SIF Alpha Round 2 Project Registration

Date of Submission

Nov 2023

Project Reference Number

10084666

Initial Project Details

Project Title

RetroMeter Alpha

Project Contact

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Challenge Area

Accelerating decarbonisation of major energy demands.

Strategy Theme

Flexibility and commercial evolution

Lead Sector

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

Electricity North West

Technology Areas

Demand Response

Project Summary

RetroMeter will provide and demonstraste a consistent methodology to accurately meter the energy and cost savings of retrofit energy efficiency measures, unlocking pay-for-performance financing, increasing uptake and leading to reduced costs for consumers and additional flexible services for the DNO.

Add Preceding Project(s)

10055401 - RetroMeter

Add Third Party Collaborator(s)

Energy Systems Catapult

Carbon Co-op

epGroup

Manchester City Council

Project Budget

£537,937.00

SIF Funding

£483,934.00

Project Approaches and Desired Outcomes

Problem statement

Our project is addressing Innovation Challenge 4: "Accelerating decarbonisation of major energy demands: Improving efficiency at different levels in the energy system".

As set out in the Challenge Statement, domestic demand reduction has multiple energy system benefits, from reduced generation needs to lower distribution system costs. However, levels of retrofit remain stubbornly low, in part due to the lack of a robust, agreed methodology for quantifying and validating the actual impact of energy efficiency interventions i.e. a Metered Energy Savings (MES) approach.

Our perception of the problem has shifted marginally, in that we now understand that the key innovation and project focus is the development of a standardised, open and commonly available methodolgy (or set of methodologies) to support the development of a variety of delivery and value sharing mechanisms with P4P (Pay for Performance) one of these. Examples from around the world demonstrate that common, open standards have the ability to underpin and support new energy system markets, in contrast to closed, proprietary ones - this is key to ensuring the wider adoption of our innovation.

The challenge

RetroMeter is intended to increase levels of domestic demand reduction through retrofit. The challenge statement specifically mentions the integration of diverse energy system activities to meet Net Zero challenges and our activities in RetroMeter bring together a number of these, e.g. use of data including smart meter data, IT systems and methodologies, domestic retrofit, heat pump adoption and local flexibility systems. The realisation and stacking of new and exisitng revenue streams bring energy efficiency approaches together with flexibility and support meeting demand reduction targets in the most cost-effective manner possible. On the policy side, our engagement with DESNZ and Ofgem and, the REMA process highlighted a call for the development of a standardised energy savings measurement methodology as a key non-financial intervention in unlocking demand reduction.

Project Evolution

During the Discovery phase we made significant strides in developing a methodology, highlighting gaps in our original approach and specifying exactly how these gaps could be addressed through further innovation in the Alpha stage. We developed a broad and deep understanding of the business exploitation options for RetroMeter, including DNO local flexibility funding and devleoped a flexible value stack that can incorporate income streams from a variety of additional sources.

We have increased our understanding of the need to engage with policy makers and sector-wide stakeholders and of disseminating our results to ensure broader adoption. We believe that in time government will need to mandate common, open standards in order to underpin the development of effective markets for retrofit.

Potential users and needs

We have broadened our understanding of potential end users of RetroMeter through engagement with partners - Manchester City Council (MCC) and Carbon Co-op - and widespread engagement via dissemination and stakeholder meetings. We have further developed the concept of an Aggregator/ESCO that both delivers transformative and retrofit works and maintains ongoing engagement with householders via flexibility service provision.

Of particular note, we mapped and explored retrofit delivery options in Manchester and have identified the opportunity to validate a MES approach in two Beta phase schemes: one an MCC Social Housing Decarbonisation Fund scheme and the other a smaller Carbon Co-op Area Based Scheme (ABS) with high levels of control around delivery and engagement. These would provide an excellent real-world test-bed to demonstrate our approach.

Meeting the needs of Alpha, as well as fulfilling the Discovery phase requirements, local authority role MCC is an organisation which maintains buildings (ie social housing) and Carbon Co-op is an energy efficiency installation and supply chain company (via their ABS).

Innovation justification

Our Innovation Challenge is 4 - Accelerating decarbonisation of major energy demands: Improving efficiency at different levels in the energy system.

