SP Electricity North West

Net Zero Terrace

Driving the Decarbonisation of Heat in Terraced Communities

Rachel Stanley

The Problem

10 million terraced homes in UK, ~ 6 million 2/3 bed which have little outdoor space to accommodate an ASHP

Large proportion from 19th and early 20th century with **low energy efficiency**

Fuel poverty and affordability may be an issue for many householders

Default choice for electrification is electric boilers which will result in higher bills for residents than gas

Electric boilers have to be delivered with whole house retrofit, an additional challenge

Electric boilers put **large additional loads on electricity network** triggering expensive and time consuming reinforcement – significant barrier to Net Zero

The Solution

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Affordable, low carbon energy, healthy warm homes at no upfront cost to consumers

- Shared ambient loop heat clusters provide opportunity for more efficient community heating
- In street bore holes with individual in-home shoebox heat pump
- Homes connected by a ‘smart’ system to aggregate savings across an energy club (Smart, Local Energy, System – SLES)
- Infrastructure & retrofit debt financed with householders paying back over long term via standing charge

RV ENERGY
A community energy organisation for Rossendale

BURO HAPPOLD

University of Salford MANCHESTER

NORTHERN POWERGRID

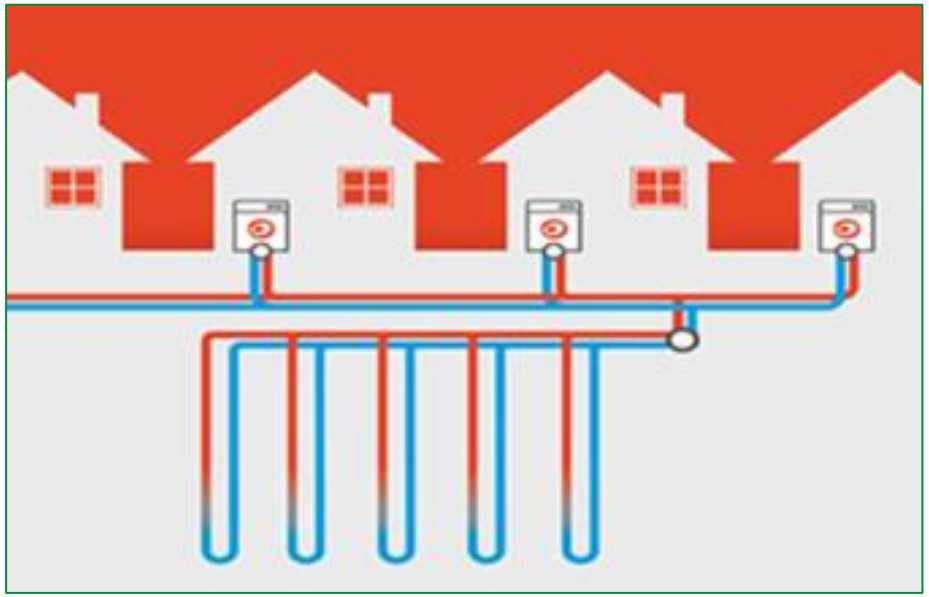
UK Power Networks
Delivering your electricity

