SIF Alpha Round 3 Project Registration

Date of Submission

Nov 2024

Project Reference Number

10130943

Initial Project Details

Project Title

CoolDown - SIF Alpha

Project Contact

InnovationTeam@enwl.co.uk

Challenge Area

Unlocking energy system flexibility to accelerate electrification of heat

Strategy Theme

Flexibility and market evolution

Lead Sector

Electricity Distribution

Project Start Date

01/10/2024

Project Duration (Months)

6

Lead Funding Licensee

Electricity North West

Funding Licensee(s)

Electricity North West

Funding Mechanism

SIF Alpha - Round 3

Collaborating Networks

National Grid Electricity Distribution

Technology Areas

Heat Pumps

Demand Response

Project Summary

As Britain warms due to climate change, electrification of heat will mean increasing customer access to Space Cooling (SC) leading to increased summer peak demands. In current distribution network planning cooling demand is currently poorly accounted for and based on limited, high-level modelling. Additionally, cooling's potential to provide flexibility during periods of network stress has not been considered.

CoolDown will explore the impact of cooling on network capacity by producing improved uptake and demand projections as well as developing novel commercial arrangements to incentivise and unlock SC flexibility, reducing network reinforcement requirements and optimising value for customers

Add Preceding Project(s)

10103019 - CoolDown

Add Third Party Collaborator(s)

UCL Consultants Ltd

NATIONAL GRID ELECTRICITY DISTRIBUTION PLC

Guidehouse

Impact Research

Oak Tree Power Ltd

Project Budget

£558,338.00

SIF Funding

£499,888.00

Project Approaches and Desired Outcomes

Animal testing (not scored)

- ○ Yes
- ◉ No

Problem statement

As electrification of heating accelerates and GB warms due to climate change, customers are increasingly likely to exploit the potential use of domestic Heat Pumps (HP's) in cooling mode, or the use of combined Heating, Ventilation, and Air Conditioning (HVAC) systems, to provide SC.

SC already accounts for 10% of the UK electricity demand according to the Building Research Establishment (BRE), with 65% of offices and 30% of retail spaces using SC. Whilst domestic SC remains nascent, a UK Energy Research Centre study forecast that 5-32% of UK homes will adopt SC by 2035. Despite representing a sizeable and growing load which could lead to significant summer peaks triggering network reinforcement, SC forecasting is currently poorly accounted for in network planning. The impact of increased SC on the network and for connected customers is therefore unknown.

The increase in load from SC will potentially reduce the reliability of the network and increase constraints. In response to this, connected customers both domestic and non-domestic with SC may have an opportunity to provide flexibility services, thereby reducing peak load whilst enabling opportunity for participation in Demand Response (DR) markets.

CoolDown will improve understanding of the relationship between electric heating and SC, helping to maximise energy system flexibility which building temperature management can provide. This addresses Innovation Challenge 3: Project Scope 2.

Demand for space cooling will be explored by improving previous uptake scenarios; the relationship between peak summer substation demand and distributed renewables will be studied; and ultimately the value of SC flexibility to minimise network reinforcement and contribute to efficient grid operations will be predicted.

To realise these network benefits, CoolDown will explore novel commercial arrangements to incentivise and unlock SC flexibility and optimise value across stakeholders. The models will incorporate best practices from geographies where SC flexibility is more ubiquitous, such as the US. The project will also consider how these commercial arrangements can build on other low-carbon heating flexibility products such as those being developed in the NGED EQUINOX Network Innovation Competition (NIC) project, synergising the value and capture of system benefits from both heating and cooling flexibility. The potential impact that SC installations could have on the network has been highlighted, and the scale of this problem is potentially much bigger than is currently accounted for. From the initial sample of 36 distribution substations on the ENWL network, 27 are predicted to require reinforcement between now and 2050. DR could be used to manage some of this additional load and prevent the need for substation reinforcement. Using SC DR could reduce the number of substations requiring reinforcement down to 25. Along with the reduction in reinforcement, the additional financial and environmental benefits have been quantified in the high-level discovery CBA.