Our unique innovation id the development of a Metered Energy Savings approach that enables independent evaluators to use a householder's smart meter data, freely available weather data and a set of calculations (ie a methodology) to quantify the impact of an energy efficiency intervention (of any size). Our research has shown that this methodology has the potential to be highly accurate, low cost/easy to deploy and open source, ie can be used, interrogated and validated by all market actors and thus has the potential for universal adoption/mandation (ie by government) to underpin existing and new markets for energy efficiency.

Learning

The Discovery Phase identified suitable sources and methodologies for the MES solution finding:

- An existing open-source methodology CalTRACK is broadly effective, but fails to account for external changes (e.g. energy pricve changes, Covid).
- Comparison-based methodologies (e.g. GRIDmeter) account for external changes but are dependent on access to lots of smart meter data

The Discovery phase also identified comfort take-back (ie homeowners preferencing increasing indoor warmth over lower use after retrofit) as a confounder, we believe direct quantification could be achieved by combining the above approaches with a new physics-based model in Alpha - a novel and unique innovation in retrofit evaluation.

To inform methodology development, in Alpha, we will measure property pre-retrofit heat loss with the development of an algorithm or a commercial measurement solution.

Challenge

We have engaged with Recurve, who developed CalTRACK and joined LF Energy, the international federation for open-source energy initiatives. We've engaged directly with DESNZ and Ofgem in the context of REMA (Review of Energy Market Arrangements) and engaged with a wider sectoral stakeholder group of 57 organisations via an Advisory Group and direct meetings.

Other approaches

RetroMeter shares some similarity with methods explored by the SMETER programme, the key difference being that MES includes not only the building fabric impact of retrofit, but the post-retrofit behavioural impact on energy use as well. This reduces the tendency to overestimate savings, as well as tying more directly to energy bill reductions that are expected by consumers and financers. Commercial actors, such as Knauf, have developed "black box" approaches to quantifying retrofit impact but they lack the external validation or wider sectoral trust-building necessary to create an energy system wide standard and their accuracy is unknown.

TRL

The readiness level for the solution moved during Discovery up to 3-4, and we predict that post-Alpha these will move to 6.

Size and scale

Our challenge relates to developing a standard methodology to improve efficiency at different levels in the energy system, with specific reference to enabling domestic retrofit. Developing the MES approach requires data on thousands of homes as well as a demonstration on hundreds of homes to verify its efficacy. Our Alpha phase project benefits from a collaboration with Hildebrand to secure the necessary data and lays the foundation for a Beta phase demonstration with hundreds of homes.

Price control funding

Whilst the need for a MES approach is clear, the fact that one does not yet exist will not impact DNO operations under RIIO-ED2, but instead results in lost opportunities and lost potential future energy system and consumer benefits. There is therefore no business-as-usual mechanism to fund this innovation.

Counterfactual

We have assessed simple smart meter assessment as a way to quantify energy savings, but this fails to account for multiple confounding factors. We assessed Heat Transfer Coefficient methods and found them incomplete, this integrating them into our

more holistic approach.

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

Financial - cost savings per annum for users of network services

Environmental - carbon reduction – direct CO2 savings per annum

Environmental - carbon reduction – indirect CO2 savings per annum

Revenues - improved access to revenues for users of network services

Revenues - creation of new revenue streams

New to market – products

New to market – processes

New to market - services

Impacts and benefits description

Currently, energy consumers are struggling in a rapidly changing energy market. Not only are energy bills more expensive than in recent memory, but a changing energy mix adds costly network reinforcement costs onto the bills of all consumers, adversely affecting those living in fuel poverty more than any other group.

A lack of available data on the impact of domestic retrofit and other energy technologies, such as electric vehicles, have made it difficult for grid operators to forecast demand changes and constraints across the network. This is primarily due to a lack of accurate, appropriate Metered Energy Savings (MES) methodologies. Current methodologies for "measuring" energy savings provide low confidence intervals and prevent uptake at-scale.

This lack of low-cost MES ensures that measuring and motivating the retrofit of UK housing nation-wide is stunted by a lack of certainty and quality assurance. This is because organisations have not been able to ascertain a "high-quality" installation without improved modelling methods, minimising access to flexibility revenues for consumers/aggregators and performance-related revenues for contractors.

The downstream impacts on the UK energy transition and retrofit market are notable: currently almost no Pay for Performance (P4P) domestic retrofit services operate in the UK, no open-source methodology enabling residential P4P or access to network flexibility revenues, and limited industry progress on making such a solution opne-source and available. Making such a solution open-source and accessible to a range of UK actors would unlock considerable benefits across the market, including access to new revenue streams, more equitable distributions of risk and rewards and accelerated delivery of essential greenhouse gas abatements.

