

# SIF Beta Round 3 Project Registration

## Date of Submission

Dec 2025

## Project Reference Number

10166558

## Initial Project Details

### Project Title

CoolDown

### Project Contact

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### Challenge Area

Unlocking energy system flexibility to accelerate electrification of heat

### Strategy Theme

Net zero and the energy system transition

### Lead Sector

Electricity Distribution

### Project Start Date

01/10/2025

### Project Duration (Months)

31

### Lead Funding Licensee

ENWL - Electricity North West Limited

### Funding Licensees (not required)

ENWL - Electricity North West Limited  
NGED - National Grid Electricity Distribution

### Funding Mechanism

## Collaborating Networks

National Grid Electricity Distribution

## Technology Areas

Demand Response

## Project Summary

As GB warms due to climate change, uptake of Space Cooling (SC) is expected to increase significantly, leading to increased summer peak demands and greater network load for building comfort alongside the electrification of heat.

However, SC demand is currently poorly accounted for in distribution network planning using limited modelling. Additionally, SC's potential to provide flexibility has not been considered.

CoolDown will produce tools to enable network operators to understand the impact of SC at a local level. Trials of SC-tailored flexibility products will enable networks to mitigate adverse impacts, reduce network reinforcement requirements and optimise value for customers.

## Add Preceding Project(s)

10103019 - CoolDown

10130943 - CoolDown - SIF Alpha

## Add Third Party Collaborator(s)

Guidehouse

UCL Consultants

Ricardo-AEA

OakTree Power Ltd

Impact Research

equiwatt

## Project Budget

£5,447,459.00

## SIF Funding

£4,901,162.00

## Project Approaches and Desired Outcomes

### Animal testing (not scored)

- Yes
- No

### Solution statement and solution focus

As GB warms due to climate change, customers are increasingly likely to turn to space cooling (SC) technologies like air conditioning (AC) to maintain their buildings as comfortable working or living environments alongside technologies like gas boilers, heat pumps, and resistive heating.

CoolDown Alpha conducted detailed modelling of SC uptake and found that by 2050, 39% of all buildings in our license area will overheat and 30% of them will install SC. This is a marked increase on 2023 where only 9% overheated and 5% had SC installed. While SC is already prevalent in commercial buildings, customer research conducted in CoolDown Alpha revealed a growing domestic trend with 20% of households considering installing SC in the next two years.

Rising SC uptake places more demand on the electricity network leading to increasing network constraints. CoolDown Alpha found that SC growth accelerates the need for substation reinforcements across all Distribution Future Energy Scenarios (DFES), with a marked increase in reinforcements triggered by peak summer load (e.g. from 18 to up to 1802 in ENWL's license area alone) instead of the peak winter load that network planning is currently centred around. Left unmitigated, SC growth could lead to more significant network reinforcement requirements, increasing customer electricity bills and delaying project connections critical to wider net zero targets.

Demand response (DR) offers a potential mitigation strategy with domestic and commercial customers flexing their SC assets to reduce summer demand peaks. CoolDown Alpha showed that SC demand profiles are different from other technologies. Therefore, new DR programmes are needed to unlock SC flexibility and optimise its value for stakeholders; CoolDown Alpha designed four SC programmes suitable for domestic and commercial customers. The Cost Benefit Analysis (CBA) developed during CoolDown Alpha showed that SC DR could unlock up to £81m (depending on the DFES) in cumulative net benefits for GB DNOs and customers by 2050. While the benefits of SC DR are apparent, live trials with 'real' assets are needed to better understand customer behaviour and build the evidence base that will inform future DR programme designs amenable to SC technologies. CoolDown Beta will trial the four DR programmes iteratively across two summer trial periods. These trials will provide evidence and learning to enable networks to incorporate SC flexibility in their business-as-usual markets, mitigating the impact of SC growth on customer bills and offering additional revenues for Flexibility Service Providers (FSPs).

CoolDown Beta will also further enhance the network impact modelling work conducted in the Alpha project to produce a forecasting tool for SC allowing DNOs to incorporate predicted demand increases directly into their DFES.

Using and building on learnings from our NIC project, Celsius, CoolDown Beta will analyse how climate change impacts substation asset ratings, the need for reinforcement and consequently DR requirements.

