SIF Alpha Round 2 Project Registration

Date of Submission

Nov 2023

Project Reference Number

10085870

Initial Project Details

Project Title

Net Zero Terrace Alpha

Project Contact

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Challenge Area

Supporting a just energy transition

Strategy Theme

Net zero and the energy system transition

Lead Sector

Electricity Distribution

Other Related Sectors

Electricity Distribution

Project Start Date

01/10/2023

Project Duration (Months)

6

Lead Funding Licensee

Electricity North West

Funding Licensee(s)

Electricity North West

Funding Mechanism

SIF Alpha - Round 2

Collaborating Networks

Northern Powergrid

UK Power Networks

Technology Areas

Heat Pumps

Community Schemes

Photovoltaics

Project Summary

Net Zero Terrace will produce a replicable technical and financial model for decarbonisation of mixed-tenure terraced housing that can be scaled and is appropriate for those that might otherwise be left behind.

Add Preceding Project(s)

10055259 - Net Zero Terrace

Add Third Party Collaborator(s)

Buro Happold

Rossendale Valley Energy

Rossendale Borough Council

The Kensa Group

Urban Chain

University of Salford

Centre for Energy Equality

Project Budget

£578,866.00

SIF Funding

£494,502.00

Project Approaches and Desired Outcomes

Problem statement

Net Zero Terrace aims to solve the problem of decarbonising mixed-tenure terraced streets where space and noise constraints restrict access to air source heat pumps. The solution will use a Smart Local Energy System (SLES) that is integrated to the distribution network, affordable to consumers and easily replicable across GB.

For many of the 10 million terraced homes in the UK not suitable for heat pumps, the counterfactual low carbon heating option is an electric boiler, meaning increased costs and demand on the grid. The solution overcomes multiple barriers to the rapid deployment of low carbon, affordable heat at community scale.

The project addresses Innovation Challenge 1, “Supporting a just energy transition”, and Project Scope 2, “Supporting decarbonisation of heat… for those consumer groups with reduced access to opportunities for decarbonisation”, in a number of ways, but primarily by providing an affordable option with no upfront capital costs and by delivering with a high degree of community engagement and benefit.

The project will investigate a SLES comprising ambient loop ground source heat pumps (GSHPs), community owned storage, solar photovoltatics (PV) and local peer-to-peer Power Purchase Agreements (PPAs) controlled by optimisation software. The project will provide a replicable model that integrates with the electricity network, reduces bills and defers the need for reinforcement. Its innovation lies within the integration and optimisation of community energy models for electricity and heat, utilising the Distribution Network Operator’s (DNO) network for fair distribution of generation and provision of flexibility.

Discovery has shown that it is possible to design a system architecture that features these components, which, alongside subsystems, are already proven. The soft market testing undertaken has demonstrated that suppliers want to take part in the solution; the innovation is in how they are integrated, and more investigation is required as to how they will work together. The high-level techno-economic modelling has shown that it saves approximately 2tCO2e per house per year compared to the counterfactual and approximately 6tCO2e compared to gas. It has also shown this is the lowest-cost option for delivering low carbon heat (and almost on par with the current gas/ do nothing option).

Discovery has also shown that integration into the network is possible under current regulations with the proposed element of community-owned power, but will require further testing in Alpha utilising Urban Chain, a peer-to-peer trading platform. Current connection processes also enable integration to the network but miss opportunities to maximise the benefits of the SLES by treating each aspect in isolation. Therefore, further investigation into how to maximise the benefits of flexibility for customers needs to be undertaken in addition to investigations into how to accommodate the solution without reinforcement.

Understanding of end users has evolved during Discovery through detailed mapping and an engagement methodology of reach, engage, retain, using the innovative Fairer Warmth platform and app – this will need further testing and evaluation during Alpha. This mapping has identified key contacts in the end users group for private landlords, social housing providers and owner-occupiers, and it has also identified a need for a compelling narrative centered around a local, collective, place-based solution that has been built into the engagement messages and tools. This outcome has been informed by learning from previous projects run by Valley Heritage – founders of RV Energy.