The value of these benefits is notable, with the envisaged programme (see attached Cost Benefit Analysis) expected to deliver £13.47m of value (whole life NPV) to a relatively small area within Manchester, of jsut 6 substation catchments (~1500 homes). This will be acheived by deploying a "fabric-first" approach, reducing size of heat pump required and leading to a reduced contribution to peak demand. This will allow DNOs to defer reinforcement of network assets, promote the uptake of other energy efficiency measures and accurately quantify the outcomes of retrofit programmes to enable improved demand forecasting. Together this will lead to improved investment plans as well as quantification of the flexibility services provided by customers, and the revenue streams which can motivate these.

An additonal £20,000 could be garnered from fllexibility services revenues under this model. Without any retrofit actopn, this area would need £180,000 of traditional reinforcement investment to maintain current service levels. Additional value could be catalysed from these retrofits through energy efficiency measures unrelated to space heating, such as LED lighting, installation of renewable generation, etc. At a household level, this programme would create £8,980 of net present value over 45 years.

The RetroMeter consortium is confident in delivering value to the market, based in part on our achievements from the Discovery phase. The following benefits have already been reaslised through Project delivery:

- Multiple benefits quantified, with up to £1136 of value found for a comfort, air quality and real estate improvements, plus a further £1107 in bill savings and £320 through ECO flex. Our value stack validated the potential outset at the start of the Discovery phase, and will enable further aggregation in future phases.
- Validating the model with high residential complexity unlocks additional revenue streams for industrial and commercial deferral of network reinforcement.
- Application of such a metered savings retrofit offer would save at least 15.7ktCO2e/year from reduced peak consumption, and could defer up to 101 substation replacements per year, if applied to all expected heat pump installations under DFES scenarios.

Teams and resources

The project partnership is unchanged from Discovery Phase, consisting of Electricity North West, Energy Systems Catapult, EP Group, Carbon Co-op and Manchester City Council.

Electricity North West

Electricity North West Limited (ENWL) are world leaders in innovation and are constantly looking for new opportunities to deliver benefits for customers through efficient and novel approaches to operational performance, investment decisions and working processes.

ENWL operate across the North West of England, supplying over 2.4 million homes in areas ranging from remote rural locations of Cumbria to urban city centres such as Manchester. As a result, they are well equipped to provide the insight and expertise to understand the electricity distribution network and consumer opportunities in this project.

The ENWL project team is made up of a Project Manager who will manage both ENWL's and the consortium's work packages, monitor project progress and provide limited technical input, and a technical lead who will provide detailed technical input to the work packages. The team will also be supported by our Project Management Office to track the finances.

Energy Systems Catapult

Energy Systems Catapult (ESC) is an independent, not-for-profit centre of excellence that bridges the gap between industry, government, academia and research. We take a whole-systems view of the energy sector, helping us to identify and address innovation priorities and market barriers, in order to decarbonise the energy system at the lowest cost.

During the Metered Savings project (started in 2020) and the SIF Retrometer Discovery Phase, ESC was responsible for sourcing and preparing metering data, implementing and evaluating different algorithms for baseline energy usage, and identifying root causes for strong/weak model performance.

The methodology development will be delivered by ESC's Data Science team led by Sam Young, Practice Manager for Data Science & AI, all of whom have been involved in the methodology work in previous phases.

EP Group: Business modelling, financial assessment and funding arrangement expertise.

EP consulting is a UK-wide team of experienced energy professionals dedicated to transforming the energy system in pursuit of low carbon economic growth and prosperity. Their services include strategy and business model development for large organisations, market intelligence and due diligence for investors, and development of investable projects and programmes. Since 2018 they have been developing the market for metered demand flexibility in the UK and Europe under an exclusive agreement with California-based Recurve Analytics Inc, and chair the Metered Savings Working Group on behalf of the Green Finance Institute.

Carbon Co-op is a member-led, multi-disciplinary energy services co-operative based in Manchester. It has a track record in developing and delivering deep retrofit services (acting here as the energy efficiency supply chain partner) as well as expertise in energy systems services including local flexibility aggregation and use of smart meter data. Carbon Co-op's role in Alpha covers energy consumer engagement, retrofit scheme development and data sourcing as well as the policy and dissemination work package. Energy Systems Lead Matt Fawcett -- Energy Systems Team Lead heads up Carbon Co-op's team which includes Research lead Helen Grimshaw, Engagement Co-ordinator Aneaka Kellay and Kat Wong covering dissemination and communication. Retrofit Lead Jonathan Atkinson will offer policy overview and Business Development input.