CoolDown Beta builds on the outputs from the CoolDown Alpha to develop more accurate assumptions on SC uptake and its impact on the network, enabling DNOs to better target their investment plans.

CoolDown continues to meet Challenge 3 and focus area 2 as it further improves understanding of the relationship between electric heating and SC and maximises the flexibility achievable from building temperature management for DNOs.

Throughout CoolDown Discovery and Alpha, we engaged with DESNZ, FSPs, UKRI, and other DNOs who showed keen interest in the project. The project team now includes an additional FSP with domestic customers, demonstrating recognition of the growing importance of understanding SC and how it can flex.

CoolDown builds on learning from previous innovation projects such as EQUINOX and Heatropolis and best practices from these will be incorporated into the CoolDown Beta trials.

### Innovation justification

CoolDown Beta will develop and trial:

1. Novel DR programme designs for the provision of flexibility services from domestic and commercial SC assets
2. A first of its kind SC demand forecasting tool enabling its inclusion in network planning

CoolDown Alpha was the first GB DNO-led project to explore the impacts of SC growth on distribution networks and how SC flexibility can be unlocked to mitigate potential impacts on network planning.

CoolDown Discovery and Alpha uncovered how poorly understood cooling is among DNOs, FSPs, and customers. The innovative substation-level building modelling methodology developed across previous phases suggests that DFES have vastly underestimated the amount of cooling demand that could be added to the network. In CoolDown Beta, we will enhance this model to produce a forecasting tool that all DNOs can use to better account for SC in future network planning.

While commercial FSPs have some experience in flexing SC assets as part of a wider portfolio, they have never explored the limits of SC DR to lower summer demand peaks. Our engagement with multiple domestic FSPs has shown that they view SC assets as increasingly important but are unsure how to best integrate it into their asset portfolios given its relative nascency. Customer surveys in CoolDown Alpha found large variation in when and how customers use SC. Overall, CoolDown Alpha found that SC assets are used differently to other assets and embedding them into existing markets would risk inefficient flexibility delivery.

CoolDown Beta will trial the four SC DR programmes developed in Alpha to see how SC can optimally integrate into Business-as-Usual (BaU) flexibility portfolios and network services, including at transmission level. Engagement with DESNZ, FSPs, UKRI, and other DNOs has helped challenge and refine CoolDown, confirming the need for a DR demonstrator. With over 80% of customers reporting experiencing overheating during the summer 2022 heatwave, and SC becoming the norm in office and retail spaces, now is the right time to trial DR programme designs.

Through two iterative trial periods, held over successive summers, CoolDown Beta will, for the first time at this scale across GB and Europe, build an evidence base for the bounds of flexibility from SC in domestic and commercial buildings. We will use asset-level monitoring to understand customers' cooling behaviours more granularly and hold events across a range of temperatures, lengths, frequencies, and payment amounts to understand how these factors impact the level of flexibility achievable. We will explore customer sentiment through regular engagement with participating customers.

CoolDown remains well-suited to the SIF, innovating new flexibility programmes and DFES improvements through demonstrators and iteration. The DR trials and forecasting tool development build on previous CoolDown phases. Without these demonstrators, we risk SC not being properly embedded into network planning and flexibility market design. CoolDown's iterative trials with both domestic and commercial buildings allow us to develop a plan for transitioning SC assets into a BaU flexibility solution which could be scaled across DNOs alongside the forecasting tool.

The work outlined in CoolDown Beta will take the TRL from 5 to 9, the CRL from 5/6 to 8, and the IRL from level 2 to 8.

CoolDown Alpha also considered the potential for ground source heat pump passive cooling to mitigate SC demand growth. Whilst pilots have successfully delivered savings for individual households, it was unclear how the substantial scale-up required to deliver network benefits comparable to SC DR could be achieved and whether it would be appropriate for DNOs to play a role in this. We have therefore discounted this passive cooling for CoolDown Beta but recommend that it could be further explored elsewhere.

## Impacts and benefits selection (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

Revenues - improved access to revenues for users of network services

New to market – products

New to market – processes

## Impacts and benefits description

**Current position:** Outside CoolDown Alpha, the impacts of SC growth, and its flexibility potential, have not yet been appraised and quantified across GB. As a result, SC demand is not properly accounted for in the DFES and DNO's network planning.