UrbanChain

CEE Centre for Energy Equality

Rossendale BOROUGH COUNCIL

Kensa Group

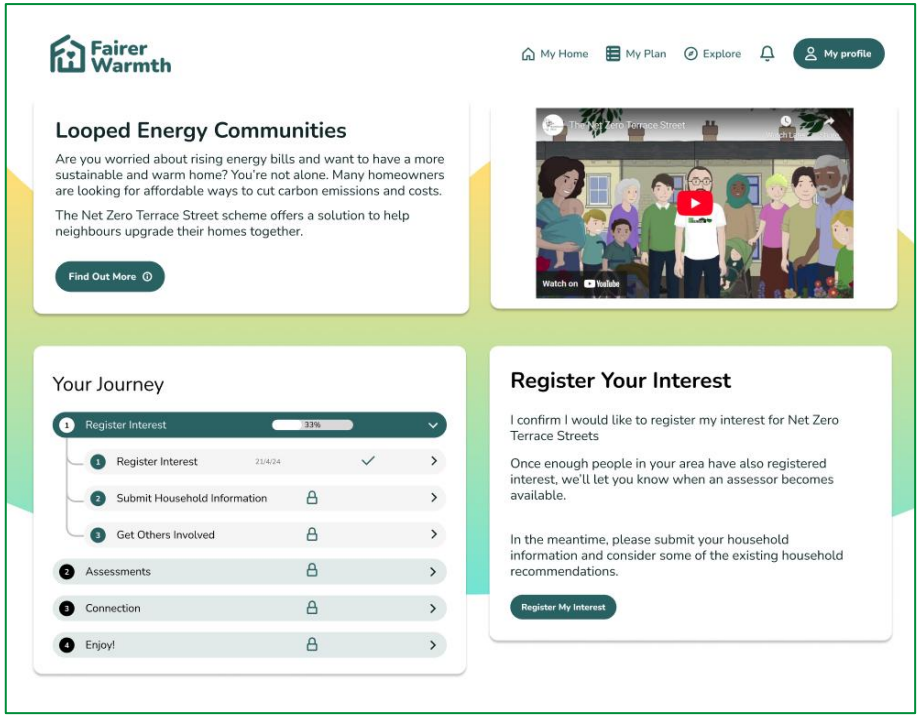


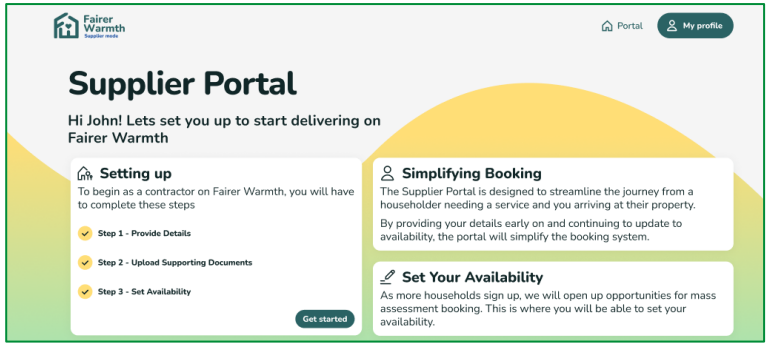
Engagement: Fairer Warmth app

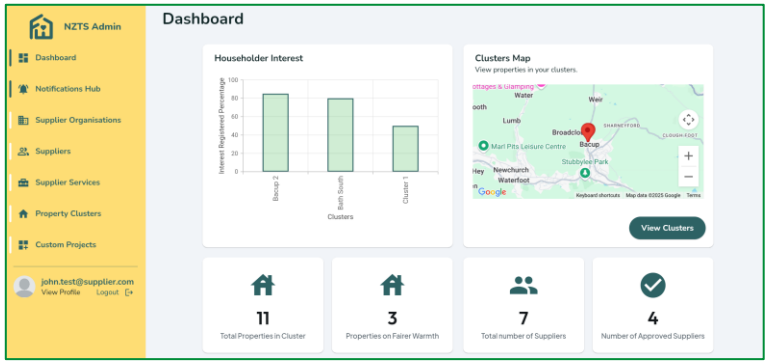
Bespoke development within the Fairer Warmth platform to guide households through each NZT stage.

- Linking householders to local energy champions and community events for advice and reassurance.
- Automated updates, reminders, progress tracking, and appointment booking for each property.
- Back-end tools for project teams to enable, coordinate, and monitor all engagement activities.
- Separate interface for contractors to receive jobs, update progress, and upload completion evidence
- Building a digital spine to enable streamlined and inclusive delivery in the community.