Manchester City Council are playing a dual role in Alpha, as our local authority partner and as an owner and managing agent of 40,000 social housing properties in the Manchester area. The team features Dr. Ellie Kuitunen a Senior Project Manager (Zero Carbon) with a background in retrofit policy whilst at Arup and responsibility for overseeing the MCC SHDF programme delivery. Sharon Hanbury is SHDF Programme Manager and also part of the project team.

Project Plans and Milestones

Project management and delivery

Approach to Project Management

RetroMeter 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 RetroMeter 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 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

Links or dependencies between work packages

WP1 on Project Management spans the whole project; WP2 which will develop the methodology and WP3 which will develop the business model will both feed into the requirements specification for Beta Phase testing in WP4 (work can begin on WP4 before WP2 and 3 concludes). WP5 will disseminate the results of all other WPs.

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 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.

Proposed stage-gates

Stage gates can create uncertainty and their use in projects often necessitates non-parallel working, e.g., where passing a stage gate is a prerequisite to commencing a subsequent piece of work. This approach is not efficient when applied to this type of work and is likely to increase time and cost. Given the short timescale of Alpha, we do not believe that use of stage gates is appropriate. We will use our regular project review meetings to assess project progress against the plan and manage risks associated with delivery.

Energy consumers involvement

The project will engage with energy consumers via WP4, ensuring their needs and priorities are reflected in the development of the project. This engagement will filter through to WP3 and the development of business models that meet energy consumer needs and help them to effectively procure retrofit.

Summary of milestones

WP1

1. Project team mobilised
2. Mid-point review complete
3. Alpha phase closedown

WP2

1. CalTRACK methodology validated
2. Comparison-based methodology complete
3. Physics-based methodology complete
4. Methodology outputs published

WP3

1. Value streams produced
2. Business model defined
3. Scale up plan defined

WP4

1. Beta Phase Engagement and Recruitment approach devised and tested
2. Pre-works data access and collection secured
3. Beta Phase scheme contractor engagement

WP5

1. Policy maker engagement activities
2. Industry stakeholder engagement
3. Sectoral dissemination of project results

Key outputs and dissemination

By the end of the Alpha phase we will have:

- **devised a Metered Energy Savings (MES) methodology** that effectively addresses the problem statement (ie quantification of energy savings realised by energy efficiency interventions) and has the potential to realise new economic and social benefits from increased retrofit activity.
- explored and quantified the **viability of the income streams and other measurable outcomes** realised by the innovation that were identified in Discovery, and synthesise these income streams into viable, replicable **business models** made possible by the MES innovation.
- **designed a detailed plan for the Beta phase pilot activity** with a focus on energy consumer centred design and data access availability, putting whatever steps are necessary in place to support the demonstration of the innovation in a real-world context at Beta Phase.
- **broadened stakeholder engagement and participation** in the development of the innovation and **influenced policy makers and gained policy insight**, to support the future sectoral adoption of the mature innovation.

Responsibility for key outputs and planned dissemination activity

As Project manager, Geraldine Paterson of ENWL is responsible for WP1 Project Management outputs ie Project team mobilised, Project Delivery, Monitoring officer liaison and Project closedown and preparation for Beta.

Samuel Young of Energy Systems Catapult is responsible for WP2 outputs, namely validating the CalTRACK methodology, completing the comparison-based methodology summary, developing the physics-based methodology and publishing the final methodology report.

Alex Rathmell of EP Group is responsible for WP3 outputs on Business Model development, namely proposing an income value stack, drafting the CBA for Beta phase, publishing a business model proposal and publishing a MES-enabled retrofit scale-up plan.

Matthew Fawcett of Carbon Co-op is responsible for WP4 Beta phase outputs, namely publishing an engagement summary report and Beta phase engagement plan, publishing a Beta Phase data access plan, devising a Beta Phase retrofit works specification and publishing a report summarising energy and performance data collection points. This work will be supported by Manchester City Council.