This could result in DNOs overestimating – resulting in stranded assets and over expenditure on reinforcement – or underestimating – potentially leading to reinforcement of the same substation multiple times, compounding the associated costs of future network reinforcement. Both scenarios will increase network operation costs, which translates into increased electricity bills for GB customers. CoolDown Alpha found that network reinforcement costs could rise by up to £10bn GB-wide from an increased uptake of SC by 2050 across DFES scenarios.

By unlocking SC flexibility from domestic and commercial buildings, CoolDown is expected to deliver the following benefits:

### **Financial: Future reductions in the cost of operating the network**

SC DR is expected to reduce peak demand from building SC, especially for summer peaking substations. This provides extra network capacity, deferring (and potentially avoiding) network reinforcement. CoolDown Alpha found that unlocking this additional capacity could defer the reinforcement of substations by 1-5 years and reduce the number of reinforcements required by up to 7,000 across GB by 2050, depending on the DFES scenario.

Furthermore, increased participation of SC technologies in local flexibility markets will improve these markets' liquidity, reducing DNO costs of procuring flexibility. This has been included in the CBA, with the flexibility procurement cost assumed to be in line with current BaU flexibility markets pricing which reduces over time.

The CBA completed in CoolDown Alpha has shown benefits of up to £81m GB-wide by 2050 depending on the DFES scenario.

Note: The CBA does not include secondary substation and system level benefits i.e. SC DR contributing to system level balancing through participation in NESO flex markets. Therefore, it represents a conservative estimate. The project team will look to quantify these benefits in the CBA of the Beta phase. An alternative benefit is that SC flexibility can free up network capacity allowing networks to connect new customers, providing further operating cost benefits which will be considered in CoolDown Beta.

### **Financial: Cost savings per annum on energy bills for consumers**

Network operation costs are reflected in customer bills through Distribution Use of System charges. Therefore, savings associated with deferred reinforcement will lead to savings in customer's electricity bills.

Furthermore, the DR programmes will enable customers with SC to participate more widely in network flexibility services. These programmes will incentivise customers to use their SC assets outside congested, potentially more expensive, times of the day, thereby reducing their overall electricity bills.

### **Revenues: Improved access to revenues for users of network services**

The four SC DR programmes to be trialled in CoolDown Beta will offer revenue opportunities to businesses and households with SC through provision of flexibility services to DNOs. It also opens a new pool of technologies for FSPs to manage and earn flexibility revenues from.

### **Environmental - carbon reduction – direct CO2 savings per annum**

Reducing network reinforcement requirements will allow DNOs to save emissions associated with construction and installation processes. The CoolDown Alpha CBA calculated that, depending on the DFES scenario, up to 1,043tCO<sub>2</sub>e of reduction GB-wide can be achieved by 2050, giving a benefit of up to £7.5m.

### **New to market – products, processes and services**

The novel CoolDown SC DR programmes will be a new addition to local flexibility market products and FSP business models. During CoolDown Beta, we will trial the shortlisted DR programmes and develop a plan to transition these to BaU.

## Teams and resources

ENWL, UCLC, Guidehouse, Oaktree Power, Impact Research and NGED will continue to collaborate as project partners on CoolDown following the successful Alpha project. equiwatt (a new relationship) and Ricardo are joining the team bringing further skills and expertise to enhance the project learning.

ENWL will adopt the overall project management and governance role as well as leading WP3 - Trial Execution and WP8 – Closedown and BaU transition. We will incorporate the learning from the trials to refine the quantification of SC's network impact and the costs / benefits of SC DR. We will create a plan to transition the outputs to BaU ensuring they deliver benefits for customers.

NGED will provide additional network support across all WPs to ensure that project outputs can be scaled across all DNOs. To directly address scalability, customers from their license area will participate in trial 2, incorporating learnings from trial 1. NGED has a track record of delivering innovation projects, with their experience leading EQUINOX being relevant here.