The project has been developed from the Decarbonising Rossendale project, which was funded by the Community Renewal Fund and led by Valley Heritage to identify the best way to decarbonise their community. The SIF Discovery project ran alongside a Net Zero Living Pathfinder project, which focused on the non-technical and commercial barriers to the delivery of the project.

Innovation justification

This project sits under Innovation Challenge 1, Project Scope 2, and will develop an affordable and scalable solution to decarbonising terraced streets in the UK. There are nearly 10 million terraced homes, many of which cannot easily transition to low carbon heat due to space constraints, affordability, and capacity in the DNO networks.

Discovery built on previous Community Renewal Fund work and identified that there could be a viable solution to the challenges faced, delivering affordable low carbon heat via an integrated SLES combining ambient loop heat technologies with community renewables, home energy management, and integration into the DNO network.

Soft market testing has been carried out under Discovery with over 20 organisations. This process has shown that the subsystems exist and there is significant existing learning that can be assessed, but it needs to be supplemented with actual testing of some subsystem components to prove they can integrate.

Discussion with UKPN's SHIELD Discovery project team has demonstrated there are opportunities for shared learning between the two different approaches to decarbonising heat in domestic properties.

Learning has also been brought in from the Pathfinder-funded sister project, which informs the evidence base for the benefits of the Net Zero Terrace solution. Centre for Energy Equality (CEE), as a project collaborator, has also brought in learning around customer engagement from its involvement in other SIF Discovery projects.

Buro Happold has leveraged learning from the BEIS-funded Heat Pump Ready Programme and NIC-funded CommuniHeat project, resulting in refinements to the planning process and validating our plan to use energy monitoring during Alpha.

This solution will be the first demonstration of how a novel SLES can be fully integrated into a DNO network, providing benefits for customers. Comparable systems exist in private networks and some elements have been tested on social housing, but no such schemes have been identified that have been deployed on regulated networks with mixed tenure properties.

Discovery has shown that it is possible to use current connection processes to integrate the SLES into the DNO network, but this limits the opportunities to maximise the benefits of operating the SLES as one system. It has also highlighted differences between DNO assumptions on the network impact of these technologies, resulting in different upgrade requirements in different license areas. Further innovation is required through Alpha regarding the connections process, including around the assumptions made and identification and realisation of network and customer benefits.

The readiness levels for the solution moved during Discovery up to 3-4, and we predict that post-Alpha these will move to 5.

In terms of scale, the study area has been chosen by RV Energy because it represents the key characteristics of the challenge being addressed. The project aims to achieve a scalable solution, so Alpha will also look at deployment through the entire borough; initial mapping shows in Rossendale alone that 14,000 homes could be decarbonized with this solution. Alpha will also scale up the impacts for delivery across the UK.

The counterfactual is the installation of an electrical boiler. District heating and hydrogen have been discounted as counterfactual options because the location is not near an industrial cluster or significant waste heat source or has a dense enough heat demand.

Discovery has concluded that the model is viable and subsystems exist, but the system as a whole does not currently exist in the market and without innovation support would not be viable due to the complexity of interactions needed between parties. The benefits are now clear as compared to the counterfactual of installing electric boilers.

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 CO_2 savings per annum

Environmental - carbon reduction – indirect CO_2 savings per annum

Revenues - creation of new revenue streams

New to market – products

New to market – processes

New to market - services

Impacts and benefits description

Techno-economic modelling shows that this solution is the lowest cost option for delivering low carbon heat and will be on par with the current gas / do nothing option once the cost modelling has been refined with in-situ data. It delivers approximately 6tCO_2e/ year carbon savings compared to the current gas option and approximately 2tCO_2e/ year compared to the counterfactual electric boiler installation.

- The pre-innovation baseline is the current heat supply to the households, which is predominantly gas boilers. This has been modelled based on benchmark data to cost an average of £4,423 per household and produce 7tCO_2e/ year (the project is questioning the benchmark data and will test with real data from homes in Alpha).
- The counterfactual is the installation of electric boilers with individual PV installations. This has been modelled to cost an average of £9,095 per household per year, with carbon emissions of 3.5tCO_2e/ year.
- There were three scenarios modelled for the solution, and the costs and benefits for the mid-point scenario are: average annual cost £5,436 with annual carbon emissions of 1.25tCO_2e/ year per household.