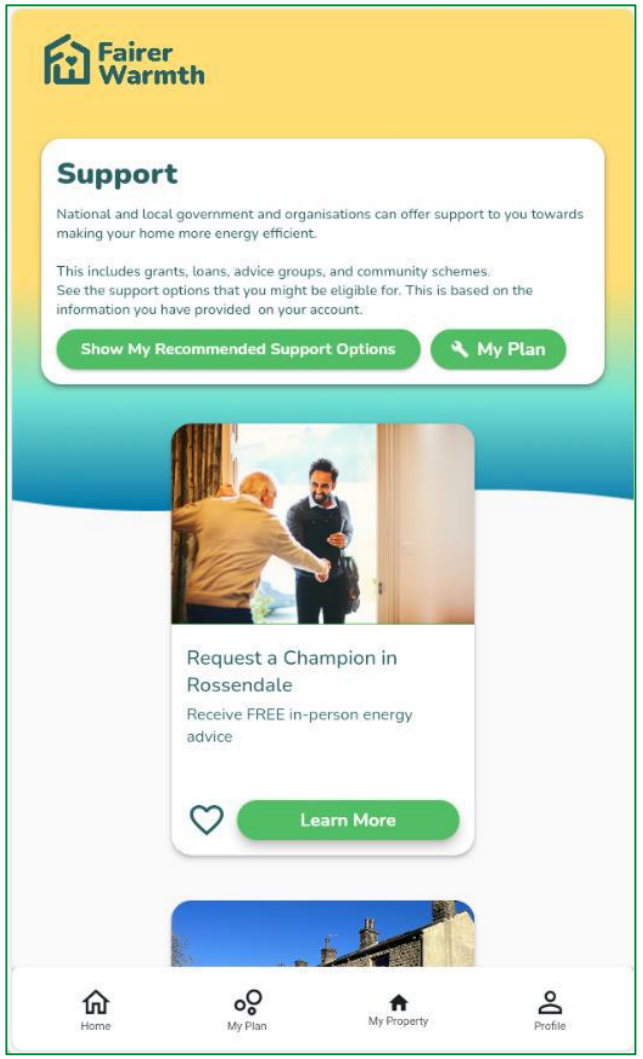
RVE Energy Champions







Fairer Warmth Platform – Customer Interface

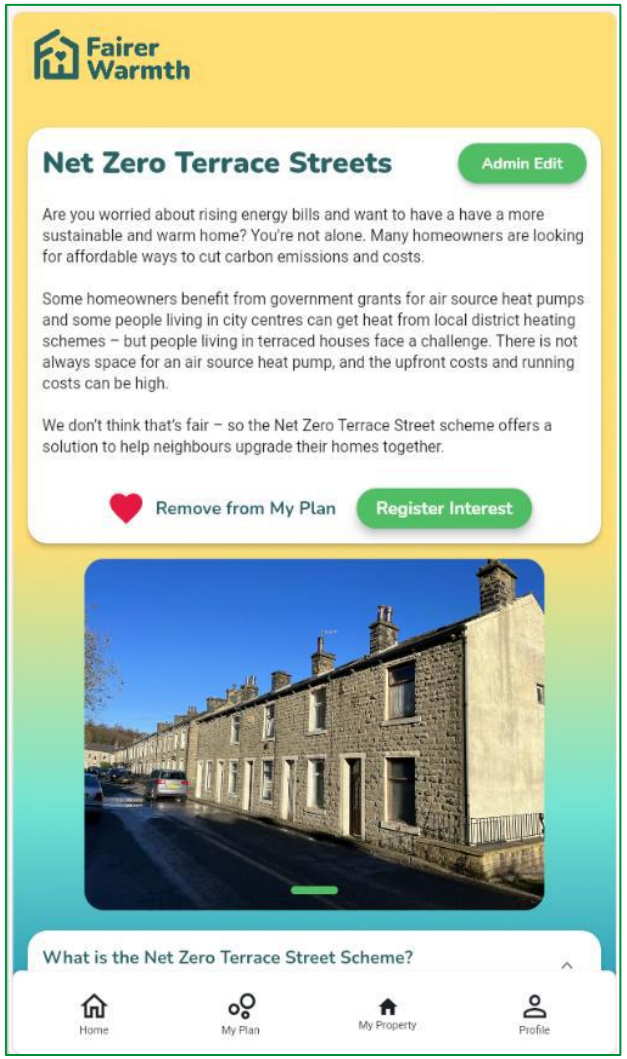


Hosts bespoke content designed to educate and engage householders on NZT and the opportunities it presents

Householders can indicate interest in NZT directly through the platform.

Householders interact with NZT support by adding it to their plan

Facilitates independent engagement, allowing users to review information at their convenience.



What makes NZT Different / Innovative

- Solution for mixed tenure streets
- No up-front costs
- Combining physical and virtual infrastructure to overcome difference in gas and electricity prices
- No grant dependency avoids boom / bust for supply chain
- Debt sits on infrastructure, repayment via standing charge
- Replicable, scalable to achieve economies of scale

Community Energy AWARDS
2023 WINNER
Advancing Innovation

THE ENERGY AWARDS 2025
Low Carbon Initiative - Energy Distribution or Industrial Breakthrough
Winner