The project aims to build on Discovery by significant refinements to the model and the use of up to 10 times more data to increase the accuracy. This should provide a robust, scalable and representative picture of the problem that can inform potential DR trial design, network reinforcement decisions and customer flexibility requirements.

The Discovery Phase highlighted the need for customer engagement to understand perceptions and knowledge base around SC so a customer engagement partner and a Flexible Service Provider (FSP) have been incorporated for the Alpha phase to provide valuable insight into DR trial design.

A thorough understanding of the size of the problem and its impact on the network, in addition to robust DR trial design, will facilitate physical trials of the DR programmes at Beta Phase.

Innovation justification

Prior to CoolDown, the impact of SC on electricity demand has only been modelled on a transmission scale, and even then, only

at a high level. No GB DNO-led or supported project had explored the distribution network impacts of SC or how flexible SC demand can be unlocked to alleviate these emerging constraints.

The CoolDown Discovery phase was the first project to consider these elements in-depth, particularly using network impact insights to appraise the value of DR and how to incentivise and commercialise SC flexibility from end users.

The lack of prior detailed consideration given to SC network impact means that bolstering understanding of future SC scale and exploring novel commercial arrangements to improve the value and capture of system benefits from flexible building temperature control are innovative activities which cannot be considered part of business as usual BaU) activities.

The innovative modelling methodology developed in the Discovery phase of the project highlighted the benefit of modelling at a distribution substation level. The Alpha phase looks to develop this further by using the expanded modelling, customer engagement and FSP expertise to design suitable DR programmes in preparation for real world trials at Beta phase.

To ensure that SC's network impact can be properly forecasted and planned for, Alpha phase will refine the high-resolution dynamic thermal simulation modelling, carried out in Discovery, to explore the SC response of building stock under a range of scenarios. We will expand the work carried out in Discovery to further assess which distribution substations may be at risk of overload due to SC demand, and how these substations are characterised in terms of building types, numbers, and Photovoltaic (PV) penetration.

CoolDown will use these insights to assess the need for, and feasibility of, specifically designed new and innovative commercial arrangements to incentivise SC flexibility and minimise the need for network reinforcement. The Discovery phase produced a comprehensive long-list of potential models informed by learnings from international markets and UK network innovation, such as NGEDs NIC project EQUINOX.

The work outlined in Alpha is expected to take both the Technology Readiness Level (TRL) and Commercial Readiness Level (CRL) from 3 at the end of Discovery to 5/6. This will enable demonstration of the selected DR trials in Beta phase. We expect the Integration Readiness Level (IRL) to be level 2 at the end of Alpha.

In addition to all the enabling work done in Discovery phase, additional partners have been brought on board to further expand and accelerate the development of the project:

a customer engagement partner to understand the customers' knowledge, technology bias and DR participation willingness
an FSP to inform DR trial design and provide commercial customer insight. Note that we saw high interest from FSPs in the opportunity to partner on cooling DR, and will disseminate project findings to at least four additional FSPs
an additional DNO to ensure scalability across GB networks.
The Beta phase will then physically trial these developed solutions and progress them into a BaU solution which could be rolled out across GB markets and beyond.

Due to the high level of uncertainty around cooling uptake and potential DR participation, approaching this project in a phased manner reduces the risk of committing to a significant innovation project prior to fully defining the problem. For these reasons, CoolDown is extremely well-suited to the Strategic Innovation Fund (SIF) process, guiding the concept of GB SC distribution network flexibility through the different readiness levels to deliver a BaU network flexibility product.

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 - creation of new revenue streams

New to market – products

Impacts and benefits description

Impacts and benefits description
The impacts and benefits of network flexibility from domestic, office and retail SC have not yet been appraised and quantified across GB. The CBA counterfactual is the gradual rollout of SC up to 2050 on a sample of 36 distribution substations on the ENWL network. The counterfactual for the CBA considers network reinforcement only, with no flexible alternative.

