SIF Alpha Round 2 Project Registration

Date of Submission

Project Reference Number

10086034

Initial Project Details

Project Title

Indus

Project Contact

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Challenge Area

Accelerating decarbonisation of major energy demands.

Strategy Theme

Net zero and the energy system transition

Lead Sector

Electricity Distribution

Other Related Sectors

Gas Distribution

Project Start Date

01/10/2023

Project Duration (Months)

6

Lead Funding Licensee

UKPN - Eastern Power Networks Plc

Funding Mechanism

SIF Alpha - Round 2

Collaborating Networks

Cadent

Technology Areas

Heat Pumps

Commercial

Low Carbon Generation

Demand Response

Distributed Generation

Electric Vehicles

Photovoltaics

Energy Storage

Stakeholder Engagement

Gas Distribution Networks

Project Summary

Dispersed industrial sites account for nearly 10% of UK carbon emissions, and there is no coordinated plan for decarbonising small to medium enterprises. Indus is developing a novel approach to decarbonising industrial heat by clustering industrial sites. This allows for shared infrastructure investment and co-location of renewables on site, and improved network planning.

Indus is establishing a network-led framework to support commercial development of zero carbon industrial parks. Through market testing with local authorities, industry stakeholders, and gas networks, this whole systems approach to accelerating decarbonisation of industrial sites is an innovative step forward in the fight against climate change.

Add Preceding Project(s)

10086034 - Indus

Add Third Party Collaborator(s)

Camirus Ltd

M3MAS Ltd

CR+ Ltd

Ameresco

Peterborough City Council

Guidehouse

Project Budget

£551,953.00

SIF Funding

£496,757.00

Project Approaches and Desired Outcomes

Problem statement

Industrial energy demand accounts for 17% of total UK carbon emissions, with half of the demand met through burning gas. Of this total demand, over 50% comes from dispersed small and medium (SME) sized manufacturing sites and 90% of this can be attributed to industrial process use, and therefore cannot be addressed by building energy efficiency measures1.

Decarbonising these businesses is challenging because many options have significant infrastructure dependencies and involve major changes to business processes. For example, hydrogen may be a lower risk option to electrification, but only if a hydrogen network is available locally. Equally, electrification may be expensive or time consuming if local electrical network capacity is constrained. Onsite generation is almost always a preferred solution for larger sites, but the economics typically do not work for individual dispersed sites.

At the same time networks do not have advance visibility of future industrial electrification demand and rely on individual connection requests, which they respond to on an application-by-application basis. This creates a high potential for sub-optimal outcomes and stranded network investments, with high costs passed on to network customers.

This project proposes a framework and commercial model to enable joined-up thinking across multiple users to decarbonise while reducing impact on the grid. This will improve visibility of current and future use, and minimise infrastructure dependencies to create lower risk, easier to implement options. SMEs know they must act. This project will help provide a clearer path for decision-makers to do that. It will explore how to facilitate clustering of sites in a way that manages commercial risk and deliverability, addressing the challenge of decarbonising heat in dispersed industrial sites within the scope of the SIF Challenge 4 and Theme 1.

The Discovery Phase tested the hypothesis that a mini-clustering approach with shared zero carbon energy supply ranging from grid electricity to onsite generation and green hydrogen (zero carbon hub) could deliver benefits for electricity networks and customers. It found a potential benefit of at least £154m to GB customers from network savings by 2050. It also focused our attention specifically on the value of formalising the role of the DNO in enabling the industrial decarbonisation process for dispersed manufacturing sites; the need to expand our geographic scope to identify a suitable industrial development to test this approach; and the importance of bringing a gas distribution network (GDN) perspective into the team (which is how we will address the Theme 1 partner requirement).

This learning encouraged us to focus the Alpha Phase on developing a specific and standardised network-led framework and customer-facing tools that could enable dispersed industrial customers and developers to develop zero carbon industrial clusters. It will also inform DNO planning processes to be able to procure flexibility and identify asset investment requirements more accurately. It could also feed into local energy planning tools being developed by projects such as UK Power Networks' (UKPN) project CLEO2. The collaboration with a GDN and local authority (LA) partners will enable the project to identify how the solution can also align with their processes. To support our whole systems perspective during the Alpha Phase we will explore any relevant changes to gas network or LA processes and incorporate those identified into the Indus scope and framework during the Beta Phase.