UtilityWeek AWARDS
Innovation Award – Energy
2024 Winner

Techno-Economic Model

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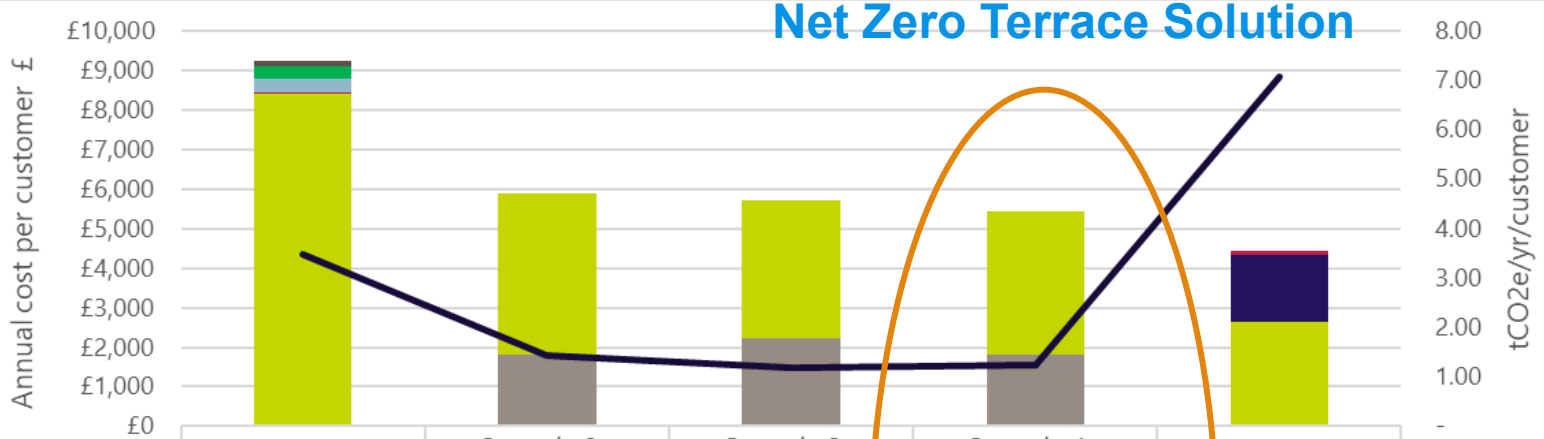
Net Zero Terrace Solution

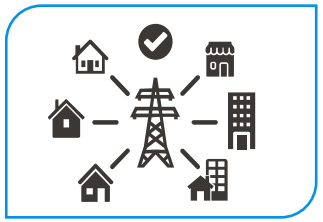


	Scenario 1 - Electric boiler counterfactual with individual PV	Scenario 2 - shared GSHP with communal PV system and no retrofit	Scenario 3 - shared GSHP with communal PV system and deep retrofit	Scenario 4 - shared GSHP with communal PV system and light retrofit	Scenario 5 - Do nothing Gas boilers
Loan repayment interest	£152	£-	£-	£-	£-
Annual Plant replacement per customer	£293	£-	£-	£-	£-
Capex required per customer	£361	£-	£-	£-	£-
Annual O&M	£31	£-	£-	£-	£83
Annual Gas bill	£-	£-	£-	£-	£1,695
Annual electric bill	£8,410	£4,100	£3,495	£3,624	£2,646
Annual service charge	£-	£1,797	£2,222	£1,812	£-
Total annual costs per customer	£9,095	£5,897	£5,717	£5,436	£4,423
Annual Carbon tCO2e per customer	3.47	1.44	1.19	1.25	7.07

Annual service charge
Annual electric bill
Annual Gas bill
Annual O&M
Capex required per customer
Annual Plant replacement per customer
Loan repayment interest
Annual Carbon tCO2e per customer

DNO Benefits

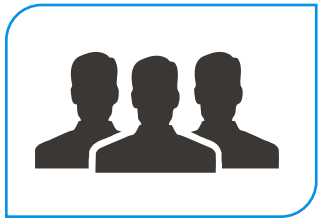
New connections processes and policies to accommodate NZT SLES at the required pace



Informs network forecasts and planning

Opportunity to develop coordinated approach meaning upgrade network once to meet 2050 targets, reducing overall cost and disruption

Helps the most vulnerable customers who might otherwise miss out on the advantages of the energy transition



Responds to communities' request for support where no-one is taking a lead

Research so far has demonstrated that:

- NZT requires 3x less demand from the network than electric boiler counterfactual
- Community demand led model and use of PV as part of a SLES make it innovative
- Majority of sub-systems readily available but further development needed to provide functionality
- TEM shows it is challenging to make it “affordable” and sensitivities for end price to the customer
- Approach suitable for terraced streets across UK, tool kit being developed to enable model to be delivered anywhere
- Further work required to ensure DNOs can enable the roll out at pace and scale

Other funded projects shown solution of interest to financers / funders but at least a proof of concept needs to be delivered to lower the risk enough to attract long term finance.

Next steps

Demonstrate that Net Zero Terrace can deliver healthy, warm homes at an affordable cost to customers

- Small-scale NIA funded project underway to develop the Minimum Viable Product of the SLES to derisk ready for deployment

- Pathfinder Places project focusing on
  - non-technical barriers,
  - operational Governance and finance models
  - Legal templates

- Application in 2026 for SIF Beta funding to develop the Community Energy Management System and enable a living lab demonstration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