CoolDown is expected to deliver the following:

Financial -- future reductions in the cost of operating the network -- Network flexibility derived from SC load could defer or avoid the need for summer-peaking substations to be reinforced, reducing expenditure. Considering a nominal cost of £32,200 per new transformer, the high-level CBA results up to 2050 show that the cost saving due to SC DR on the 36 substations has lowered the overall network expenditure. Taking a conservative assumption of 100% of overheated buildings and subsequent installation of AC, the reduction in expenditure, associated with reinforcement is £610,000. Taking a more optimistic assumption of 50% of overheated buildings and half of the subsequent installation of AC, the equivalent reduction in expenditure is £480,000. If results were scaled across ENWL's 17,000 ground mounted distribution substations, the cumulative benefits could be up to £35m by 2035.

Financial -- cost savings per annum on energy bills for customers -- New commercial arrangements designed to incentivise customers to reduce their SC electricity usage during peak demand times could provide benefits to customers by:

1.Receiving compensation for reducing their electricity demand through mechanisms such as DR payments or a new time-of-use tariff.

2.Saving money that would have been spent on electricity during periods where they reduce usage, or through wider behaviour change instigated by being on that commercial arrangement.

3.Reduced network charges on their energy bill due to more efficient network management and reduced reinforcement costs.

Environmental -- carbon reduction (direct) -- Reduced SC demand will reduce the amount of greenhouse gas emissions associated with the reduction in peak energy consumption. The high-level CBA results up to 2050 shows that the reduction in losses associated with the total reduction in peak energy consumption for the conservative 100% assumption is 10,031.14MWh which translates to an overall reduction in CO2e of 649.15t. The total for the more optimistic 50% assumption is 4482.04 MWh which translates to an overall reduction in CO2e of 308.52t. The conversion from MWh to tCO2e is based on the 2023 government greenhouse gas conversion factors.

Environmental - carbon reduction (indirect) -- Reduced network reinforcement requirements will save the emissions associated with the manufacture, construction and installation of additional assets.

Revenues - creation of new revenue streams -- As detailed above, novel commercial arrangements for SC flexibility will offer revenue opportunities to businesses and homes with relevant technologies installed, increasing the potential market liquidity for local flexibility requirements. In the Discovery phase, we defined a comprehensive list of commercial arrangements and shortlisted the five most promising for further investigation in the Alpha phase.

New to market -- products, processes, and services -- SC DR commercial arrangements will be a new addition to the growing and maturing GB flexibility market. We will consider how such models complement other low-carbon heating flexibility products such as those being developed in NGED's NIC project EQUINOX. There is also an opportunity for FSPs to further develop their business models, earning fees for coordinating DR programmes amongst customers.

During Alpha we will be exploring commercial arrangements and drawing on the experience with proven flexibility markets to assess the costs and benefits of adding SC into existing flexibility services.

Teams and resources

ENWL, UCL Consultants (UCLC), and Guidehouse will continue to collaborate as project partners on CoolDown following the successful discovery phase. Additionally, OakTree Power, Impact Research and NGED are joining the project to bring further skills and expertise.

Each organisation will utilise its skills and experience to deliver its project role:

ENWL will adopt the overall project governance role as well as leading the work exploring the impact SC will have on the ENWL network. ENWL will use existing business processes to quantify the impact and inform the business case for the commercial

arrangements.

UCLC will lead the modelling of SC demand, drawing on over a decade of development of high-resolution building-by-building models of the UK building stock. The '3D Stock' method pioneered by the Building Stock Lab will be used to develop a detailed description of the thermo-physical properties of the buildings in each case-study area. This will be used to understand their SC performance in a rapidly warming climate.

Guidehouse will build on their CoolDown Discovery work shortlisting UK SC DR commercial arrangements by leading the design of commercial arrangements for SC DR and exploring high-level trial logistics to lay the foundation for the Beta phase. They will also lead day-to-day project management and support development of the CBA. Guidehouse have successfully delivered innovation projects for various DNOs and bring expertise, specialised resources, and domain experience. Examples of relevant work include the delivery of the design of the commercial arrangements for NGED's NIC-funded project EQUINOX.

Impact Research will lead the customer engagement work during the project looking to better understand the capacity and appetite of domestic, commercial, and small-scale industrial customers to participate in a flexibility market utilising cooling. Impact have previously supported the delivery of innovation projects at both an NIA and NIC scale for multiple DNOs.