The Alpha Phase will also identify a specific commercial industrial development - i.e. a planned or existing substantive industrial park ('use case') - which will be used to trial this network-led framework in the Beta Phase.

*1ECUK (2022) https://www.gov.uk/government/statistics/energy-consumption-in-the-uk-2022

*2CLEO: https://innovation.ukpowernetworks.co.uk/projects/collaborative-local-energy-optimisation/

Innovation justification

Indus is innovative as it delves into an underexplored solution to industrial decarbonisation. It offers the opportunity to solve the decarbonisation of industrial heat by considering a whole system approach to the concept of clustering dispersed small to medium industrial businesses as zero carbon industrial hubs. Failing to do so, could ultimately lead to uncoordinated and inefficient business and infrastructure investment, risks stranded assets or missed Net Zero targets.

The project addresses Challenge 4 and Theme 1 by developing and testing a novel framework and potential for customer-facing

tools for network operators to offer to the industrial market to enable commercial development of zero carbon industrial hubs. The framework will cover the full range of planning, contracting, and operating interactions between the DNO and the relevant industry stakeholders, as well as gas networks and transmission networks where appropriate. It will include business process definitions; example operating models; and commercial offers (e.g. flexibility and connection agreements with DNOs) and will explore the demand for digital offerings.

To maximise market acceptance, we will work with relevant stakeholders through an advisory board, and help developers, industry, LAs, and IDNOs that manage the local site networks, to align their own operating models and processes with this framework. Considering insights from Discovery Phase and continuing to meet Theme 1 partner requirements, Indus will include an additional energy network licensee, Cadent, as a partner. As a potential developer of hydrogen networks, Cadent will help complete the picture from a whole system perspective.

The Discovery Phase tested the hypothesis that a clustering process could deliver benefits for electricity customers. It showed this approach is replicable across UKPN's licence areas with potential to deliver network benefits of circa £33m by 2050. As part of the Alpha Phase, we will engage with other DNOs to refine benefits' estimates and validate the replicability across GB; estimating provisional benefits of ~£154m.

Indus has already engaged with multiple stakeholders in Peterborough and UKPN's licence areas and plans to broaden this engagement in the Alpha Phase; working through the wider geography of New Anglia and Peterborough. The project builds on work done through the national Industrial Decarbonisation Challenge programme in the Black Country and is a significant evolution on this approach. The focus on a network-led framework and whole systems approach with the gas network is completely novel and potentially transformative, given the Local Network Operators' (LNO) unique role in zero carbon infrastructure provision.

The technical knowledge required for Indus delivery needs to include industrial decarbonisation solutions (Ameresco), energy infrastructure solutions (UKPN and Cadent), regulations and business models (Guidehouse). This knowledge needs to be combined in new ways (Camirus) in specific geographical and industrial contexts (Peterborough, New Anglia and M3MAS).

Discovery Phase moved the proposition from CRL4 to 5. Alpha will move it from CRL5 to 6. TRLs and IRLs are not appropriate to this project as it is a system innovation applying to multiple technology integrations.

Alpha Phase will also establish a method for DNOs to understand and predict likely development of industrial demand in their licence areas. It is vital to develop such a solution within RIIO-ED2 period to be able to influence decision making in the decarbonisation of industrial heat processes and prepare the business with a credible plan for RIIO-ED3. There is currently no alternative funding stream to cover this, and it is a novel solution that is unlikely to be developed as part of business as usual (BAU) activities in RIIO-ED2.

In Beta the project will develop the tools and apply the framework to a landmark commercial industrial development ('use case') selected with stakeholders during Alpha.

Impact and benefits (not scored)

Financial - future reductions in the cost of operating the network

Financial - cost savings per annum on energy bills for consumers

Environmental - carbon reduction – direct CO2 savings per annum

Environmental - carbon reduction – indirect CO2 savings per annum

Revenues - improved access to revenues for users of network services

New to market – products

New to market – processes

New to market - services

Impacts and benefits description

The following benefits were identified and quantified in Discovery:

Financial - future reductions in the cost of operating the network (£33 by 2050)

· Currently networks do not have full visibility of future electrification potential as industry decarbonises. They typically respond to individual industrial connection requests on an application-by-application basis. To decarbonise process heat through electrification, each industrial site would need to invest in its own low carbon energy infrastructure (e.g. heat pump) and secure required capacity through the network. To reduce energy costs and peak load, they also need to invest in other renewable energy infrastructure (e.g. batteries and onsite solar). The cost of additional network capacity, in the form of network reinforcement, is measured in £/MVA.