Jonathan Atkinson of Carbon Co-op is responsible for the dissemination outputs under WP5, namely authoring of two relevant policy and industry consultations, issuing the minutes of advisory board meetings and publishing a dissemination report

documenting webinars, blog posts and sectoral briefing notes.

Key output and planned dissemination activity

The dissemination activity will be led by Carbon Co-op as part of WP5 and will be aimed at policy makers as well as stakeholders within the sector (retrofit practitioners, investors, industry federations and networks). Dissemination will cover the key outputs covered above as well as outcomes relating to the knowledge and learning gained within the project and its relevance to the UK sector.

Dissemination includes direct engagement with policy makers via meetings with relevant DESNZ/Ofgem staff and responding to other relevant policy and industry consultations.

Direct dissemination of outputs to the broader sector will take place via our Advisory board - a group of around 30 stakeholders that we have built during Discovery. We will also arrange ten one to one meetings with industry stakeholders.

Broader dissemination will include hosting (and recording) three public webinars on business, methodology and engagement outputs, posting three blog posts with video documentation and issuing three briefing notes authored. All these will be hosted on project partner websites and be disseminated via newsletter and social media channels.

Finally, we will attend and disseminate outputs at least three industry conferences during the Alpha phase.

Commercials

Intellectual property rights, procurement and contracting (not scored)

Each partner within the consortium will comply with the default IPR arrangements in accordance with 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.

ESC has background IPR in the form of knowledge around metered energy savings, as well as data and methodologies used for assessing different metered energy savings models. ESC supports the shared intention to produce an open-source methodology, and will approach any decisions on licensing of new IPR with this intention in mind. Note that ESC also has background IP in the form of knowledge and code for cleaning and preprocessing smart meter data which ESC does not intend to make open-source as part of this project. Many organisations have similar knowledge and code, so this is not required to enable deployment of the solution.

EPL has some relevant background IPR in the form of know-how regarding energy efficiency, measurement and verification, 'metered energy savings' and the design of P4P energy efficiency schemes. In addition, EP has background IPR within 'ESCO-in-a-box(r)', a package of software and resources that is licensed to organisations delivering energy services, some of which will be relevant to the development of delivery models and business models. However, EPL notes the consortium's shared intent to produce open-source, public domain resources as outputs of this project, and will approach any decisions on licensing of new IPR with this intention in mind.

Carbon Co-op is an open collaboration and innovation organisation, which publishes and licenses its work in order to maximise reuse and replicability, via the use of open-source licensing for software development and public release of its research process and findings. Carbon Co-op's preference is for the outputs of the project to remain open-source, though recognises this may be contingent on the terms of any Funding Agreement with the Project Funders and the outputs of the Discovery Phase project.

MCC has no relevant background IPR.

Commercialisation, route to market and business as usual

RetroMeter comprises **three distinct aspects** that each address barriers to energy efficiency, and represent sources of value for future commercialisation:

1. **The standardised metered energy savings (MES) calculation method**. This will be freely available and open source so as to maximise its uptake, and it may be used independently of the other two aspects. The aim is to make a useable MES calculator available by the end of Alpha phase. This will define standard 'weights and measures' for energy savings, which will foster the development of a competitive market for high-performing retrofit solutions that maximise customer savings and network benefits.
2. A **business model for MES-enabled retrofit programmes** that produce direct benefits for networks and their customers, through demand reduction, flexibility and other value streams.
3. A **'data warehouse'** storing outcomes of retrofits 'measured' using the RetroMeter MES method, along with contextual information about the project, the home and the contractor. This becomes a planning resource for networks, policymakers and numerous other stakeholders, unlocking further value for networks and customers. The data warehouse concept will be refined during Alpha.

Commercialisation plan

Commercialisation efforts will focus on the second aspect and a successful business model will drive use of the MES calculation method and thereby feed the data warehouse, increasing the utility of these two aspects.

The business model will be developed during Alpha (WP3) and will directly inform the design of the Beta phase so that key aspects can be piloted. During Beta the design will be substantially developed and refined in response to learning from its deployment in Greater Manchester by Carbon Co-op and partners. The business model will be codified for use by other delivery bodies -- eg local authorities or community energy organisations -- to implement area-based retrofit schemes that harness the network value of energy efficiency within the value stack.