Guidehouse will lead trial preparation and evaluation efforts, building on the commercial and domestic cooling DR programme designs and high-level trial design developed in CoolDown Alpha. They will also support ENWL with trial execution, stakeholder engagement and the transition to BaU. Guidehouse has successfully designed and/or delivered novel flexibility trials for UK DNOs in EQUINOX (heat pumps) and Heatropolis (heat networks). They bring their domain experience, expertise, and specialised resources, honed through various network innovation projects.

UCLC will lead development of the SC forecasting tool, building on existing efforts from CoolDown Discovery and Alpha and their Building Stock Lab's extensive experience developing high-resolution building-by-building energy demand models through their '3D Stock' method using their inhouse SimStock automatic modelling tool. UCLC will use these detailed demand models to explore the design of DR events.

As an FSP with commercial customers, Oaktree Power helped develop our commercial DR programmes in CoolDown Alpha. In CoolDown Beta, they will execute the commercial cooling DR trials with their customers and provide relevant data and expertise to support the trials evaluation.

Impact Research will build on the customer engagement work undertaken in CoolDown Alpha, expanding to cover non-SC users as well as domestic SC users and considers to explore cooling behaviours beyond SC. Impact have previously supported the delivery of innovation projects at both NIA and NIC scale for multiple DNOs.

equiwatt join as our domestic FSP partner. They will execute the domestic cooling DR trials with their customers with SC installed. equiwatt bring an extensive customer base and knowledge of residential flexibility markets to the CoolDown team, as well as experience of piloting flexibility events in SSEN's innovation Project LEO.

Ricardo joins to explore how hotter summer weather and SC load patterns impact substation performance and the need for cooling DR. Ricardo has similarly considered winter substation performance in our Celsius innovation project, and has experience of several SIF projects including HUBs (working with SPEN) and SeaChange & FORTRESS (working with SSEN).

Additional equipment: Whilst the trials will only include customers that already have SC installed, we intend to install asset monitoring equipment at a number of customer premises to monitor their SC usage. This allows us to build a more detailed picture of SC demand profiles and compare them to smart meter data. We will install up to 60 commercial and 20 domestic monitors.

Wider stakeholders: We will engage with, amongst others:

- Commercial and domestic customers, to participate in the trials.
- DESNZ's cooling team, building on the contact made in CoolDown Alpha.
- NESO, to consider the impact that SC demand growth and DR may have at the transmission level.

# Project Plans and Milestones

## Project management and delivery

The PMT outlines the project's eight WPs. Q11 outlines responsibilities for and outputs from each WP.

Approach to project management: We will use the programme management and governance approach employed for the delivery of previous ENWL innovation projects. Following the success of previous projects, our proven project governance methodology will ensure that CoolDown Beta meets the defined milestones and project deliverables. The philosophy to be open and collaborative, with the commitment to get it right first time to achieve delivery success will be embedded in the project team.

To support successful project management and governance, we will:

- Use a clear and disciplined approach to project monitoring and reporting, reflected in regular meetings and project progress updates.
- Promote a culture of openness between all partners that supports early identification of risks and allow us to proactively develop mitigations before issues arise
- Track the overall project plan and dependencies between WPs to understand, plan for and mitigate the impacts of any changes.
- Hold workshops at mobilisation to share lessons learned from previous phases
- Use a shared file repository to promote open information
- Agree clear roles and responsibilities for each project partner documented in a 'Responsible Accountable Consulted Informed' (RACI) Matrix

We will develop and proactively manage a stakeholder engagement plan to ensure valuable engagement of internal and external stakeholders throughout the project. For finance, all partners will report monthly on actual vs budgeted spend. Regular invoicing will promote transparency and cost effectiveness.

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

- WP2 outputs feeding into WP3 and WP4 to enable DR trials to occur and inform analysis of trial outputs
- WP4 outputs feeding into WP6 to inform how DR is accounted for in the forecasting tool, and WP7 to support the research into cooling customer insights
- WP4, WP5, WP6 and WP7 outputs feeding into WP8 to inform the update of the business case and the plan for transitioning to BaU.

Risk management strategy: A key aspect of our project delivery methodology is the identification and management of risks and issues. The definition and creation of mitigating and contingency activities form a key part of our risk management strategy. The project team will continually identify and review the project risks, mitigating actions and contingencies, to ensure that risks are managed in priority order. When a risk is raised the project team will be responsible for creating a mitigating action that can be brought into play should the risk be realised.