· Compared to the counterfactual scenario, Discovery analysis indicates Indus could avoid the need for 395 MVA additional network capacity in UKPN's licence areas and 1,844 MVA of capacity across GB. This stems from industrial parks sharing renewable energy solutions to decarbonise heat (e.g. heat pump) in a coordinated way. The shared energy solutions reduce overall capacity requirements through lowering the design margin (%), improving the coefficient of performance of the heat pump, as well as introducing peak diversification (%). The avoided MVA results in approximately £33 million of cumulative discounted net financial benefits for UKPN till 2050 and £154 million across GB.

Environmental - carbon reduction – direct CO2 savings per annum (1,600t CO2e by 2050)

· The network has embodied emissions in the infrastructure itself. Avoiding 1,844 MVA of additional infrastructure could reduce the embodied emissions of GB's networks by 7,500 tCO2e resulting in £460k worth of savings, of which UKPN's share is 1,600 tCO2e or £98k.

In the Alpha Phase we will focus on the quantifying the value from these other benefits described:

Financial - cost savings per annum on energy bills for consumers

· Reducing connections costs and avoiding related network reinforcement could save consumers money on their energy bills.

· Indus also offers industrial customers the opportunity to reduce overall energy use (MWh) through access to shared renewable energy infrastructure (e.g. waste heat from neighbouring industry, batteries and onsite solar arrays). This will be measured in MWh of consumption. Additionally, industrial customers can make savings through reducing the need to invest in their own onsite energy solutions. This will be measured in the £ difference between the counterfactual capital requirements for decarbonisation of the use-case site vs. the capital requirements for the Indus solution.

Environmental - carbon reduction – indirect CO2 savings per annum

· It is anticipated that Indus could also accelerate industrial decarbonisation, resulting in additional emissions savings per industrial site decarbonised.

· Indus could also require less on-site industrial energy infrastructure to support the decarbonisation of industry e.g. fewer HPs, therefore resulting in lower embodied emissions.

Revenues - improved access to revenues for users of network services

· The shared energy infrastructure at Indus sites could allow industry to participate in providing flexibility services, which offers them access to new revenue streams. This can be quantified through the cost of procuring flexibility to the network.

· Indus could also provide industrial parks with the opportunity to participate in system balancing depending on the type of onsite energy infrastructure implemented. This can be quantified through the cost of procuring system balancing to the network.

New to market – products, services and processes

· Indus will develop a new DNO framework that enables commercial industrial developments that reduce the costs of industrial decarbonisation for everyone. Specifically, this will include new forms of business process definitions, methods for planning network capacity, operating models, and commercial offers (e.g. flexibility and connection agreements) and will explore the demand for digital offerings to support industrial park developments.

Teams and resources

There will be eight partners in the Alpha Phase made up of the six organisations who completed the Discovery Phase and two new partners. Cadent are a GDN and New Anglia LEP who are a local enterprise partnership (LEP) covering a large part of UKPN's EPN licence area. They have been added to assess the whole systems perspective of Indus solution and expand the project site pipeline for the Beta Phase demonstration.

UKPN serve 8.5m homes and business in East Anglia, London and South East England and bring the DNO perspective to the project. They lead the Alpha Phase application, provide any data required and lead on engagement and dissemination activities, ensure that the project meets the Alpha Phase governance and are the primary stakeholder in shaping the development of the Indus framework.

Camirus are the innovation partner lead and have experience of leading and managing energy innovation projects with multiple partners for over 30 years. They led the Black Country Industrial Cluster Decarbonisation Roadmap planning project (which involved 10 partners and £2m funding) and supported Innovate UK in developing the Local industrial Decarbonisation Planning call for proposals. They lead on project management (Work Package (WP) 6).

Ameresco are a leading engineering and renewable energy asset developer, owner and operator. They specialise in renewable energy systems and energy efficiency for industry. They bring the technical capability to understand use cases and industrial requirements and ensure the project remains focused on commercially deliverable low carbon solutions for industry. They lead WP1 and development of an investment case for the chosen use case.

Guidehouse are a global consultancy spanning the commercial and public sectors with specialist expertise in energy infrastructure. They have specialist teams working in industrial decarbonisation and bring a comprehensive knowledge of electricity network regulation and business processes to the project. They lead WP2 & 3 to develop the Indus framework, refresh the project business case and update regulatory and policy barriers specific to the solution.

