

RetroMeter – Show & Tell

SIF Discovery Phase

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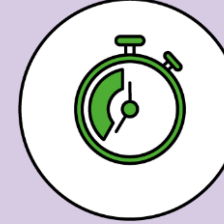
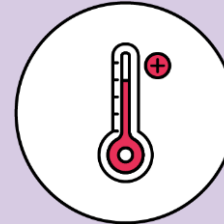
www.enwl.co.uk



How much energy (and money, and carbon) does a retrofit actually save?

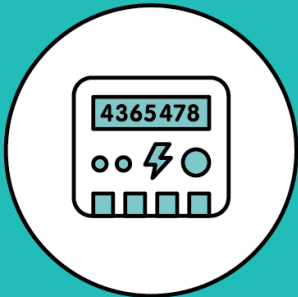
Why is it hard?

- Weather
- Time of Use
- Customer Behaviours

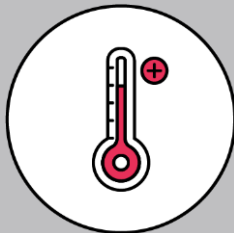




Focus on homes with gas heating



Use gas smart meter data (+ external temp), but model daily



Don't require pre-retrofit internal temperature

Existing Methodologies



CalTRACK

- Existing open-source method in US
- Validation on UK homes valuable

Comparison

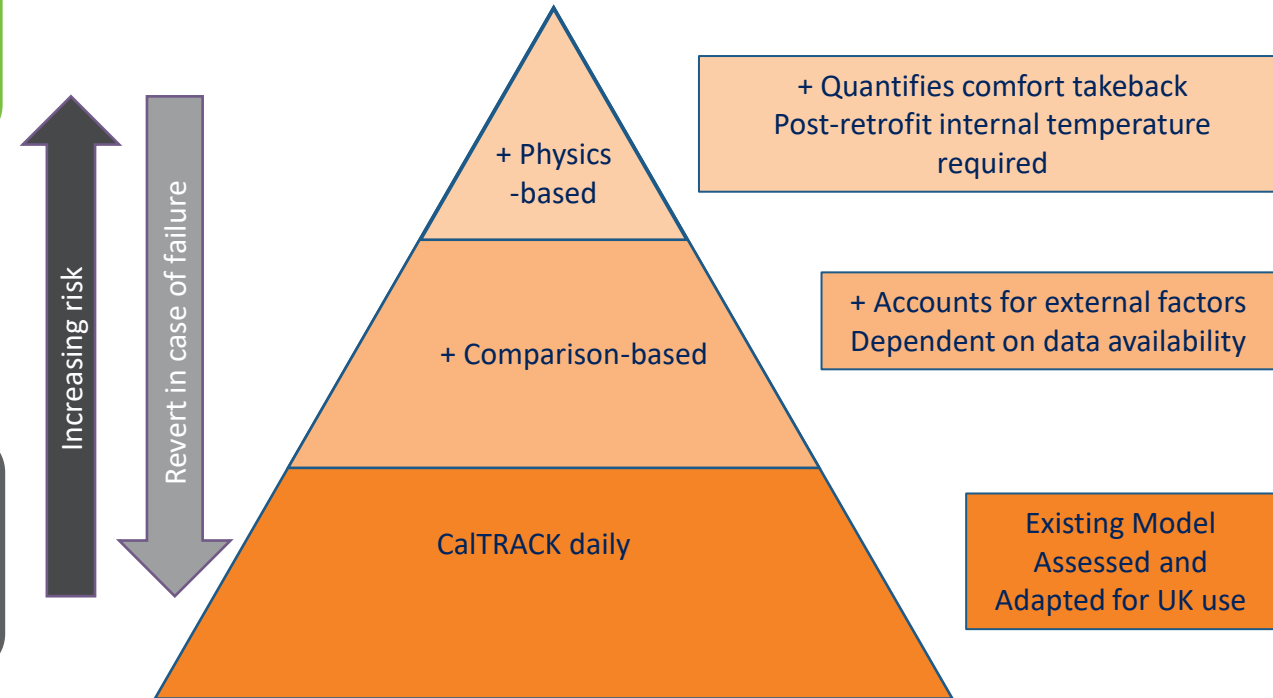
- Existing US open-source method needs adapting
- Accounts for population wide changes in energy use
- Large dataset required