The ENWL Project Manager will oversee the project risk register ensuring mitigating actions are devised and implemented and it will be reviewed at every project partner meeting. Key risks are outlined in the PMT.

Customer engagement: Direct engagement with customers is a key element of CoolDown Beta. FSPs will recruit, onboard, and interact with them throughout the trials. We will define a detailed customer engagement plan to ensure project activities do not negatively impact energy services of customers. CoolDown Beta will trial SC DR programmes that reduce network demand but will not interrupt customers' supply.

To ensure success, we have planned a stage gate review at 15/11/2026 to assess if the project learning would benefit from moving forward with trial 2. This will be based on:

- Necessity: Is trial 2 essential to achieving the overall project goals or has trial 1 delivered them all? How does trial 2 build on trial 1 and enhance learnings?
- Benefits: Has trial 1 demonstrated that the forecasted SC DR benefits are indeed achievable, or that new DR designs need to be tested in trial 2?

## Key outputs and dissemination

By the end of CoolDown Beta, we will achieve the following:

- Optimise SC asset flexibility for domestic and commercial customers via iterative trials, substation performance analysis, and customer engagement.
- Transition trialled DR programme designs into BaU network flexibility services to maximise future SC participation.
- Integrate SC uptake and demand growth, and DR potential, effectively into network planning (via DFES, etc.).

Dissemination for the project will be primarily through deliverables and the project close-down report. Key objectives, outputs, and dissemination approach by WP will include but not be limited to:

WP1: Project Management (Lead: ENWL)

- Objectives: Manage project on time and to budget, oversee risk management, stakeholder engagement, and dissemination activities, liaise with monitoring officers and ensure governance requirements are met.
- Outputs: All project deliverables published on time and to budget. Dissemination activities detailed below.

WP2: Trial setup (Lead: Guidehouse)

- Objectives: Prepare comprehensively for trials 1 & 2. Design the end-to-end trial process. Undertake necessary technical integration. Recruit sufficient customers.
- Outputs:
  - Reports for each trial detailing:
    - Trial objectives, programmes, delivery approach
    - Trial analysis and evaluation approaches
    - Customer engagement, recruitment and communications strategies
  - Data catalogue detailing data collection and usage

WP3: Trial execution (Lead: ENWL)

- Objectives: Trial DR programmes following approach developed in WP2.
- Outputs: Trial implementation tracker (DR event days, temperatures, number of customers engaged, etc.)

WP4: Trial evaluation (Lead: Guidehouse)

- Objectives: Evaluate customer, DR, and network impact for trialled DR programme designs following approach developed in WP2. Report and share findings.
- Outputs: Report and accompanying webinar for each trial detailing results.

WP5: Substation performance (Lead: Ricardo)

- Objectives: Assess how hotter summer weather and SC load patterns impact performance of substation and distribution network assets and how this impacts the application of DR.
- Outputs: Estimated enhance and dynamic ratings for transformers and report of impact on other substation and network equipment

WP6: Cooling Modelling (Lead: UCLC)

- Objectives: Extend Alpha phase modelling to create a forecasting tool which can be used to assess cooling demand and DR potential at the secondary substation level
- Outputs: Substation classification report, forecasting tool specification, cooling uptake report, half-hourly demand profiles for 2030, 2040 and 2050, DR design report.

WP7: Customer insights (Lead: Impact)

- Objectives: Expand insights into the cooling behaviours and motivations of aircon users, considerers, and non-users, and

assess their willingness to engage in SC DR. This will inform targeted interventions and optimise BaU customer engagement strategies.

- Outputs: Comprehensive report summarising key insights from qualitative and quantitative customer research, including engagement recommendations for different customer segments.

WP8: CBA and transition to BaU (Lead: ENWL)

- Objectives: Update the CBA and business case. Produce the plan for transitioning the outputs to BaU, Produce the closedown report.
- Outputs: BaU Transition plan. Closedown report summarising all the learning including an updated business case.