M3MAS are the financial and commercialisation lead partner on several industrial decarbonisation projects and bring a wide range of contacts in the industrial and commercial development sectors across South East England. They lead WP4 to engage and maintain relationships with commercial stakeholders and potential use cases, working with New Anglia LEP and Peterborough City Council.

Peterborough City Council is a forward-looking council with multiple industrial development sites available. They are experienced in supporting innovation projects and have excellent working relationships with UKPN. They lead WP5 to ensure project outputs and the solution developed align with LA processes and plans.

New Anglia LEP covers Norfolk and Suffolk and has already contributed six substantial industrial park developments including more than 500 businesses at different stages of development to Indus' pipeline. This provides a helpful head start in our search for the optimal use case for the Beta Phase. They work closely with WP4 to support selection of use cases and stakeholder engagement.

Cadent as a GDN provide experience in supporting gas specific process in industrial sites. They will bring access to more detailed gas consumption data and the perspective of a potential developer of hydrogen networks (another potential solution to decarbonisation of industrial energy demand for some customers) to the project. They support WP1 by offering technical support in the development of use cases.

To shape an appropriate solution for all relevant stakeholders, the project team will develop an Advisory Panel consisting of LAs, LNOs, IDNOs and industrial developers and customers. The needs of the industrial stakeholders will be discussed in the Panel and then addressed by the proposed Indus solution.

Project Plans and Milestones

Project management and delivery

Indus will follow best practice project management, with Camirus providing a full-time project manager alongside UKPNs' Innovation Lead. The team will hold fortnightly project meetings, virtual and physical, working to agreed agendas to ensure progress is reviewed and communicated, risks will be reviewed and updated routinely, and any issues and changes will be escalated and managed in a timely way.

UKPN has highly effective innovation governance procedures. This includes robust stakeholder engagement, weekly programme manager reviews and regular monthly meetings with a dedicated planning resource to support programme adherence, and mitigation of delays if any occur.

The project is structured around seven work packages, with clear roles and responsibilities as described below. There are key milestones identified throughout the plan and these ensure dependencies are managed. A critical dependency occurs in early January when the use case for the Beta Phase is selected, and depending on the nature of the use case this triggers further activities to develop a detailed investment case as the basis for the showcase Indus development.

· WP1 Use case and masterplan development (Ameresco)

Key Milestones: Develop a specific technical solution and investment case for the chosen development (use case) for the Beta Phase.

Dependencies:

WP2 – Definition of requirements of Zero Carbon Hub (ZCH)

WP4 – Confirm shortlist of potential use cases and selection of final use case

· WP2 Commercial framework design (Guidehouse)

Key Milestones: Establish the qualifying criteria for a ZCH, design the commercial framework and agreements, determine how DNOs & Local Authorities can better consider industrial decarbonisation in their planning cycles and complete workshops any explore value of customer facing tools with stakeholders.

Dependencies:

WP1 – Input on technical requirements

WP4 – Advisory panel established and workshops successfully completed

WP5 – Input from Local Authorities

· WP3 Business case and regulatory/policy barriers assessment (Guidehouse)

Key Milestones: Develop detailed cost benefit analysis for Indus covering UKPN's licence areas and GB and explore further the

regulatory and policy barriers identified during the Discovery Phase. Provide an overview of available funding opportunities for industrial decarbonisation.

Dependencies:

WP1 – Investment Case for the use case

WP2 – Workshops with Indus stakeholders and identified stakeholder requirements

· WP4 Market testing (M3MAS)

Key milestones: Develop, maintain and manage relationships with developers and industrial customers to give the project maximum access to potential use cases. Confirm shortlist of potential use cases and selection of final use case. Supported by Peterborough City Council, New Anglia LEP and Camirus.

Dependencies:

WP1 and 2: Key definitions and requirements for ZCH & technical and commercial assessments

· WP5 Local authority integration (Peterborough City Council)

Key milestone: Ensure the solution designed in WP2 aligns with existing LA spatial planning, local area energy planning and political processes.

Dependencies:

WP2: Development of commercial solution design

· WP6 Project management and knowledge dissemination (Camirus)

Key milestones: Ensure partners work together to deliver agreed project outcomes in a timely and efficient way. Develop and implement communications and dissemination plan.