Physics-based

- Can account for comfort take-back
- Need open-source method developing

Probabilistic

- Quantify model uncertainty
- Calculation of savings is non-trivial
- Discounted due to selection of daily approach





Hildebrand smart meter data

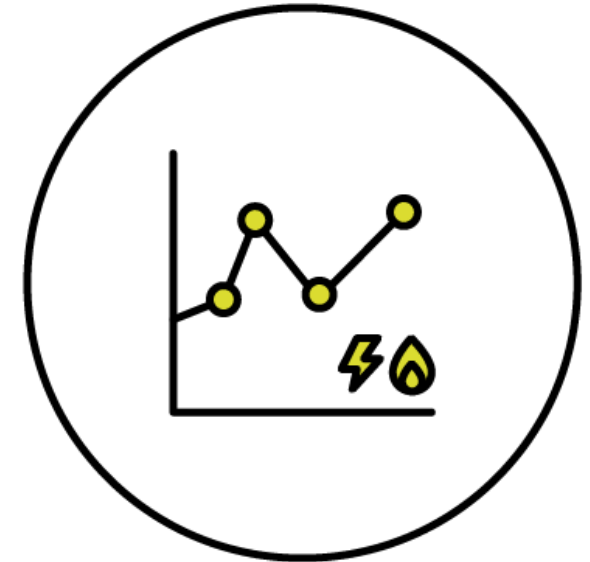
Gas smart meter data

- 9-12k homes, 2+ years, +weather
- Small number (~100) have internal temperature
- Accessible for decarbonisation-related research at cost

Smart Energy Research Lab (SERL)

Gas smart meter data

- 13k homes, 2+years, +weather, +property information
- Access possible for “public good” research with an academic partner
- Complex access requirements makes this our backup for comparison model data