Dissemination: We will share learnings by:

- Publishing project reports on the Smarter Networks Portal and ENWL website
- Disseminating specific learnings via 'Show & Tell' events and trial results webinars
- Sharing project discoveries via ENWL's social media channels and existing DSO stakeholder panel
- Publishing external media where appropriate
- Presenting at relevant conferences such as the Energy Innovation Summit
- Engaging with various stakeholders like FSPs, DNOs, customers, customer groups, local authorities, DESNZ and NESO to:
  - Share relevant findings and lessons learned
  - Maximise trial recruitment
  - Refine DR programme design to incorporate different customer segments, account for transmission flexibility needs, and contribute to the development of a fair and competitive market for network flexibility services

Transparent collaboration: CoolDown Beta will continue the ways of working, established in CoolDown Alpha and outlined in our response to Q8, to enable transparent collaboration.

## Commercials

### Intellectual Property Rights (IPR), procurement and contracting (not scored)

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

For CoolDown Beta 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 evaluate different demand response options and form the basis of the data to be included in the forecasting tool. The forecasting tool will be made freely available at the relevant stage of the project.

Any learning developed during CoolDown 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 (made up of representatives from each project partner and created at the start of the project) 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

During CoolDown Beta a number of the partners will bring on board contract resource to support their delivery.

Oaktree Power will bring use contract resource to install direct control and metering hardware into commercial properties prior to the commencement of the trials.

equiwatt will bring on board marketing subcontractors to support the recruitment of additional households in the trial area. They will also use contract resource to install and set up the asset metering infrastructure prior to the trials and decommission the equipment at the end of the project.

Impact Research will use contract resource to:

- recruit participants for the customer research
- manage incentive payments to participants.
- interview participants for the online survey.
- moderate the focus groups and conduct depth interviews

We have no requests for information (RFIs) or requests for proposals (RFPs) planned for CoolDown Beta.

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

#### Commercialisation plan

CoolDown Beta will demonstrate that there are benefits available for all stakeholders involved in providing flexibility from cooling assets.

For BaU deployment, CoolDown Beta will adopt an iterative approach, transitioning successful components into BaU solutions progressively. Early wins and value demonstration will be prioritised.

CoolDown Beta has the support of ENWL senior management through our Strategy & Growth Director and our Head of DSO who is the business sponsor. The DSO team will be the end user of the innovation and subject matter experts from within that team will be closely involved with CoolDown Beta. It also has the support of NGED senior management through Helen Sawdon – Head of DSO Operations Commercial and Operability whose team would be the end user and will be involved in trial 2 and Jennifer Woodruff, Future Capability Programme Lead Innovation.

Our DSO forecasting team will influence the development and testing of the new forecasting tool to prepare it for incorporation into our existing suite of network planning tools when CoolDown Beta finishes. NGED will review the specification for the tool to ensure it is applicable to other DNOs and can be incorporated into their planning processes.

It is intended that the new DR market for cooling will use standard BaU flexible services contracts, asset registration and dispatch functionality. To help with this we are proposing (with the support of the DSO flexible services teams) to schedule and dispatch the DR trial events via BaU flexible services platforms. This will ensure that, once proven, the CoolDown Beta commercial innovations can be transitioned seamlessly to BaU without the need for further development.

Utilising both ENWL and NGED BaU teams and processes as much as possible during CoolDown Beta will give them all the relevant learning to enable us to start using the outputs in our DFES and flexible services as soon as the project finishes.

Following completion of the trials we will develop and implement a BaU transition plan for the ENWL and NGED license areas which will be disseminated, along with the new tools, to other DNOs to enable them to implement the solutions.

Oaktree Power and equiwatt, our FSP project partners, are poised to implement the commercial innovations showcased in CoolDown. They already incentivise a portfolio of commercial and domestic customers to offer flexibility to benefit (both themselves and their customers) from DNO flexibility markets and Oaktree Power already have some cooling DR in their portfolio. A successful trial will demonstrate that it is commercially viable, feasible and beneficial for other FSPs and suppliers to incentivise flexibility from their customer's cooling assets.

#### Competitive markets

CoolDown is committed to not undermining the development of competitive markets or preventing the use of existing DSO flexibility products within an area. Our DR programmes have been designed to ensure fair competition, non-discrimination, and transparent operation of the network.