· WP7 Alpha Phase Governance (UKPN)

Key milestones: Ensure UKRI and Ofgem project direction and governance as well as UKPN's internal governance requirements are met.

Detailed information on project deliverables, success criteria and dependencies are included in the Gantt chart.

Robust risk management will ensure the capture, communication and escalation of key risks and issues. An initial risk register is included in the project management spreadsheet detailing identified risks and mitigations. The key risks involve the solution acceptance by DNOs and industrial customers; data acquisition from all relevant stakeholders and identification of a use case for beta phase.

Indus does not anticipate any planned or potential unplanned supply interruptions for consumers.

Key outputs and dissemination

By the end of the Alpha Phase Indus will deliver:

1. A stakeholder map showing the roles and relationships between stakeholders engaged in any Indus (zero carbon industrial hub) development. This will also consider interactions between individual business units within the DNO and DSO. (WP2 – Guidehouse)

2. A set of business process definitions and charts showing how each party will engage with the Indus development process. These will cover, for example, what data needs to be provided by whom at what stage in the process, anticipated timescales for each step. These charts will also show how the Indus development process fits into existing (BAU) UKPN/DNO and LA planning and operational processes. (WP2 – Guidehouse)

3. A commercial framework that formalises the relationships in the stakeholder map and will enable an Indus development to proceed. This may lead to new DNO/DSO products being identified and will require engagement with other partners through interviews and workshops to understand and document key requirements between:

a. industrial parties to agree to a collective Indus connection contract

b. Indus and UKPN on the connection contract

c. Indus and UKPN on flexibility services.

(WP2 – Guidehouse)

4. A summary of energy system regulations relevant to the Indus process and model, including comments on how each is relevant, and, in some cases, why additional will apply within the Indus solution. (WP3 – Guidehouse)

5. A summary of funding opportunities for decarbonisation of industrial sites (WP3 – Guidehouse)

6. A shortlist of suitable use cases for the Beta Phase that includes suitable locations for a cluster, the industrial businesses that could relocate to those locations, the heat decarbonisation and renewable generation options for that cluster of businesses, a network impact assessment and mitigation options, and a high-level techno economic modelling for each cluster (WP1 – Ameresco)*

7. A detailed techno economic model, implementation plan, investment case and funding plans for the selected Beta use case that has applied and tested the aforementioned business process definitions and charts, and the commercial framework developed (WP1 – Ameresco)*

8. Signed memorandums of understanding, or similar, between key stakeholders demonstrating commitment to the Beta Phase use case. To include the LA, commercial developers, industrial customers, and the relevant network operators. (WP4 – M3MAS)

* Deliverables 6 and 7 will be supported by a ‘pattern book’ developed by Ameresco in Discovery, which contains technical solutions for the decarbonisation of industrial heat and the economic characteristics of each. This pattern book will be refined during Alpha as it is used and tested with developers and other network operators to prove national replicability and robustness.

Dissemination and engagement will largely be through:

- an advisory panel that will include industrial stakeholders (M3MAS)
- direct presentation at industry events and through publications (Camirus)
- dissemination to other LNOs through engagement during the project (UKPN/Cadent)
- upload of selected deliverables to the ENA Smarter Networks Portal and UKPN’s innovation website (UKPN)
- specific project learnings dissemination at the IUK Show & Tell events (Camirus and UKPN)
- an in-person event in London hosted by UKPN to disseminate the learnings and key outputs of all successfully awarded

Alpha Phase projects to a wider audience (UKPN)

· UKPN's social media channels to share project successes and discoveries with the possibility of publishing external press media where appropriate (UKPN)

· participation in Innovate UK and their Knowledge Transfer Network (KTN) dissemination events, where KTN is a nationwide network that works with Innovate UK a create connections, shape future innovation communities for their programmes and enhance technology expertise (Camirus)

· active promotion through the UK Industrial Decarbonisation Challenge Programme and through the Industrial Decarbonisation Research and Innovation Centre (IDRIC) (i.e. national conference and policy workshops). (Camirus)

Commercials

Intellectual property rights, procurement and contracting (not scored)

The parties agree to adopt the default IPR arrangements for this project as set out in Section 9 of the SIF Governance Framework.

