assessments, the following tables present the gas sector projects that are recommended to Ofgem for funding under the SIF Round 2 Discovery Phase, subject to the various conditions outlined above, and the gas projects that are not recommended for funding.

8.1 Gas Sector Projects recommended for SIF Funding

Supporting a just energy transition

Project Name	Funding Licensee	SIF Funding Requested (£)
Hy-Fair	SOUTHERN GAS NETWORKS PLC	£111,854.00

Improving energy system resilience & robustness

Project Name	Funding Licensee	SIF Funding Requested (£)
Distribution Network Information Modelling (DNIM)	SOUTHERN GAS NETWORKS PLC	£2.00
Hydrogen Cost Reduction (HyCoRe)	NORTHERN GAS NETWORKS LIMITED	£137,262.00
Supply Chain Resilience in the Transition	NATIONAL GRID GAS PLC	£77,893.00
NextGen Electrolysis – Wastewater to Green Hydrogen	WALES & WEST UTILITIES LIMITED	£81,422.00
Looking-Glass	SOUTHERN GAS NETWORKS PLC	£88,007.00
Digital Inspector	CADENT GAS LIMITED	£47,600.00

Preparing for a net zero power system

Project Name	Funding Licensee	SIF Funding Requested (£)
Electrolyser Improvements drive by Waste Heat Recovery	NATIONAL GRID GAS PLC	£95,714.00
Hybrid Storage Systems for site safety and efficiency	NATIONAL GRID GAS PLC	£133,656.00

Accelerating decarbonisation of major demands

Project Name	Funding Licensee	SIF Funding Requested (£)
Integrated Hydrogen Transport Hubs	WALES & WEST UTILITIES LIMITED	£135,169.00
Calfacto Latent Energy	SOUTHERN GAS NETWORKS PLC	£82,469.00
Net Zero Community Energy Hubs	SOUTHERN GAS NETWORKS PLC	£81,315.00
Carnot Gas Plant	SOUTHERN GAS NETWORKS PLC	£93,952.00

Total SIF Funding requested by gas Projects recommended for SIF Funding:
£1,166,315.00.

8.2 Gas Projects not recommended for SIF Funding

[REDACTED]

9 SIF Round 2 Discovery Phase Portfolio Electricity Sector Projects - Summary

In summary, based on these assessments, the following tables present the electricity sector projects that are recommended to Ofgem for funding under the SIF Round 2 Discovery Phase, subject to the various conditions outlined above, and the electricity projects that are not recommended for funding.

9.1 Electricity Projects recommended for SIF Funding

Supporting a just energy transition

Project Name	Funding Licensee	Initial Net Funding Requested (£)
Net Zero Terrace	ELECTRICITY NORTH WEST LIMITED	£129,519.00
EV Respond	NATIONAL GRID ELECTRICITY DISTRIBUTION (WEST MIDLANDS) PLC	£121,384.00
VIVID – Vulnerability Identification Via Informative Data	SOUTHERN ELECTRIC POWER DISTRIBUTION PLC	£94,459.00
Guidelight	UK POWER NETWORKS (OPERATIONS) LIMITED (LPN)	£119,628.00
SHIELD	UK POWER NETWORKS (OPERATIONS) LIMITED (EPN)	£82,163.00

Improving energy system resilience & robustness

Project Name	Funding Licensee	Initial Net Funding Requested (£)
SIF Black start demonstrator from offshore wind (SIF BLADE)	SP TRANSMISSION PLC	£149,226.00
REWIRE (Residential Whole System Integrated Resilience)	ELECTRICITY NORTH WEST LIMITED	£149,947.00
SECURE – Securing the future delivery of all HVDC projects by de-risking the HVDC cable supply chain	SCOTTISH HYDRO ELECTRIC TRANSMISSION PLC	£147,909.00