As an independent organisation, Guidehouse will be leading the trial evaluation work package to ensure learnings are shared widely across market participants, preventing competitive advantage by sharing information e.g., lessons learnt. Furthermore, the project will continuously engage with external stakeholders (other DNOs, other FSPs/suppliers, NESO, Ofgem, DESNZ) to keep them informed and involved. This would address any concerns or market development barriers.

### Policy, standards and regulations (not scored)

As of this application, we do not foresee any significant government policy, standards or regulation that would hinder a successful trial and progress into BaU post-trial. We do not expect any changes in government policy or decisions, or require a derogation/exemption, to conduct a successful Beta project.

The project team does note that there is an industry-wide push to standardise DNO flexibility products, which could result in some resistance towards the introduction of brand-new DR programmes. We have mitigated against this by designing the DR programmes such that they can integrate with/into existing flex products.

Additionally, we recognise that the project will conclude and transition to BaU in the new RII0-ED3 regulatory period, which will transition away from a 'flex first' approach to defer distribution network investment and envisions flexibility to play a greater role at managing system level intermittencies and managing local network issues. While this does not impact the importance of trialling and unlocking SC flexibility, the CBA in CoolDown Beta will be reflective of this new role for flexibility. To do this we will engage with NESO to ensure the system balancing benefits of SC flexibility are accurately captured.

We will regularly track changes to policy, standards and regulations that may occur during the project timeline, and iterate the DR programme design and trial execution if deemed necessary. We will also ensure the business case and transition to BaU plan being designed in WP8 will reflect these.

Given the growing importance and the lack of understanding of SC demand growth and flexibility potential, CoolDown Alpha prioritised stakeholder engagement and knowledge dissemination. We shared the interim findings with DESNZ's cooling team,

who viewed the work as complementary to theirs and were keen to see the project progress to the trial stage. We held public webinars to share the DR programmes designed and the domestic customer insights we gathered on cooling use, adoption and DR potential. These were attended by organisations across the industry such as DNOs, energy suppliers, FSPs, DESNZ, Ofgem and UKRI. We also held a show and tell webinar to share the results and learnings from the Alpha phase with the wider industry.

We will continue prioritising stakeholder engagement and knowledge dissemination in CoolDown Beta. As part of WP1, we will continue to engage with DESNZ and hold knowledge dissemination sessions regularly. We will also engage directly with Ofgem, NESO, local authorities, other DNOs, FSPs and energy suppliers, whose insights will be valuable in refining the DR programmes and trial to ensure a smooth transition to BaU.

## Consumer impact and engagement

The primary financial benefit of CoolDown for customers is the reduction in bills associated with avoided reinforcement savings.

Financial benefits directly associated with CoolDown Beta include incentive payments to customers who participate in DR events, trial surveys and interviews. These benefits would be proportional to their level of contribution (e.g. based on number of surveys completed).

CoolDown Beta trials will take an iterative approach, incorporating learnings from customer feedback during and post-trial to refine and improve the solutions offered. Customer surveys and interviews will serve as valuable sources of insights, providing first-hand information on customer preferences, concerns, and satisfaction levels.

CoolDown Beta will engage with both domestic and commercial customers to trial DR programmes for SC. For domestic customers, SC is nascent but growing and for commercial customers SC is already ubiquitous. Given the different uptake and utilisation of SC, we are keen to include both types of customers. We recognise the diverse requirements of different customer segments and will account for these in our programme designs. For example, for commercial customers this might mean understanding the constraints of different business types and for domestic customers consideration of customers in vulnerable circumstances. Through engagement with commercial customers and a GB-wide domestic survey in CoolDown Alpha, we have a strong foundation for understanding these customers and have incorporated the learnings into the DR programme designs to maximise inclusivity and accessibility.

WP2, WP3, and WP4 carry out most customer engagement activities:

- In WP2, the FSPs will design engagement, communications, and recruitment strategies based on their understanding of their customers and learnings from other flexibility trials. As part of the customer engagement strategy development we will identify specific vulnerability factors that would need to be considered.
- In WP3, the FSPs will execute the strategies and carry out activities such as recruiting customers, sharing information about the trial, communicating DR events to customers, responding to customer queries or concerns and monitoring participation.
- In WP4, we will utilise surveys and interviews to understand customer perspectives, experience, and acceptability of DR programme design. This will ensure customer feedback is incorporated and recommended designs deliver customer benefit.