This modelling has been done using standard industry data for modelling energy consumption and annual energy bills for the types of homes in Bacup. Alpha will collect actual data through monitoring homes and subsystem testing to refine the model.

The CBA shows the electric boiler option has a whole life NPV of £0.6939m compared to the solution NPV of £0.8601m, meaning that the solution is the least cost option for decarbonisation.

The CBA uses the actual cost of reinforcement calculated for the study area for both the project solution and counterfactual electric boiler solutions. The total demand for the GSHPs was found to be significantly lower, with a total demand of 166.69kW, compared to the electric boiler counterfactual which was found to be 424.20kW. This leads to reduced need for reinforcement and reduced connections costs.

The impact of these differences will be modelled for the whole network during Alpha alongside the avoided (indirect) carbon savings from the reduced need for network investment.

There will also be local economic benefits and the creation of new revenue streams and job creation as a result of the solution. For example, the soft market testing undertaken during Discovery demonstrated that fabric retrofit, solar PV and sensors can be provided by local supply chain companies.

In addition, the solution includes community-owned solar, which will be owned and operated by RV Energy, resulting in the following local economic benefits:

1. Local people will be invited to purchase shares (£50 minimum share) in RV Energy and in return will receive interest payments for the lifetime of their investment as well as their investment re-paid. The share offer will be open to as many as possible by offering a low entry price.
2. The profit from operating the community-owned solar will be used to create a community benefit fund which will be invested in the local area.
3. The aim of the solar co-op is to subsidise the cost of electricity for the local community.

The counterfactual does not provide the community-owned benefits because it only includes individually-owned PV. It is also unlikely to create the same level of new revenue streams for local installers because the counterfactual is not a co-ordinated approach, therefore will not create a significantly increased, new level of demand.

The solution is a new-to-market product, process and service. It integrates existing sub-components from different suppliers and provides them a new route to market by offering a new service to homes for the supply of low carbon heat, including an offer of energy efficiency installation.

Teams and resources

Existing partners:

ENWL, Buro Happold, Northern Power Grid, Rossendale Borough Council and RV Energy.

New partners:

Urban Chain, Kensa Utilities, Centre for Energy Equality, University of Salford and UK Power Networks.

Roles and responsibilities for Alpha:

Project lead ENWL will continue its role as project manager, and will also continue to explore innovations and requirements related to DNO network planning and DSO interfaces.

Buro Happold will continue in its capacity to develop the system architecture, energy model and associated techno-economic model as well as an approach to spatial planning for identifying opportunities for the cluster deployment at scale. In addition, Buro Happold will lead the development activities and oversee the subsystem testing process for potential providers working with the University of Salford and demonstration test specification development.

RV Energy will continue in its capacity as the community energy lead, seeking to develop the requirements for integration of community energy and community engagement process.

Rossendale Borough Council, as the sponsoring local authority, will provide support in community engagement activities and input to aspects of the system approach where local authority support would be beneficial, including potential routes of financing and relevant regulatory and planning items.

Urban Chain as a licensed energy supplier and operator of a local energy market platform will develop with Buro Happold and RV Energy an approach to local energy market structures and operation compatible with the system architecture.

Kensa Utilities as a heat system provider and operator will contribute directly to the architecture and energy model development and provide equipment and oversight as part of the subsystem testing process.

The University of Salford will provide support and a controlled local environment facility for testing of selected subsystems in support of the testing process and evaluation of potential interface requirements.

Centre for Energy Equality (CEE) will leverage funding from other projects and work closely with RV Energy to develop an approach to the Fairer Warmth App for community engagement as well as support Buro Happold in digital integration of data from the app into the system architecture.

Northern Power Grid will review outputs and provide insight and comparison to their systems and approach with a view to enabling future deployment on other network.

UK Power Networks will review outputs and provide insight from the SHIELD project and other innovation projects, such as CommuniHeat, as well as insight and comparison to their systems and approach with a view to enabling future development on their network.