REACT (Rapid Evaluation Areal Connection Tool)	SCOTTISH HYDRO ELECTRIC TRANSMISSION PLC	£149,320.00
Dynamic Networks	SOUTHERN ELECTRIC POWER DISTRIBUTION PLC	£139,273.00
D-Suite	SP ENERGY NETWORKS: MANWEB PLC	£131,875.00
Scenarios for Extreme Events	NATIONAL GRID ELECTRICITY SYSTEM OPERATOR	£149,999.00
Resilient Customer Response	NORTHERN POWERGRID (NORTHEAST) PLC	£117,889.00
Whole Energy System Resilience Vulnerability Assessment	NATIONAL GRID ELECTRICITY TRANSMISSION PLC	£142,820.00
SF6 whole life strategy	NATIONAL GRID ELECTRICITY TRANSMISSION PLC	£119,607.00
SCOHL – SuperConductor Overhead Lines	NATIONAL GRID ELECTRICITY TRANSMISSION PLC	£132,507.00
Trinity	UK POWER NETWORKS (OPERATIONS) LIMITED (EPN)	£134,793.00
CommsConnect	UK POWER NETWORKS (OPERATIONS) LIMITED (SPN)	£110,138.00
WARN (Weather Alerts and Risk analysis for Network operators)	UK POWER NETWORKS (OPERATIONS) LIMITED (SPN)	£109,647.00
Connectrolyser	UK POWER NETWORKS (OPERATIONS) LIMITED (EPN)	£118,525.00

Preparing for a net zero power system

Project Name	Funding Licensee	Initial Net Funding Requested (£)
INSIGHT (Innovative Network Status Intelligence Gathered by Holistic use of Telemetry and Simulation)	SCOTTISH HYDRO ELECTRIC TRANSMISSION PLC	£83,515.00

Shifting Currents	NATIONAL GRID ELECTRICITY DISTRIBUTION: WEST MIDLANDS PLC	£99,040.00
Powering Wales Renewably	NATIONAL GRID ELECTRICITY SYSTEM OPERATOR LIMITED	£135,491.00
Diversified Flexible Queue Management	NORTHERN POWERGRID (NORTHEAST) PLC	£147,151.00
Artificial Forecasting	NORTHERN POWERGRID (NORTHEAST) PLC	£126,722.00
Power Block	UK POWER NETWORKS (OPERATIONS) LIMITED (LPN)	£42,355.00
CRoDo+ Climate Resilience Demonstrator (extension to new climate risks)	UK POWER NETWORKS (OPERATIONS) LIMITED (EPN)	£112,284.00

Accelerating decarbonisation of major demands

Project Name	Funding Licensee	Initial Net Funding Requested (£)
RetroMeter	ELECTRICITY NORTH WEST LIMITED	£148,081.00
LEO-N	SOUTHERN ELECTRIC POWER DISTRIBUTION PLC	£141,756.00
Tyseley Environmental Enterprise District	NATIONAL GRID ELECTRICITY DISTRIBUTION (SOUTH WEST) PLC	£145,216.00
Planning Regional Infrastructure in a Digital Environment (PRIDE)	NATIONAL GRID ELECTRICITY DISTRIBUTION (EAST MIDLANDS) PLC (WESTERN POWER DISTRIBUTION PLC)	£130,641.00
Inform	NORTHERN POWERGRID (NORTHEAST) PLC	£123,196.00

Proportional Investment of Networks in Energy Efficiency Retrofit (PIONEER)	NATIONAL GRID ELECTRICITY DISTRIBUTION (EAST MIDLANDS) PLC) WESTERN POWER DISTRIBUTION PLC)	£125,446.00
Indus	UK POWER NETWORKS (OPERATIONS) LIMITED (EPN)	£141,349.00
Heatropolis	UK POWER NETWORKS (OPERATIONS) LIMITED (LPN)	£146,195.00
Full Circle	UK POWER NETWORKS (OPERATIONS) LIMITED (LPN)	£108,453.00
Lightspeed	UK POWER NETWORKS (OPERATIONS) LIMITED (SPN)	£140,552.00
Park & Flex	UK POWER NETWORKS (OPERATIONS) LIMITED (SPN)	£108,554.00
Heat Risers	UK POWER NETWORKS (OPERATIONS) LIMITED (LPN)	£92,341.00
Watt Heat	UK POWER NETWORKS (OPERATIONS) LIMITED (LPN)	£86,697.00

Total SIF Funding requested by electricity Projects recommended for SIF Funding:
£4,935,663.00.

9.2 Electricity Projects not Recommended for funding

[REDACTED]