SIF Discovery Round 2 Close Down Report Document

Date of Submission

Jul 2025

Project Reference Number

10061341

Project Progress

Project Title

Full Circle

Project Reference Number

10061341

Lead Funding Licensee

UKPN - London Power Networks Plc

Project Start Date

April 2023

Project Duration

3 Months

Nominated Project Contact(s)

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Project Summary

Full Circle addresses Challenge 4: Accelerating decarbonisation of major energy demands. Specifically, it is looking at improving the efficiency of heat networks to make heat networks cheaper and more accessible for everyone. The heating of housing developments and urban communities usually comes from high-carbon, low-efficiency, and high-cost heating sources such as natural gas or resistive electric heating. This project aims to deploy a new industry-leading framework for how heat network developers, property developers and ESCos can operationally and commercially recover low-grade waste heat from DNO transformers to use as an input into their heating networks and deliver lower cost and carbon heating.

The design of the heat recovery from transformers and thermal storage capacities will be at the forefront of energy network innovation as it requires collaboration and agreement between UK Power Networks and multiple parties on complex technical and commercial considerations to be successful. This project requires cross-vector collaboration with industry and community to develop a framework that can be applied across UK Power Networks' regions and across other DNOs.

Full Circle has four key partners:

1. **UK Power Networks** are the DNO for electricity and have been leading multiple innovation projects to increase the resilience and efficiency of its assets and will provide the technical knowledge to support this project.
2. **Arup** is an engineering consultancy that develops innovative heating and energy infrastructure and solutions. They have a wealth of experience developing innovative energy solutions for national regions, cities, and individual developments.
3. **SGN** is a gas distribution network and developer of heat networks. They are perfectly placed for this project as SGN Place are the property development subsidiary of SGN and has a senior living development planned in Wandsworth near UK Power Networks' transformers which will be the demonstrator.
4. **Wandsworth Council** provides planning permission to developments within the council boundaries and has the target to achieve carbon neutrality by 2030.

This project is focused on solving the needs of all the stakeholders in this value chain: the heat network and property developers, the electricity network and finally the end customers. For the heat network developers, ESCos and end customers will benefit from an improved coefficient of performance (COP) for the heating system all year round and reduced costs. The electricity network will benefit from reduced reinforcement costs that also cause construction delays and influence customer energy costs.

Project Description

Heat networks are seen as a cost-effective solution to heat decarbonisation but with the current energy crisis, electrifying heat sources can be expensive, and inefficient when considered all year round due to system inefficiencies and cause reinforcements on the network side. However, low-income and vulnerable customers and communities in concentrated urban settings do not have the same abilities to afford or pick low-carbon heating solutions for themselves.

Full Circle aims to help provide affordable low-carbon heating to vulnerable and hard to reach customers by developing a new industry-leading framework for how Energy Service Companies (ESCo), heat network developers and property developers can operationally and commercially interact with Distribution Network Operators (DNOs) to recover low-grade waste heat from DNO substations and use it as an input in their heating systems to improve efficiencies and reduce operating costs.

This Discovery Phase plans to deliver the cost savings and benefits directly to the residents of a planned senior living development in Wandsworth that will be connected to the local heat network. This project will also explore the benefits for DNOs as extracting the heat from the transformer will reduce peak operating temperatures and therefore increase the asset life cycle.

The design of the heat recovery from transformers and thermal storage capacities will require collaboration and agreement between UK Power Networks and multiple parties on complex technical and commercial considerations to be successful. This project requires cross-vector collaboration with industry and communities to develop a framework that can be applied across UK Power Networks' regions and other DNOs.

Full Circle has four key partners: Arup, SGN, UK Power Networks and Wandsworth Council. For the demonstrator in Wandsworth, the primary customer of the innovation will be SGN and we expect the benefits to be passed onto the end users who will be the future residents of SGN's planned senior housing development in Wandsworth. However, this project will be developed and designed with all users in mind to ensure rapid adoption in business as usual (BAU), this includes the heat network developers and operators, the electricity networks and end consumers.

Summary Key Findings

See End of phase report

User needs

See End of phase report

Impacts and benefits

See End of phase report

Risks, Issues and Constraints

See End of phase report

Working in the open

See End of phase report

Costs and value for money

See End of phase report

Special conditions

See End of phase report

Documents uploaded where applicable

Yes

Documents:

SIF Round 2 Discovery - Full Circle End of Phase (for upload) (1).pdf