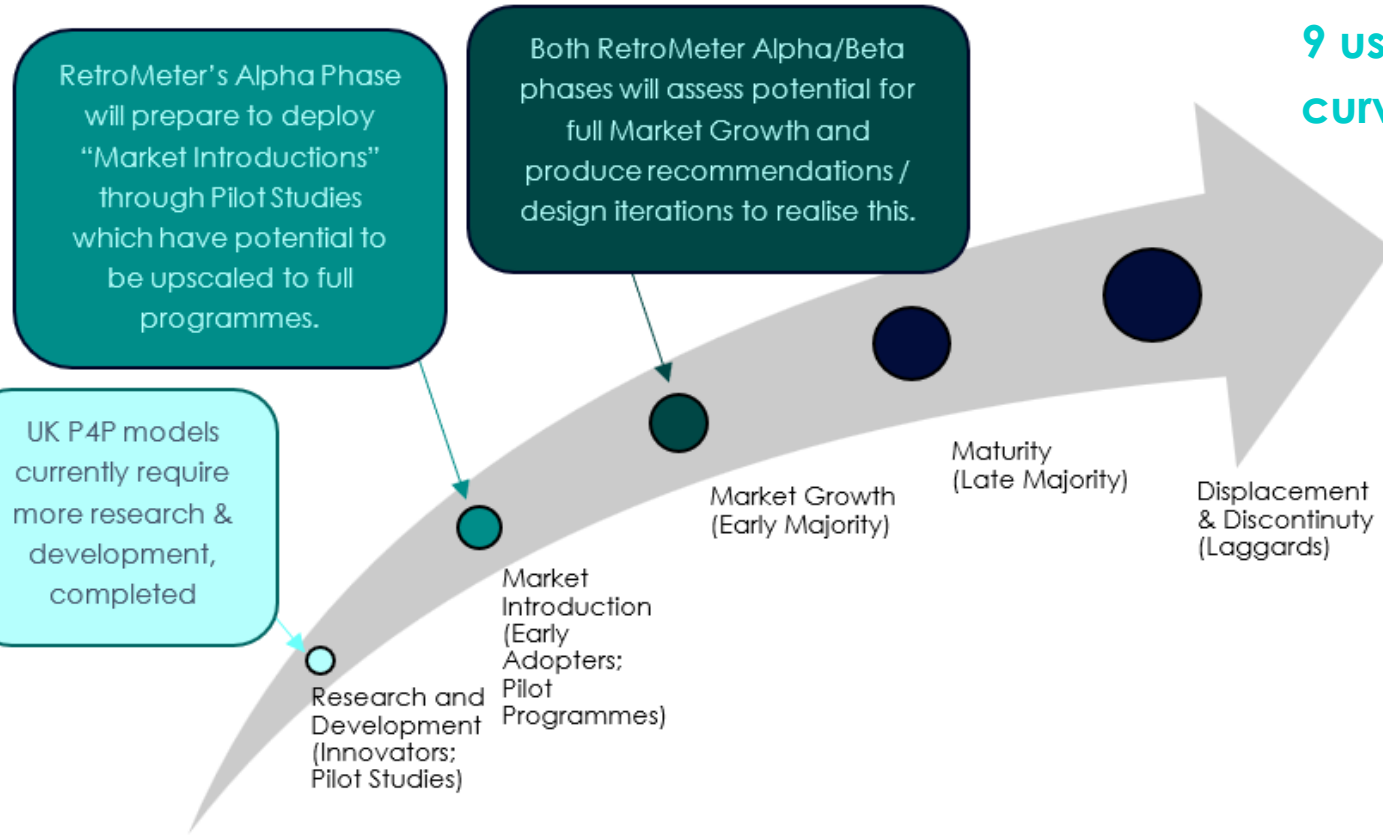


Summary of Approach and Progress

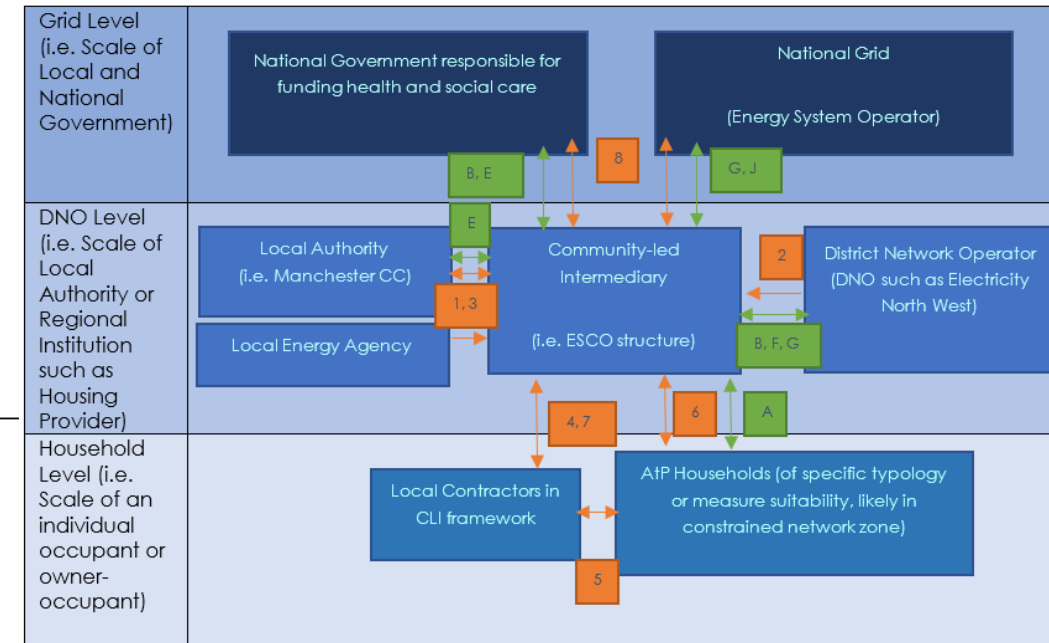


9 use cases were assessed across the innovation curve, with two options developed in detail.