In addition to the above, through a process of community engagement, we will be selecting up to three homes for winter energy monitoring to provide valuable insight into the energy efficiency of buildings in the test area and likely efficiency measures needed. This will include the procurement of energy monitoring services (provider to be determined during Alpha). We will also be installing LV monitoring equipment at six homes located at the end of the feeders in the trial area to collect network data. We will engage with specialist external experts for the delivery of the community engagement work package to help with the service design, social impact measurement and organisational governance.

We are aiming for in-kind contributions of third-party home energy monitoring systems to test and evaluate their offering in our test programme, although a provision has been put in the budget to cover some testing activities.

We will continue soft market testing, including the running of workshops and convening webinars and appraising existing market offerings and learnings from other projects.

Project Plans and Milestones

Project management and delivery

ENWL has a proven track record of delivering innovation projects on time and to budget. The project team will use ENWL's proven programme management and governance methodology to ensure all defined milestones for Alpha are met. Project management will include regular progress meetings, review in line with the project plan and reporting in line with project direction and governance requirements.

Partners have been carefully selected based on their expertise and ability to commit skilled resource, Partners have worked together to develop a robust project plan and confirm all contributions, costs, roles and responsibilities, which will form the basis of our contractual agreements, to ensure that Alpha can be mobilised quickly if funding is awarded.

The project will contain 7 work packages (WPs): Project Management, Community Engagement, System Design and Integration, DNO/DSO Integration, Beta Commercial Arrangements, Learning and Scalability, Project Governance.

The project plan outlines our approach by defining the activities required within each workstream and identifying who is assigned to undertake each, and when.

Due to the nature of this collaborative project, there will be several links and interdependencies through Alpha:

- WP2/ WP3 - link between operational governance and organisational governance work
- WP2/ WP3/ WP5 - integration work will use outputs from the consumer interface work and share outputs for DSO interface work to bring solution together technically
- WP3/ Pathfinder/ WP5 - Outputs from WP3 and Pathfinder will feed data into the CBA for WP5
- WP4/ WP5 - outputs from DNO/DSO integration will feed into Beta commercial arrangements

A key aspect of our project delivery methodology is the identification and management of risks and issues. The risk model we have used evaluates the likelihood and impact of all identified risks and details all contingencies and mitigating actions. The team will use this methodology to continually identify and review the project risks, mitigating actions, and contingencies to ensure that risks are managed effectively. When a risk is raised the team will be responsible for creating a mitigating action that can be brought into effect should the risk be realized.

We have identified several review points throughout the project, identified in our project plan, which will be used to review milestones and correlate between them. We will then take a decision towards the end of Alpha as to whether we continue the project with a Beta application based on our project learning.

Customers will not be affected by any planned or unplanned supply interruption as a result of this work.

The solution model is designed to be inclusive, with Innovation Challenge 1, Scope 2 in mind, to ensure that those consumer groups with reduced access to opportunities for decarbonisation are not left behind, and enable shared value across project stakeholders.

Partners RV Energy, Centre for Energy Equality and Rossendale Borough Council will implement a carefully-planned customer engagement strategy to ensure that customers are engaged appropriately during Alpha. Feedback received during the project will be used to continually improve the customer research and engagement strategy.

The project team will use monitoring and evaluation to reduce the impact on future customers and their premises as much as possible. There will be some level of change as a result of the work planned in Beta, with the installation of kit and efficiency measures at customers' premises. However, without this solution, there will be further change required in the future as a result of the multiple, necessary interventions customers will have to make alone. The Net Zero Terrace solution will produce a pre-designed package that co-ordinates all aspects required, preventing the need for customers to achieve this in future.

Key outputs and dissemination

Discovery has determined a high-level system architecture and, through significant market testing and consultation, that the solution is viable subject to further refinement of the model, integration of subsystems and a robust process for community engagement.

Alpha will take this forward, further refining the model through consultation with industry, actual data from providers and subsystem testing and evaluation from credible providers.

The expected key outputs and their owners are summarised below:

1. Definition of the offer to members of the community, including refining which engagement methods, are the most appropriate through pilot testing and evaluation.