The partners recognise that knowledge transfer is one of the key aims of the SIF, and that the benefits of this project will be maximised by the ability of other licensees to be able to learn from the Project so as to create improved outcomes or reduce costs for consumers. The partners do not anticipate that the Alpha Phase (or any potential subsequent phases) will result in the creation of IPR that cannot be freely disseminated, and have no expectation of creating income streams or royalties from IPR outside of participation in a competitive marketplace for services that may be informed or stimulated via the outcomes of the project.

Commercialisation, route to market and business as usual

The project will engage with different stakeholders within UKPN to identify requirements for the development of the framework and need for any required tools. It is anticipated that the new framework will potentially impact multiple parts of the business ranging from the DNO connections and planning departments to the DSO network strategy, flexibility and Local Area Energy Planning (LAEP) teams. The project team will work alongside UKPN experts to shape any products/frameworks in the Alpha Phase and test these during the Beta Phase. This approach will facilitate effective BAU adoption of the project outputs. The project will also explore whether there is a need for developing a separate business team to support the decarbonisation of industry potentially during future price control periods. Any funding requirements post project completion will be met via BAU allowances.

To replicate the solution across other networks, there will be:

- continuous engagement with other LNOs to understand their network requirements; and;
- knowledge dissemination activities when the solution is shaped and ready for deployment

To ensure the framework and associated tools and processes support commercial development of zero carbon business parks, the project team will create an Advisory Panel consisting of LAs, LNOs, IDNOs, industrial developers and customers (WP4). This panel will effectively act as a market testing forum, ensuring the commercial viability of any specific customer facing tools within the framework.

Working closely with real customers and addressing their current and future needs will help to ensure the market-readiness of the relevant elements of the new framework. This will be supported by demonstrating the commercial benefits of applying the Indus framework to specific industrial developments and technology combinations in comparison to a counterfactual that consists in looking at the same technology solution applied to the development in the absence of the Indus solution (part of Ameresco's activities in WP1).

The initial route to market will be through the project Advisory Panel and direct networking activities at industry events and publications, through active promotion in the UK Industrial Decarbonisation Challenge Programme and the Industrial Decarbonisation Research and Innovation Centre, and dissemination activities with other network operators. These activities will be led by Camirus, M3MAS, Cadent and UKPN.

Following the initial demonstration (in Beta) the project will deploy the framework and potential customer facing tools as a network led BAU product as described above.

The partners are able and committed to their commercial readiness and to scale their activities to expand the project where relevant. The BAU beneficiaries of this project have the scale and capacity to adopt the Indus framework.

Project Indus outputs are not expected to undermine the development of competitive markets and on the contrary, they are expected to encourage competition between commercial parties offering zero carbon solutions.

Policy, standards and regulations (not scored)

The Discovery Phase identified no significant regulatory or policy barriers preventing Indus from being deployed as a solution. Thus, no future project phase is envisaged to require a derogation or exemption. However, it did identify areas where improvements could be made to further enable Indus.

Recent direction from Ofgem in RIIO-ED2 requires DNOs to ensure they take 'reasonable steps to invest ahead of demand and future-proof the network where this benefits consumers' which should support the realisation of Indus. Through Indus, networks will proactively identify future industrial electrification and collaborate with industry to enable its realisation through gaining certainty on plans. This is further bolstered by the agile package of uncertainty mechanisms outlined in RIIO-ED2 that will allow investment to adapt quicky to support higher volumes of low carbon technologies if networks are faced with sharper uptakes in demand for new connections.

The Industrial Energy Transformation Fund (IETF) was initially announced by the Department for Energy Security and Net Zero (formerly Department for Business, Energy and Industrial Strategy) in 2018 and forms part of the government's Powering up Britain package to support industry cut energy bills and carbon emissions. In the future, the £185m Phase 3 funding that is available from 2024, could complement Indus by providing capital funding to industry to enable industrial electrification, and therefore help fund trial site locations for the Indus project. On top of that a deliverable looking into

Currently, connections applications are limited to one legal entity at a time, which means industrial collectives cannot apply for capacity without forming a new legal entity. While technically possible, this requirement makes it unattractive to collaborate. Providing means for industrial sites to collectively engage with their DNO on their decarbonisation plans and associated connection applications, will enable a more efficient electricity network infrastructure planning.

Historically, applications for capacity connections are processed and capacity is allocated in the order in which the applications are received, despite readiness. This also disincentivises collaboration between industry within an industrial park as, if it becomes evident there is a limited amount of capacity available for a particular area, businesses are incentivised to quickly apply themselves, irrespective of readiness to electrify.