Key stakeholder relationships and revenues were mapped, and value streams further developed.



Financial and emissions impacts were modelled using data from ENW's DFES scenarios.

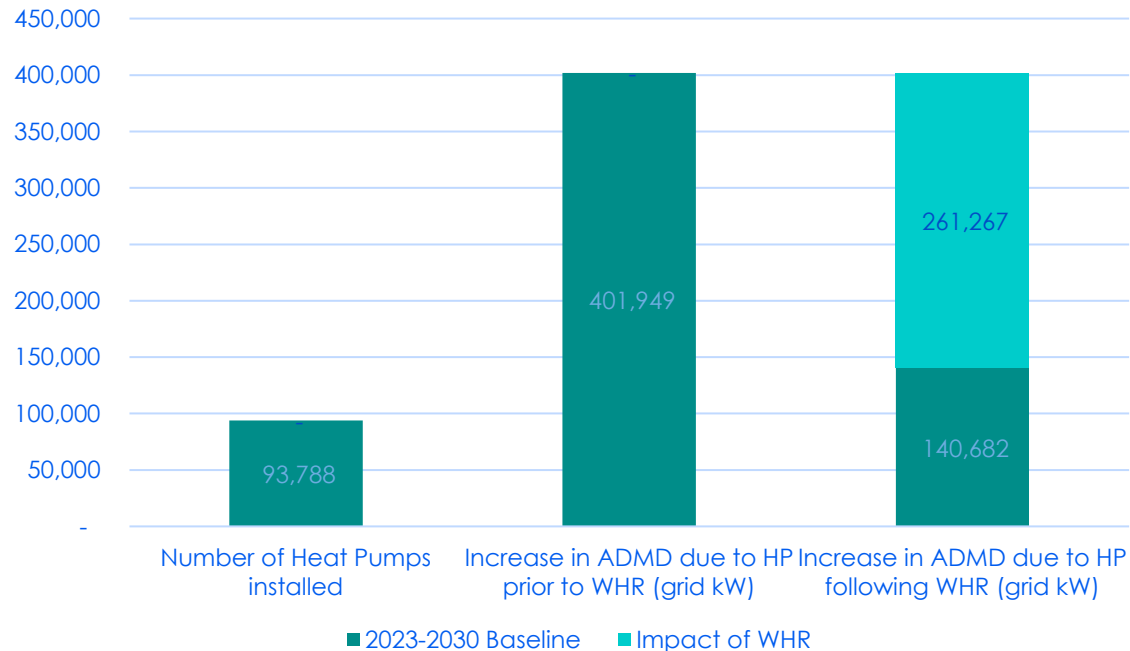


Key Outputs

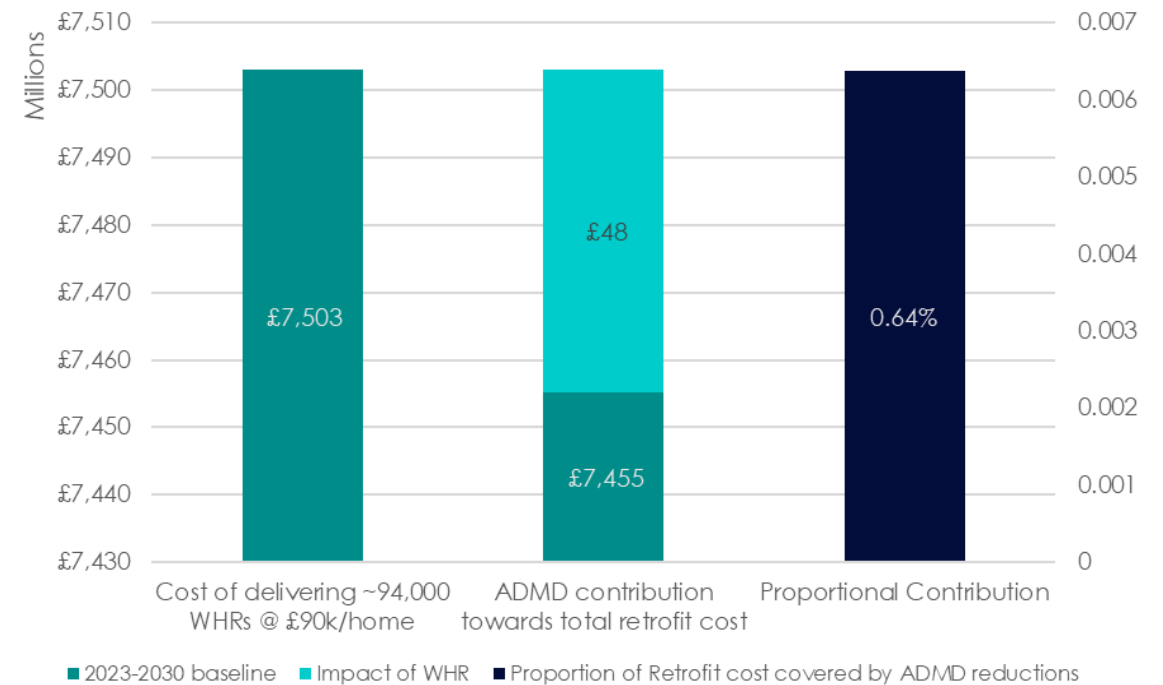


Deferred network reinforcement costs (due to lower ADMD requirements) could **contribute up to £50 million** towards the **deep retrofit of ~94,000 homes across Manchester** by 2030.

Impact of Whole House Retrofit on Heat Pump ADMD (Grid kW) in 2023-2030 time period ("Best View" DFES)



Financial Implications of Whole House Retrofit (WHR) on delivering Electrified Heat to Manchester



Key Learnings



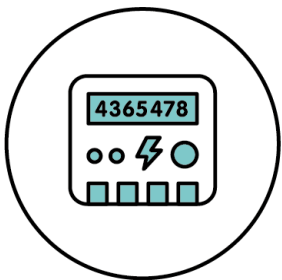
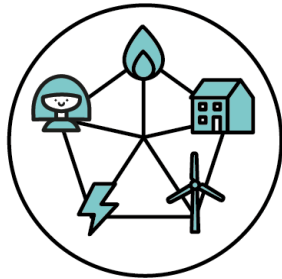
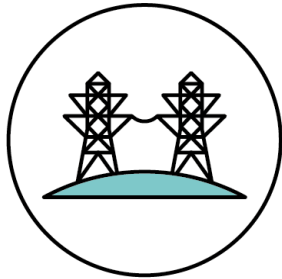
Daily modelling of gas-heated homes is sufficient to unlock the key use cases

Hildebrand are a good source of historical gas smart meter data for ~10k homes

Accounting for household behaviour requires combining two open-source methodologies and developing a new open-source physics-based model

Development and standardisation of national objectives and policies to support retrofit including uncertainty thresholds and their interactions with subsidised performance risk

Payment schedules and scheme design must be carefully and considered and reiterated.



Work Package	Description
1	Develop and test the layered metered energy savings methodology (all three layers) on historical smart meter data, including developing the new physics-based component
2	Test value stream implementations & pilot scenarios , comparing real values to the hypothesis to develop robust approaches to funding retrofit in diverse contexts . Assess the potential for full market growth through various tenures and target markets , and produce recommendations / design iterations on how to realise this
3	Development of Beta phase pilot: options assessment for delivery, testing engagement mechanisms, supply chain engagement, technical assessment, scheme modelling and spec.
4	Policy Engagement and Dissemination

- Energy Systems Catapult Bids team will coordinate the Alpha Phase application
- All partners have confirmed available resource for both bid submission and delivery



Beta phase piloting options



QUESTIONS & ANSWERS



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