The precise commercial model will be developed during Alpha and Beta but our working assumption is that a licensing model will be used, mirroring the way EP Group's ESCO-in-a-box(r) platform is licensed to local delivery partners supporting clients. A 'business as usual' deployment would involve a local aggregator-ESCO licensing the RetroMeter solution and using it to manage the financing, implementation and evaluation of a retrofit programme, thereby providing services for the DNO that release payments as energy-saving impacts are delivered.

Commercial readiness

ENWL has demonstrated a strong commitment to the project during Discovery, which has included proactive participation by senior sponsors from Innovation and DSO Transition. ENWL will build on this commitment during Alpha, supporting the identification of specific retrofit locations and modelling their network value, and into Beta when this value will be released to support the delivery of retrofit projects.

As an organisation already delivering retrofit projects Carbon Co-op is uniquely placed to use Metered Energy Savings approaches in scaling retrofit services, having developed substantial know-how in the preceding OpenEnEffs project and Discovery phase. They are well integrated into the local retrofit supply chain and connected with Greater Manchester policy-makers. Based on planning during Alpha, the organisation will scale up delivery as volumes increase.

EP Group has an existing solution, 'ESCO-in-a-box' commercialised in an adjacent market segment, and has good links to finance providers in scaling-up housing retrofit, and has a substantial body of knowledge on MES. EP believes that the funds available through Alpha and Beta will be sufficient to bring the RetroMeter business model to minimum viable product stage.

Energy Systems Catapult will focus on the MES calculation method and the data warehouse, and does not intend to become a commercial partner beyond the RetroMeter SIF project.

Policy, standards and regulations (not scored)

Policy, standards and regulations

RetroMeter relates to the development of a standard, ie it is non-financial intervention in energy markets and does not require any derogations or exemptions from regulatory requirements.

A metered energy savings approach seeks to create a standardised and widely agreed methodology for quantifying energy efficiency savings ie a 'weights and measures' approach. Standardisation creates a level playing field for suppliers (ie retrofit providers) and consumers (ie DNOs, government, energy suppliers) of energy efficiency savings, and transparency and accountability and ultimately results in the creation or strengthening of effective markets for energy efficiency.

The wider adoption and take up of the innovation will be supported by the inclusion of Metered Energy Savings approaches into relevant energy systems standards by Government and mandating the use of MES approaches as a requirement of key Government schemes.

The barriers to the development of RetroMeter are therefore not regulatory but technical ie the technical development and real-world testing of the innovation is required to demonstrate the efficacy of the approach; and policy-based ie the requirement for standards.

Standards

The broader adoption of a MES standards approach is complex in that it touches on a number of energy system regulatory areas including Energy Codes (market mechanisms), PAS standards (eg PAS2035) and the direct governance of UK Government programmes (eg SHDF and ECO). However, RetroMeter does not require the change of any existing standards so much as the application and creation of new standards -- and these standards will support its adoption, rather than acting as a pre-requisite for Alpha or Beta.

Policy development

It should be noted that RetroMeter have been developed as a response to a specific request by DESNZ and Ofgem for innovation around metered energy savings approaches. Representatives from DESNZ (Nick Pocock - Senior Policy Advisor at the Department for Energy Security and Net Zero) and Ofgem (Joseph Slater - energy efficiency measures as they relate to the DNOs) have been part of the InnovateUK funded OpenEnEffs project advisory board that preceded RetroMeter and those representatives are committed to being part of the Alpha Phase advisory group. These relationships were initially brokered

through the SIF Challenge process, in particular a challenge meeting organised by DESNZ relating to the need for MES approaches held in July 2022.

Work package 5 in Alpha Phase will specifically engage policy makers -- this will involve involving them in the project advisory group, responding to specific government consultations (most significantly around the Review of Energy Market Arrangements (REMA), policy maker briefing notes and one to one meetings with policy makers. This activity will extend our understanding of policies, standards and codes and also act to increase policy makers understanding of our innovation and its application.

We anticipate further engagement with REMA during Alpha as the agenda develops over the next 12 months. We have already attended a session with DESNZ, hosted by the Association of Decentralised Energy (ADE) on how REMA might accommodate innovations such as MES approaches held in March 2023, with additional similar sessions anticipated.

More broadly, the adoption of a common standard requires widespread consent from the broader sector -- ie retrofit, energy data, practitioners and DNO stakeholders. As a result, Work package 5 will also involve broader dissemination activities such as webinars, blog posts and an advisory group with a broad membership (e.g. GFI, BRE, CIBSE, UK Finance, Association of British Insurers), to enable a broad conversation within the sector on the creation and adoption of MES standards.

