# Projects Insights

- CommuniHeat
- SHIELD

# Agenda

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|---|---|
| 1. | Introduction |
| 2. | Project Overview & Lesson Learned |
| 3. | Discussion & Q&A |

# Introduction

| Project Lead | Projects |
| --- | --- |
| Dean Mason | CommuniHeat |
| Nikolai Hueting | SHIELD |

# CommuniHeat – Project Overview

CommuniHeat was created to "write the book" on
**how to decarbonise off-gas grid communities**
by analysing an uncoordinated vs. coordinated approach
on electrification of heat in rural communities.

UKPN's RIIO-ED2 Commitments:
Facilitating decarbonisation at the lowest cost
**Delivering the lowest possible bills whilst enabling Net Zero**
**Being a force for good in the communities we serve**

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# CommuniHeat - Findings

**Building Fabric**
- Bespoke data (surveys) is key
- Publicly available data is very poor
- Fabric selection and heat technology selection is sensitive to archetypes

**Community Assets**
- Key to reducing consumer bills / providing resilience to market conditions
- Will lead to multiple connection studies and applications
- Reduced overheads for connection strategy
- Significant opportunities for enhanced network services (DSO)

**Digital Planning**
- Using network data is critical
- Visualisation is key to supporting decision
- A "simple" modelling approach is insufficient
- requires new data standards and processes to extract network data
- Cost structure approach needs agreement

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# Discussion/ Q&A

# SHIELD – Project Overview

**Fuel poverty is on the increase as energy prices have been rising. New smart solutions can cut energy bills and carbon emissions  - but the least well off may miss out.**

**SHIELD is about an inclusive approach** to smart energy solutions combining

- Business model innovation: funding and management on a social ESCo (energy services company) model.
- Technology innovation: integrating established and new energy technologies .

By doing so, SHIELD aims to:

- Make big cuts in  low-income household energy bills: over 50% in some cases.
- Make big emissions reductions.
- Help DNOs manage the net zero transition at lower cost.

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# SHIELD – Technologies assessed/trialled in Alpha



- Smart Local Energy System (SLES)
  - Solar PV
  - Battery Storage

- New Thermify Heat Hub heating solution
  - The Heat Hub is a miniature data centre.
  - Using its own broadband and power, it earns most of its revenue from provision of data services to remote third parties.
  - This makes it possible to levy a low flat rate charge for heat. No charge for households in fuel poverty.
  - SHIELD integrates Heat Hub with smart heat storage enabling heat and hot water demand to be met throughout the year, even in extreme weather conditions. Heat storage includes direct electric back up.
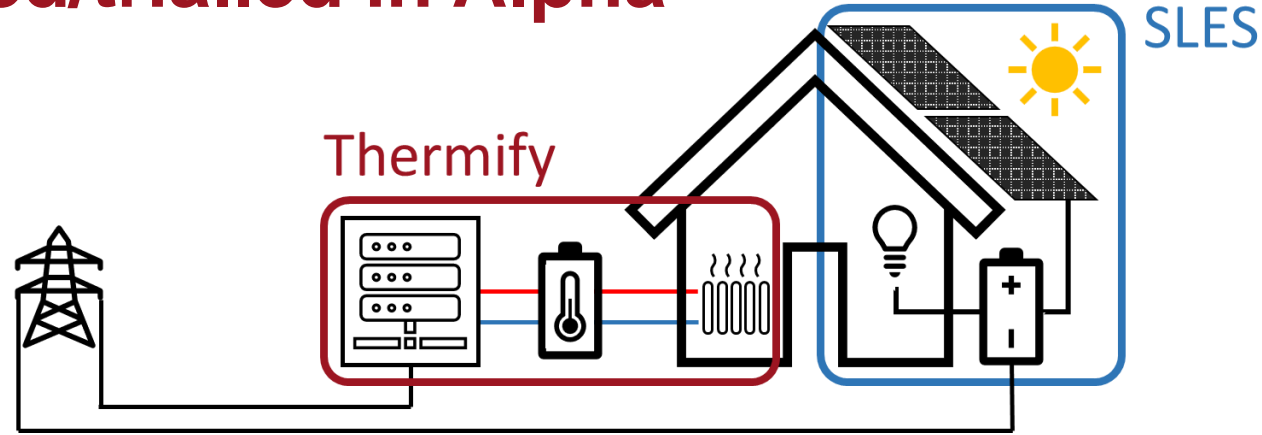
# SHIELD – Social ESCo Business Model

- Addresses barriers to scaling up low carbon investment in homes and small businesses: don't have the money, don't have the expertise, fear being 'ripped off' if someone else funds it etc.

- Dedicated project company develops, manages and assembles funding.

- Virtual Power Plant generates revenues to keep down costs to users.

- Can also enable peer to peer trading on a local energy market basis.

- Social enterprise structure inspires trust.

- For projects in Essex, Power Circle has established Essex Community Energy as a Community Interest Company, with support from Essex County Council.

- For SHIELD Beta Phase, Essex Community Energy will enter long term contracts with low-income households. For socially-owned homes, this will be supported by an access agreement between  Essex Community Energy and the social landlord.

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# SHIELD – Benefits

## Cost to Consumer

- Based on current proposition assumptions, heating from the Thermify HeatHub could cost consumers only £300 per year and there are no upfront costs.
- Assume there will be no upfront costs for solar PV and storage as the project will receive the revenues and incentives from services to the grid.

## Network Avoided Costs

- Reduced network reinforcement due to flexibility services being offered to the grid.

## GHG Emissions

- There are GHG emissions benefits from consumers switching from traditional gas boilers to the SHIELD solution and from heat pumps to the SHIELD solution.
- There are no GHG emissions associated with heating for the SHIELD solution as heating is a waste output from Thermify's distributed data centre.

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# SHIELD - Lessons learned

- Installation of prototype hardware
  - The project experienced delays to the production of the Thermify HeatHub prototype
  - The rigid timelines of SIF Phases meant that the installation had to be descoped, triggering a PDCR
  - Lesson learned: Move activities with limited mitigation options (such as the reliance on a certain component) to Beta phase, where there is more flexibility due to the length of the phase

- Stakeholder engagement - GDPR assessment
  - The pool of tenants that was targeted for recruitment into Beta phase was limited due to GDPR concerns of the tenant's housing association
  - Lesson learned: Engagement activities should be planned in sufficient amount of detail, such that the impact of GDPR/data protection can be assessed ahead of the project (Who are we contacting? How are we contacting them? Why are we contacting them? Do we have permission to contact them?)

# Discussion/ Q&A