OakTree Power, as a FSP, has a large portfolio of demand response assets, with a high proportion being cooling assets, i.e., HVAC, freezers etc. They will feed into the work around the future commercial arrangements and trial design.

NGED is the DNO that operates four of the licence areas in GB covering the Midlands, South Wales and the South West of England. NGED will bring additional network input to ensure that the resultant outputs of the project can be rolled out across GB. They have a track record of delivering innovation projects, and their experience on EQUINOX will help inform the project.

Collectively, the project partners have the resources, equipment and facilities needed for the Alpha phase. The resource requirements are mainly in the form of individuals with the necessary skills and expertise to conduct the work. There will be some payments to users involved in the customer survey work. In terms of equipment and facilities, there are no additional requirements beyond existing computers, software applications and office facilities.

Project Plans and Milestones

Project management and delivery

As the PMT outlines, this project contains seven WPs. Please see Q9 for responsibilities for and outputs from each WP.

Approach to project management

WP1 is the project management package. A project manager from the ENWL Innovation Team will adopt the project governance role, supporting a day-to-day project manager from Guidehouse. Together, they will define and implement processes for governance, and stakeholder, risk and finance management.

Guidehouse will create a stakeholder engagement plan to ensure efficient and valuable engagement of internal and external stakeholders throughout the project. The plan will be proactively updated throughout the project. For finance, the project will employ monthly reporting by all partners on actual vs budgeted spend and regular invoicing to promote transparency and cost-effectiveness.

Following the success of previous ENWL innovation projects, our proven project governance methodology will ensure that CoolDown Alpha meets its defined milestones and deliverables.

To support the successful management and governance of the project, we will:

- Use a clear and disciplined approach to project monitoring and reporting, which will be reflected in regular meetings and project progress updates.
- Promote a culture of open communication between all partners, to give visibility of risks before they become issues, and allow us to proactively seek solutions.
- Develop and maintain an understanding of the dependencies between work packages to inform the project plan and allow impacts of any changes to be understood, planned for and mitigated if needed.

The accompanying Gantt chart illustrates the project delivery timeline, milestones, and dependencies between work packages, including:

- The outputs from WP2 feeding into WP3, at regular intervals through the task, to drive the analysis of cooling uptake and DR on networks.
- The initial outputs from WP3 links into WP2 to provide the data required for the characterisation of substation archetypes.
- The outputs from WP3 feeding into WP7 to drive creation of the CBA.
- The outputs from WP4 feeding into WP5 to support the work around potential commercial arrangements.
- The outputs from WP5 feeding into WP6 to inform the high level trial design.

Risk management strategy

A key aspect of our project delivery methodology is the identification and management of risks and issues, including mitigations and contingency activities. The ENWL project manager will oversee the project risk register, ensuring mitigating actions are devised and implemented. The risk register will be reviewed at every project partner meeting to ensure that risks are managed in priority order and mitigation actions identified.

CoolDown Alpha will not result in any supply interruptions for consumers. A future Beta phase would trial commercial arrangements to incentivise commercial and residential consumers to reduce network demand for SC, but never to interrupt supply for customers. WP6 focuses on creating a high-level trial design for Beta. We will reach out to FSPs, commercial property managers and other relevant stakeholders to inform the commercial arrangement and trial design. These WPs will also be informed by the outputs of consumer engagement via surveys and in-depth interviews by Impact in WP4. The stakeholder engagement plan developed by Guidehouse in WP1 will track these engagements.

Key outputs and dissemination

The key outputs and deliverables across all work packages are detailed below and will be disseminated on the ENA Smarter Networks Portal and in the Alpha "Show and Tell" presentations.

WP1: Project management

*Objective: Manage project on time and to budget, oversee risk management, liaise with monitoring officer and ensure governance requirements are met as well as making preparations for Beta Phase, including a full analysis of CoolDown's benefits.

*Outputs: Prepare for Beta phase. All project deliverables published on time and to budget.

*Lead: Guidehouse.

WP2: Development of high resolution demand models for SC

*Objective: Refine Discovery phase forecast model to provide a greater understanding of SC uptake and SC DR across a series of building archetypes. Update the existing model to include the year 2040.