RV Energy have overall responsibility for the delivery of this output and will be supported by Centre for Energy Equality as developers of the Fairer Warmth app, one of the key engagement methods being trialed and developed, and Rossendale Borough Council as the local authority partner.

At the heart of this output is community engagement. It will be disseminated to actors in the community energy sector in addition to audiences interested in network innovation learnings. This will take place through forums such as Community Energy England events, webinars and online tools, as well as via the regional Net Zero Hubs and community energy networking events.

2. A refined architecture for delivery of the SLES including further development of subsystem interfaces and overall functional requirements specification to allow providers to participate.

Buro Happold as the system designers have responsibility for delivery of this output, and will be supported by Kensa as the heat pump provider and Urban Chain as the peer-to-peer platform provider – these are two key subsystems. Both companies are keen to make their technology available as part of Alpha to allow for in-situ testing of how the sub-components will operate together. This will take place alongside testing of Home Energy Management Systems to shortlist options which provide the required functionality and will be undertaken by the University of Salford using their existing expertise, smart meter lab and test house facilities.

The learnings from this outcome will be made available to the academic and industrial partners for dissemination through their channels to subject-specific audiences.

3. Review of DNO/DSO interface to review the connections process and identify how to maximise the value to customers and fully quantify the network benefits from rolling out the solution.

ENWL have responsibility for delivery of this work package and will be supported with input from Buro Happold and network partners. The aim of this output is to identify how to manage the connection of SLES to a distribution network in the most cost-effective way whilst at the same time maximizing the benefits for customers.

The outputs will be disseminated to audiences interested in network innovation through channels such as the Smarter Networks Portal and network innovation conferences. Other standard industry channels may also be suitable, such as ENA working groups and industry publications such as Utility Week.

For all project learning we will make best use of all available channels to ensure maximum reach. Summary reports will be produced, capturing the learning and insights from the activities described above, and made available to industry and other stakeholders through multiple channels, including ENWL's website. In addition, at the appropriate time we are planning to establish cross-industry workshops and webinars with relevant stakeholders to discuss the project, its aims, objectives and current insights, and this will also be used to obtain feedback into the development process.

We will also continue to support UKRI in supporting its communication programme to communicate learnings from projects.

Commercials

Intellectual property rights, procurement and contracting (not scored)

The project will comply with the default IPR arrangements in accordance with Chapter 9 of the SIF Governance Document.

Selected partners in the Alpha and Beta phases will be bringing product and systems background IP to the project for their respective ‘subsystem’ commercial offerings. This will again be managed in line with the SIF Governance. The resulting systems IPR derived from the project that determines the integrated solutions and derived benefits will be considered foreground IPR in accordance with the SIF Governance.

A key project output will be dissemination of a tool kit designed to ensure that all information required for deployment of the solution is made available to the industry. The toolkit will detail the systems architecture, and identify the roles and responsibilities and all required interfaces to deliver the solution.

Commercialisation, route to market and business as usual

The key to success will be creating customer demand by providing a SLES that allows affordable, low carbon energy and warm, healthy homes to be delivered at no upfront costs to consumers. This is the only way the entrenched, business as usual inertia will be overcome.

Integration into the network in a way that maximises the customer benefits is an important part of the overall development of the SLES. The investigations into DNO integration during Alpha will be an important step in identifying any process changes or other solutions that might be needed as part of adopting SLES as BAU within a DNO. It is anticipated that the route to BAU for the DNO will be through changes that may need to administered via ENA working groups, Ofgem or Elexcon.

Commercialisation needs scale, and the Net Zero Terrace has the potential to offer that scale.

For the Net Zero Terrace the route to BAU is the development of a standardised, replicable, scalable solution that will mobilise the supply chain and bring economies of scale, which in turn will further advance the potential for reduced energy costs for consumers. There are 10 million terrace homes in the UK and it is likely that many of those homes will not be suitable for an ASHP and the least cost grid solution will be GSHP via shared ambient ground loop.

There is a complex interplay between the commercial partners and their requirements to achieve this end goal. Please see appendix for the overview of the system and its architecture and a more detailed explanation. The whole systems approach is centered around a single, central organistion and its relationship with all the relevant stakeholders. All facets of this work have been moving from conception to detailed design in tandem, albeit at different rates.