Value for money

The consortium is seeking £483,933.88 of SIF funding for the Alpha phase of RetroMeter, we believe that this represents value for money due to the extensive experience and expertise the partners bring to the project within each of their respective work package areas. Our previous work in this field will add further value for money as we will be starting from a position of strength and progress quickly, and at lower cost, to a successful outcome. The Project Partners represent the cutting edge of metered savings knowledge in the UK and have previously worked together to successfully deliver two MES projects (Metered Energy Savings - EPL, ESC; OpenEnEffS -- Carbon Co-op w/ support from ESC) as well as the Discovery Phase of Retrometer.

We have worked to ensure that the distribution of funding accurately reflects the work required of each project partner within this phase, this includes recognition of the complexity and depth of the data methodologies work package in particular as reflected in the more significant allocation to ESC.

Balance of costs across Project Partners:

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

ENWL -- SIF request £53,403.68 (£60,686 including 12% contribution via reduced day rates) 11.04% of total costs.

ESC -- SIF request £222,958.80 (£247,732 including 10% contribution via internal R&D budget) 46.07% of total costs.

EP Group -- SIF request £94,701.60 (£105,224 with 10% contribution via internal R&D budget) 19.57% of total costs.

Carbon Co-op -- SIF request £102,664.80 (£114,090 including 10.01% contribution via internal R&D budget) 21.21% of total costs.

MCC -- SIF request £10,205 (no contribution) 2.11% of total costs.

The project partners will meet the minimum 10% compulsory contributions from internal budgets, all the partners have significant interest in the success of the project and its strategic importance their ongoing work.

An additional £10k has been set aside for engagement with Recurve Analytics Ltd, who have unique expertise in delivering MES methods at-scale in various US market sectors. They will:

- assist with the validation of business models/delivery approaches;
- provide engagement with their UK network for further business development and collaboration;
- provide comment on adoption of the open-source methodology for delivering UK retrofit, including data requirements and access procedures.

As there are negligible pay for performance and MES methods operating across Europe, Recurve represent the closest comparable context with deep expertise. Accessing this expertise is more cost-effective than re-developing learnings within UK contexts, and will catalyse deployment of MES at scale, the success of which will lead to widespread industry adoption and deep environmental/social impact, lowering network costs and improving outcomes for all UK customers. Therefore, engagement of Recurve expertise provides superb value for money compared to "reinventing the wheel" for UK contexts.

Access to the smart meter data for tens of thousands of homes from Hildebrand will cost £20k. This dataset is critical to the development of the methodology as it enables the development and testing of the methodology on a large sample of actual UK homes. Hildebrand's previous experience suggests that testing many different ways of matching homes is computationally intensive, so a budget of £5k has been allocated for sufficient cloud computing resources.

No additional funding is being used from external sources.

In addition to the significant knowledge base within the project partners, they bring significant additional resources of value to the project:

- Data resources -- via ESC's Living Lab and Carbon Co-op's PowerShaper Monitor service
- Pilot sites -- the MCC and CC proposed pilot sites being prepared during Alpha phase provide a real-world example of hundreds of homes undergoing millions of pounds in retrofit expenditure.

Associated Innovation Projects

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

Supporting documents

File Upload

RetroMeter SIF Alpha Show and Tell Presentation.pdf - 1.1 MB
WP5 M3 Sectoral Dissemination Report.pdf - 485.4 KB
WP5 M2 Industry Stakeholder Engagement Report.pdf - 458.1 KB
WP5 M1 Policy Makers Engagement Report.pdf - 219.2 KB
WP4 M3 Contractor Engagement presentation.pdf - 1.6 MB
WP4 M2 Pre works Access Report.pdf - 1.9 MB
WP4 M2 Data Access Plan.pdf - 1.3 MB
WP4 M1 Engagement and Recruitment Report.pdf - 18.1 MB
WP3 M3 Scale up Plan.pdf - 890.9 KB
WP3 M2 Data Warehouse Proposal.pdf - 378.2 KB
WP3 M2 Business Model Report.pdf - 1.4 MB
WP3 M1 Value Streams Report.pdf - 1.5 MB
WP2 M4 Methodology Final Report.pdf - 2.2 MB
SIF Alpha Round 2 Project Registration 2023-11-17 9_06 - 88.3 KB

Documents uploaded where applicable?

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