*Outputs: Identification of SC demand archetypes for substations. Baseline and DR response models in 2024, 2030, 2040 and 2050 to be fed into WP3. Final report to be published.

*Lead: UCLC.

WP3: Exploring network impact of SC

*Objective: Explore the impact of SC uptake and SC DR on a large sample of substations using refined modelling. Assess the impact of load diversity, the relationship between other low carbon technologies and the impact on wider network forecasting.

*Outputs: Network data to feed into the Alpha CBA (WP7). Final report to be published.

*Lead: ENWL.

WP4: Customer insight

*Objective: Undertake customer focus groups and in-depth interviews and quantitative online survey of 1,000 energy customers to gain insight into consumer understanding of cooling technologies and the potential for uptake and DR participation.

*Outputs: Data to be fed into the commercial arrangements (WP5) and trial design (WP6). Final report to be published.

*Lead: Impact.

WP5: Cooling DR commercial arrangements

*Objective: Engage with customers, suppliers and flexibility aggregators to develop commercial arrangements for the use of SC DR. Explore passive cooling from ground source heat pumps (GSHP) as an alternative or supplement to cooling DR.

*Outputs: Final reports on GSHP passive cooling and DR commercial arrangements to be published. Commercial arrangements to be fed into trial design.

*Lead: Guidehouse.

WP6: Cooling DR trial design

*Objective: Define high level criteria and logistics for a Beta phase trial using the learning from WP5. This includes location, commercial arrangements and customer engagement approach.

*Outputs: Final report on trial design to be published.

*Lead: Guidehouse.

WP7: Cost benefit analysis

*Objective: Using the findings identified in WP3, carry out a network CBA to determine the Alpha stage estimates for financial, environmental and societal benefits, which build on the Discovery CBA.

*Outputs: CBA and associated report to be published.

*Lead: ENWL.

CoolDown will be engaging with a wide variety of stakeholders, including energy suppliers, network operators, consumers, and policymakers over the Alpha and Beta phases. This will ensure our findings are relevant and useful to all stakeholders, and that they contribute to the development of a fair and competitive market for network flexibility services. At key points in the project we will look to utilise ENWL's existing DSO stakeholder panel to disseminate the project. We have also sought to acquire a slot at the annual Energy Innovation Summit. Additionally, we will seek to set up a session with DESNZ to ensure regulatory alignment and dissemination sessions with at least four other FSPs approached as part of the Alpha bid process, who expressed an interest in being kept informed.

We will operate with transparency and accountability and make our findings available in a timely manner to interested stakeholders. We believe that CoolDown will help inform future decision-making on how to develop and implement network flexibility in a way that is compatible with competitive markets.

Commercials

Intellectual property rights, procurement and contracting (not scored)

IPR

Each project partner will comply with the default IPR arrangements as set out within chapter 9 of the SIF Governance Document.

For the Alpha phase all selected project partners, whilst they have significant ability and the relevant expertise to deliver, are bringing minimal background IPR to the project.

UCLC has background IPR in the form of data processing algorithms and modelling techniques which will be used to develop models of the building stock and its energy consumption-related characteristics in each of the case study areas. The models developed will be based on publicly available data sources and will be made freely available at the relevant stage of the project.

Any learning developed during the Discovery and Alpha phases will also adhere to the default IPR arrangements. Section 9.7 outlines that "each party participant shall own all Foreground IPR that it independently creates as part of the project, or where IPR is created jointly then it shall be owned in shares that are in proportion to the work done in its creation". For the purpose of this project, "the proportion to work done in its creation" is defined by the days to be spent on the project. Prior to starting the SIF phase, each project partner will make a declaration of background IP to be included in the consortium agreement that will clearly define any background IP they bring to the project. If any specific IP issues arise during project delivery, they will be addressed by the project steering committee and, if necessary, raised with the monitoring officer.

In addition to complying with the default IPR arrangements, data generated during the project will be shared and made available through knowledge dissemination to allow other parties to benefit from the outputs.

Procurement and Contracting

Work planning in Alpha phase will be carried out by project partners. During this phase Impact Research will bring on board contract resource to complete their interviews, surveys and focus groups.