The solution requires a model that will allow institutional investors to invest in the infrastructure asset, which would be layered with the retro-fit debt and repaid via a standing charge over at least 40 years, or potentially in perpetuity (as per the national grid). Developing the solution and demonstrating the benefits to the network and customers is a key component of demonstrating the model is investible.

By creating a no-upfront cost solution and delivering affordable, low carbon energy, the barrier of creating customer ‘demand’ can be unlocked. Demand for retrofit and heat pumps remains low, which creates further problems with the supply chain not mobilising, jobs not being created or insufficient skills training being taken up.

Throughout this project and the corresponding Pathfinder project multiple stakeholders have been engaged, covering every facet required for project delivery and initial service design blueprint workshop was undertaken. The route to market will be to continue this work getting further into the detail that will produce all the features of a commercial package.

This template, multi partner approach, with the same overarching objective, will be replicable and scalable creating a ‘cookie cutter’ approach for others to follow. This approach should create competition between commercial partners keen to be procured for facets of the work. Thus, creating and seeding competitive markets, rather than undermining them.

Policy, standards and regulations (not scored)

The policy and regulatory barriers were investigated during Discovery, which found no insurmountable barriers. The solution has been designed to work within the existing regulations, but because it is delivering an innovative approach there are many regulations and policies that are new to this application and therefore may cause challenges. There are also a number of changes to policy that might improve the market conditions for roll out of the Net Zero Terrace solution. For example, the change to requirement for private landlords to meet EPC level C could encourage the adoption of the solution because it will provide an easy way to meet this requirement with no up-front cost.

However, the project needs to allow time and engage with stakeholders appropriately to manage the risk of the identified challenges to the project, which can be summarised as follows:

Installation of shared ground source heat pumps involves creating bore holes and an underground hot water pipe network to deliver ambient temperature heat to individual homes. Permission can be gained for installing in public highways and there is an existing process for this. Or in the instances where the roads are privately owned the owners will need to provide permission. Digging up roads requires co-ordination with local authorities and other utility providers. The local authority is a partner on the project. The planning team at Rossendale Borough Council have been consulted as part of Discovery and their advice is that planning permission will be required for drilling boreholes. They recommend a pre-application to help with the process. Cost and length of time depends on the complexity of the application

Heat as a service is currently an unregulated part of the utility sector which theoretically should reduce the barriers to entry for new service providers. However, the project has considered the long-term policy direction and looked at the heat network metering and billing and the Heat Network Code of Practice which shows the direction of travel. It is not clear if it will apply to smaller schemes like the Net Zero Terrace solution; however, the spirit of these regulations and codes are already a key part of this project. The solution will provide its service with a price cap to ensure that consumers receive a fair price.

Installation of a community owned roof-mounted PV has implications for mortgage holders in that there has been reported reticence from mortgage companies to provide mortgages for properties with solar roof leases. This experience comes from a project looking at community solar on new builds, so needs testing further. The roof top community solar is also not the only option for community solar as part of Net Zero Terrace.

Supply of electricity to local customers to key to the success of the solution. The current arrangement will work within the existing regulatory requirements to have a licence supplier to bill electricity customers. By using a platform such as the one provided by Urban Chain the energy generated by the community owned solar can be used by the consumers on the ground source heat pump loop which will contribute to overall lower costs because it can be sold at a very competitive rate. Urban Chain are working with the existing requirements by going through the process of applying for an energy supply licence and in the meantime working with Rebel Energy under a white label agreement.

Value for money

The total Alpha project costs are £575,866.

The total SIF funding request is £494,502, meaning an overall 14.6% contribution from project partners.