CoolDown is committed to ensuring the equitable distribution of benefits among customers. Financial benefits from network reinforcement deferral and avoidance will be spread across all network customers. The DR programmes will not favour specific demographics but will be designed to support various customer needs.

Project Partners' previous experience has shown that customer engagement, communication, and experience monitoring is critical to the success of flexibility trials. Therefore, customers play a central role in the design, development, and implementation of CoolDown Beta:

- Pre-trial: Stakeholder interviews and market research conducted in CoolDown Alpha informed initial trial design and DR programmes.
- During trial: Through participating in trials and providing feedback via surveys and direct feedback to FSPs.
- Post-trial: Through participating in surveys and interviews.

Customer feedback will inform decision-making on programme and trial design, plans for trial 2, and ensure solutions are tailored to meet their needs and preferences.

Effective communication with customers is fundamental to CoolDown Beta's success. Through targeted messaging and engagement activities, customers will be informed about the benefits, risks, and potential impacts of the innovation.

As part of WP2, we will develop a communications strategy and define key messaging to highlight the benefits of participating in

CoolDown, emphasising the importance of flexibility and DR programmes, and addressing potential concerns about comfort, control, and cost. The communications strategy will include thinking about different customer personas to inform tailored engagement strategies and messaging. Communication efforts will prioritise customer understanding and foster trust and confidence in CoolDown.

## Value for money

The total cost of CoolDown Beta Phase is £5,447,459 with a SIF funding request of £4,901,162. These costs are balanced across the project partners as follows:

Electricity North West Limited (Lead network):

- Total project costs: £1,469,397
- Contribution: £147,635 (10.05%)
- SIF funding request: £1,321,762 (26.97% of funding)

National Grid Electricity Distribution:

- Total project costs: £164,544
- Contribution: £16,454 (10.00%)
- SIF funding request: £148,089 (3.02% of funding)

UCL Consultants Limited:

- Total project costs: £785,705
- Contribution: £78,570 (10.00%)
- SIF funding request: £707,135 (14.43% of funding)

Guidehouse:

- Total project costs: £1,339,696
- Contribution: £134,406 (10.03%)
- SIF funding request: £1,205,290 (24.59% of funding)

Ricardo-AEA:

- Total project costs: £155,000
- Total contribution: £15,500 (10.00%)
- SIF funding request: £139,500 (2.85% of funding)

Oaktree Power Ltd:

- Total project costs: £653,187
- Contribution: £65,319 (10.00%)
- SIF funding request: £587,868 (11.99% of funding)

equiwatt:

- Total project costs: £765,810
- Contribution: £77,000 (10.05%)
- SIF funding request: £688,810 (14.05% of funding)

Impact:

- Total project costs: £114,120
- Contribution: £11,412 (10.00%)
- SIF funding request: £102,708 (2.10% of funding)

The total contribution from project partners is 10.03% which demonstrates a commitment to the project from partners as well as value for money to customers. Partners' private investment solidifies the markets' recognition that SC demand growth must be

better understood and planned for by networks and that SC's flexibility potential should be unlocked to ensure its growth will not negatively impact GB energy customer bills.

To enable the trials, ENWL and NGED will use their existing BaU flexible services platforms to dispatch the cooling demand response schedule ensuring a smoother transition to BaU once the solution is proven.

During CoolDown Beta, we will install asset metering, and in some cases direct load control, in both domestic and commercial customers premises to enable detailed analysis of the response achieved from SC assets. Our plans for these assets following the trials are:

- for domestic properties we have allocated time and budget to decommission the metering.
- for commercial properties, we are not planning to decommission unless the customer specifically asks us to do so. We believe it is quite unlikely that they'll want to decommission, and the FSP will be able to continue to use aspects of the hardware (e.g. direct control functionality) for flexibility after the trial if the customer agrees. However, we have budgeted in some contingency for decommissioning if required.

The project has planned a stage gate to allow us to refine the approach, optimise resource allocation and ensure value for money.

## 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

SIF Beta Round 3 Project Registration 2025-12-15 1\_38 - 94.2 KB

### Documents uploaded where applicable?