We have no requests for information (RFIs) or requests for proposals (RFPs) planned for Alpha phase.

We will engage with domestic and non-domestic energy customers for participating in surveys, interviews and focus groups and may offer an incentive payment for participation. The project partners will follow best practice for this customer engagement.

Commercialisation, route to market and business as usual

Our commercialisation strategy from Alpha to Beta and beyond looks to seamlessly integrate cooling DR services into BaU operations across ENWL's and other DNOs' networks.

During Alpha, we will conduct comprehensive market research to better understand the current GB SC landscape and identify opportunities for cooling DR. We will survey consumers GB-wide (WP4) to assess penetration and knowledge of SC and hypothetical willingness to participate in cooling DR. We will also explore the prevalence of cooling amongst our FSP, OakTree Power's, commercial and industrial customer base (WP5). Insights gained will help us effectively design cooling DR commercial arrangements that meet customer needs and supplier capabilities and align with existing DNO flexibility products (WP5). Our CBA (WP7) will quantify the benefits of these arrangements, incorporating cooling demand modelling (WP2) and network impact (WP3). Finally, we will undertake high-level trial design of these arrangements (WP6), laying the groundwork for Beta.

In Beta, we move to the pilot stage where we will conduct real-world trials. These trials are crucial for testing customer participation and DNO willingness to pay for cooling DR. We will seek to recruit customers from multiple FSPs and collect data throughout the trial on customer comfort, participation rates and satisfaction towards the trialled cooling DR services. This phase will also involve technical integration, ensuring that cooling technologies in the UK can provide the necessary flexibility and respond effectively to network needs. We anticipate that initial trials will focus on commercial buildings, where the existing cooling customer base is greater - 65% of office spaces and 30% retail spaces already have SC. We would incorporate a stage gate to decide whether to design additional domestic-focused or mixed trials, depending on the evolution of domestic cooling penetration rates.

Moving to BaU, the data from Beta trials will inform how cooling DR can be procured and integrated into standard DNO services. FSPs would use trial outputs to develop their own products, ensuring a tailored approach that meets their and their customers' unique needs. Aligning these cooling DR services with the ENA's standard flexibility products ensures smooth integration into existing frameworks, facilitating widespread adoption.

Our project partners are well prepared for this commercialisation journey. OakTree Power already offer flexibility products to their customers, specifically in the demand modulation space. Additionally, they have experience of the impact of changing weather conditions on heating and cooling demand size and customer behaviour. This experience, paired with an already significant presence in the commercial sector, provides a strong foundation for designing, undertaking and scaling cooling DR arrangements. Guidehouse and NGED are lead partners on EQUINOX, the largest scale heat pump flexibility trial in the UK. They can bring learnings from this that can be adapted for cooling. Finally, ENWL and NGED are both committed to the ENA's standard flexibility products, which will form the basis for the commercial arrangements. This standardisation will streamline the integration process and support the scalability of these services across different networks.

As the lead network, ENWL's involvement in this project has been reviewed and agreed by the Head of Network Innovation and the Head of DSO for the Alpha submission. This project links into ENWL's ambition to expand the number of available flexible services to cover seasonal variations. Additionally, it has links to our previous innovation projects, Celsius and Smart Heat, around the impact of temperature on distribution assets. These supplement the work being done in CoolDown as they inform temperature based ratings, which may exacerbate the impact of SC loadings.

Policy, standards and regulations (not scored)

No derogation or exemption from any project related regulatory requirement is required for the CoolDown Alpha phase. CoolDown investigates new use cases for existing technology. As the effects of climate change increase the market for domestic and commercial SC, we need to understand and manage the effect SC increases will have on the network in the future. As such, CoolDown does not seek to introduce new air conditioning or cooling products to the GB market, so we do not expect there to be any significant barriers arising from policy, standards or regulation. The project does not require a derogation or exemption for Alpha phase or foresee the need for future work.

Nevertheless, we propose holding a session with appropriate DESNZ stakeholders to clarify alignment, share learnings and ensure we are accounting for all relevant public work on SC demand.