The SIF funding request, contributions and balance of costs across partners are shown below:

- ENWL – SIF request £104,295 (£115,884 including 10% contribution via reduced rates) 20% of project costs.
- Buro Happold - SIF request £190,420 (£211,577 including 10% contribution via reduced rates) 36% of project costs.
- Centre for Energy Equality – SIF request £44,890 (£67,000 including 33% contribution via reduced rates) 12.7% of project costs.
- Kensa – SIF request £2,500 to cover the cost of the heat pumps required for the Home Energy Management System Testing at the University of Salford (£5,500 including 55% contribution via reduced rates) 1% of project costs.
- Northern Powergrid - SIF request £1 (£7,140 including 99.99% contribution via reduced rates) 1% of project costs.
- Rossendale Borough Council – SIF request £9,900 (£11,000 including 10% contribution via reduced rates) 2% of project costs.
- RV Energy – SIF request £66,150 (£73,500 including 10% contribution via reduced rates) 13% of project costs.
- UKPN – SIF request £1 (£1,875 including 99.95% contribution via reduced rates) 0.3% of project costs.
- University of Salford – SIF request £44,982 (£49,980 including 10% contribution via reduced rates) 8% of project costs.
- Urban Chain – SIF request £31,364 (£35,410 including 10% contribution via reduced rates) 6% of project costs.

In addition, it is anticipated that the Home Energy Management Systems selected for testing at the University of Salford will be donated to the project along with support time from the respective manufacturers.

Specialist consultancy support is being proposed for WP2 to support the development of the service design and social impact modelling. These are considered to be specialist skills that the project team can't provide. Their support will be designed in a way that will mean the outputs can be integrated into the project without the ongoing need for external support, so these should be one off costs.

Value for money

Our approach to the project solution will represent value for money in several ways.

The project builds on a large body of collective work looking at the complex problem of decarbonising heat at the lowest cost and maximising learning and inputs from other projects where appropriate. For example, considerable work has been undertaken on the corresponding Pathfinder project, which has fed into this work, and vice versa.

It also leverages support from a wide range of stakeholders. There has been wide engagement and soft market testing with many stakeholders which are all very keen to share knowledge and ideas with the ambition to find a solution for this complex issue, and this engagement will continue in Alpha. This motivation has led to 'collation of the willing', which includes, for example, UKIB, Bankers without Boundaries and Triple Point, who have all given their time and expertise, aware that scaling decarbonised heat solutions will be key to the Net Zero transition challenge.

The proposed solution, when deployed, will also represent value for money for customers in a number of ways. The most significant of which will be through bill reduction – potentially by up to 80% – as a result of the avoided need for reinforcement and the significantly cheaper running costs associated with a heat pump. A detailed explanation of the stacked benefits is included in the Q3 Appendix. The solution will be packaged for the consumer, will promote flexibility and improve connections planning.

Due to the potential scale of the solution across 10 million terraced homes in the UK, work undertaken within this project will have significant value as it will be sufficiently relevant to many other areas in the UK.

Associated Innovation Projects

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

Supporting documents

File Upload

Show and Tell slides - NZT Alpha.pdf - 484.9 KB
PWP6 M2 Connections Process Peer Review.pdf - 20.5 KB
PWP6 M1 Learnings Integration Presentation.pdf - 624.5 KB
PWP5 M1 Beta Commercial Arrangements.pdf - 318.4 KB
PWP4 M1 M2 M3 DNO-DSO Integration.pdf - 1.4 MB
PWP3 M7 Suitability Review Of TandCs.pdf - 145.2 KB
PWP3 M7 P2P Terms and Conditions.pdf - 203.9 KB
PWP3 M5 System Planning Approach.pdf - 3.5 MB
PWP3 M4 Techno-Economic Model.pdf - 1.5 MB
PWP3 M3 Energy Model.pdf - 1.6 MB
PWP3 M2 System Architecture.pdf - 393.0 KB
PWP3 M1 M6 Subsystem (HEMS) Testing.pdf - 553.4 KB
PWP2M2 Monitoring Evaluation Learning Framework.pdf - 2.1 MB
PWP2 M2 User Testing and Feedback.pdf - 1.3 MB
PWP2 M2 LA Engagement and Dissemination.pdf - 796.3 KB
PWP2 M2 Key Functionalty for User Testing.pdf - 1.2 MB
PWP2 M1 M2 Engagement Methodology.pdf - 2.9 MB
SIF Alpha Round 2 Project Registration 2023-11-17 9_32 - 79.3 KB
Q3 Appendix - Innovation Justification.pdf - 0.0 bytes

Documents uploaded where applicable?

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