Ofgem's recent Open letter on future reform to the electricity connections process indicates that the queuing process will be re-evaluated which provides an opportunity to address the improvements above.

Under Work Package 3 in the Alpha Phase, we plan to reassess whether the analysis done in the Discovery Phase remains accurate, in light of how the project evolves in the Alpha Phase as more detail comes to light. Further insights from the Discovery Phase are available in the appendix.

Value for money

The total cost for this project is £551,953.00 and the amount requested SIF funding is £496,757.00.

This is split per project partner is as follows:

UKPN

Total Costs: £52,100.00

Total Contribution: £5,210.00 (contribution in kind via labour)

Total SIF Funding Request: £46,890.00

Guidehouse

Total Costs: £255,024.00

Total Contribution: £25,502.00 (contribution in kind via labour)

Total SIF Funding Request: £229,522.00

Camirus

Total Costs: £59,615.00

Total Contribution: £5,962.00 (contribution in kind via labour)

Total SIF Funding Request: £53,653.00

Ameresco

Total Costs: £100,000.00

Total Contribution: £10,000.00 (contribution in kind via labour)

Total SIF Funding Request: £90,000.00

M3MAS

Total Costs: £40,200.00

Total Contribution: £4,020.00 (contribution in kind via labour)

Total SIF Funding Request: £36,180.00

Peterborough City Council

Total Costs: £14,042.00

Total Contribution: £1,404.00 (contribution in kind via labour)

Total SIF Funding Request: £12,638.00

Cadent Gas

Total Costs: £14,472.00

Total Contribution: £1,448.00 (contribution in kind via labour)

Total SIF Funding Request: £13,024.00

New Anglia LEP

Total Costs: £16,500.00

Total Contribution: £1,650.00 (contribution in kind via labour)

Total SIF Funding Request: £14,850.00

The project will meet the minimum 10% compulsory contribution from the partners' private funds as an in-kind contribution via labour.

There are no subcontractors to the project.

As the partnership illustrates this project requires collaboration across a broad range of LNO, LA, developer and industrial customer groups that simply wouldn't happen without SIF funding. The benefits of a collaborative approach in industrial decarbonisation and the scale of the challenge are recognised globally (see, for example, https://idric.org/impact-areas/research-approach/) and have been validated within UKPN's licence area in the Discovery Phase of this project, identifying £154m of national benefits that require a new approach from DNOs to realise.

Indus offers exceptional value for money because it builds on work previously done through the national Industrial Decarbonisation Challenge programme in the Black Country, avoiding unnecessary rework. It is also a significant evolution on this approach in the level of engagement of the LNOs and the focus on development and testing of a framework that can easily be replicated nationally. This is a far more cost effective and appropriate replication model for dispersed sites than the case-by-case public interventions being applied to heavy industrial clusters nationally (see, for example, https://www.gov.uk/government/publications/cluster-sequencing-for-carbon-capture-usage-and-storage-ccus-track-2)

Customer benefits: The Discovery Phase of this project identified potential customer benefits of at least £154m from reduced network reinforcement and embodied emissions alone across GB. Additional benefits are anticipated for individual industrial customers and through network operating costs due to better investment planning and additional flexibility services. DNOs become enablers of cost-effective industrial decarbonisation rather than potential barriers, offering customers tools and frameworks that encourage the most competitive low carbon outcomes.

Viability without public funding: Without public funding, it is highly likely that this work would be carried out at a significantly slower pace, with the partners only engaged once significant efforts have been put in place (and a lack of clarity as to who would be responsible for making these efforts). This would lead to uncoordinated network reinforcements, with a high risk of stranded assets, and ongoing net zero efforts would be significantly impeded. In a rapidly decarbonising world, UK industrial competitiveness would suffer, and infrastructure providers would be seen as obstacles to economic success.

Associated Innovation Projects

- ○ Yes (Please remember to upload all required documentation)
- ◉ No

Supporting documents

File Upload

Indus - Show and Tell (alpha phase).pptx - 16.7 MB
Indus - End of Phase Meeting final.pptx - 18.0 MB
Indus - R2 Alpha End of Phase Report_ENA_final.pdf - 447.8 KB
Indus - Mid Point Review Meeting v1.pdf - 497.0 KB
SIF Alpha Round 2 Project Registration 2024-01-23 3_18 - 83.0 KB

Documents uploaded where applicable?

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