Existing DSO regulatory environment

We expect any network flexibility products developed by CoolDown to work within existing flexibility service regulatory standards developed for DSO.

Privacy and GDPR

During the Alpha phase no customer personal data will be required, however data gathering for new and existing SC installations will be a key aspect of rollout of CoolDown to BaU. Customer privacy and GDPR regulations will be considered during planning for future trials and BaU. Any further policy, standards and regulatory barriers identified during the course of Alpha phase will be considered in our planning for future work.

CoolDown learning for policy makers

The learning from CoolDown will be valuable to policy makers who have a stake in decarbonising SC in a cost-efficient manner. The project will utilise existing working groups, such as the ENA's Open Networks programme to interface with policy makers and provide a potential channel for sharing learning from CoolDown to assist other members of the electricity networks community to understand and mitigate the growing challenge of SC.

During Alpha phase we will deepen our understanding of the commercial arrangements to incentivise and unlock SC flexibility. In preparation for Beta phase, the project team will consider the market and customer data and how these can be gathered as part of WP6.

Future regulation and policy changes

Learning from early phases will inform the design of CoolDown trials. If standards, policy or regulatory changes substantially impact the applicability of CoolDown objectives, the project will consider how the trial designs can be adapted to maximise learning in a new standards, policy or regulatory environment.

The rate at which heat pumps are installed, and their ability to operate in cooling mode, will continue to depend on government policy and stimulus. Should any regulatory or policy changes arise during the project, these will be carefully considered and fed into decision making on project development.

Throughout the project we will continue to review any changes to government strategy, policy or regulation and consequential impact on CoolDown. If project learning leads to identification of any changes required to enhance the rollout of CoolDown, this will be clearly highlighted in any project progress reporting.

Value for money

The total Phase cost is £558.338.00

The total SIF funding request is £499,888.00

Compulsory contribution

All project partners will provide a minimum of 10% contribution in the form of a reduced day rate.

Balance of costs across project partners

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

*ENWL -- SIF request £61,637.00 (£70,847.00 including a 13% contribution via reduced rates) 12.33% of total requested costs.

*Guidehouse - SIF request £200,000.00 (£222,768.00 including a 10.22% contribution via reduced rates) 40% of total requested costs.

*UCL Consultants - SIF request £143,509.00 (£159,455.00 including a 10% contribution via reduced rates) 28.71% of total requested costs.

*Impact Research - SIF request £48,101 (£53,445 including a 10% contribution via reduced rates) 9.62% of total requested costs.

*OakTree Power- SIF request £23,029.00 (£25,587.00 including a 10% contribution via reduced rates) 4.61% of total requested costs.

*NGED - SIF request £23,612.00 (£26,235.00including a 10% contribution via reduced rates) 4.72% of total requested costs.

Impact Research will engage with 2 subcontractors, Beam Fieldwork and Potentia, who will assist with the qualitative and quantitative fieldwork and support the focus group elements of the project. There is no additional funding from other innovation funds.

In the Alpha phase the project will be refining and developing the existing models created by UCLC during Discovery.

Regarding commercialisation, WP5 in Alpha will build on the work done in Discovery to further refine the proposed arrangements. They will then be developed more substantially into a BaU product in the Beta phase.

Associated Innovation Projects

- ○ Yes (Please remember to upload all required documentation)
- ◉ No (please upload your approved ANIP form as an appendix)

Supporting documents

File Upload

WP6 Trial design summary.pdf - 629.1 KB
WP5-2 Commercial Arrangements for space cooling DR.pdf - 560.7 KB
WP5-1 Benefits of Passive Cooling from GSHPs.pdf - 520.3 KB
WP4 Customer insight.pdf - 1.6 MB
WP3 WP7 Network Impact and Cost Benefit Analysis summary.pdf - 918.4 KB
WP2 Forecast space cooling and DR model final report.pdf - 1.4 MB
WP1 CoolDown Summary Report.pdf - 1.1 MB
Show and Tell presentation.pdf - 1.1 MB
SIF Alpha Round 3 Project Registration 2024-11-12 3_42 - 81.8 KB

Documents uploaded where applicable?

☑