

Low-carbon homes for a carbon-neutral future - Decarbonisation through Innovation

Kevin Aisbitt – Innovation Project Manager, Energy Innovation Agency



1. Agency Introduction

Organisation and Vision

- Created: 2021 as PPP through consortia agreement between eight founding partners
- Structure: board (strategic group) and an operations (tactical group), with potential for ad-hoc steering group
- “To accelerate the energy transition towards a carbon-neutral economy by bridging the energy innovation gap, increasing the deployment of innovative energy solutions in GM and beyond, to speed-up the reduction of carbon emissions”

Aims

1. **Innovation Exploitation**
2. **Decarbonisation**
3. **Rapid Commercialisation**
4. **Investment**

Services:

1. **Energy innovator validation and scale-up service:** impartial support for rapid exploitation, scale-up and project pipeline
2. **Energy Challenge Events:** pooling innovators in response to specific challenges faced by industry (call-to-action)
3. **Meet-the-Innovator / Buyer Events:** introduce a cohort of innovators to end-user groups
4. **Enabling Innovative Partnerships:** creating and supporting public / private sector innovation consortia for LC projects

1. Agency Introduction



Who we work with:

- innovative businesses with solutions that will contribute to the decarbonisation of our energy systems, and that have the potential to be deployed at scale. UK based or international, start up or established, we want to hear from you!
- End-users with energy challenges looking to decarbonise

Focus Areas:

- ✓ The Decarbonisation of Heat
- ✓ Energy generation and storage
- ✓ Energy diversity and flexibility
- ✓ Low-carbon transport

The Partners

Each of our partners brings their own resources and expertise to support delivery of our goals, creating this unique collaboration.

bruntwood

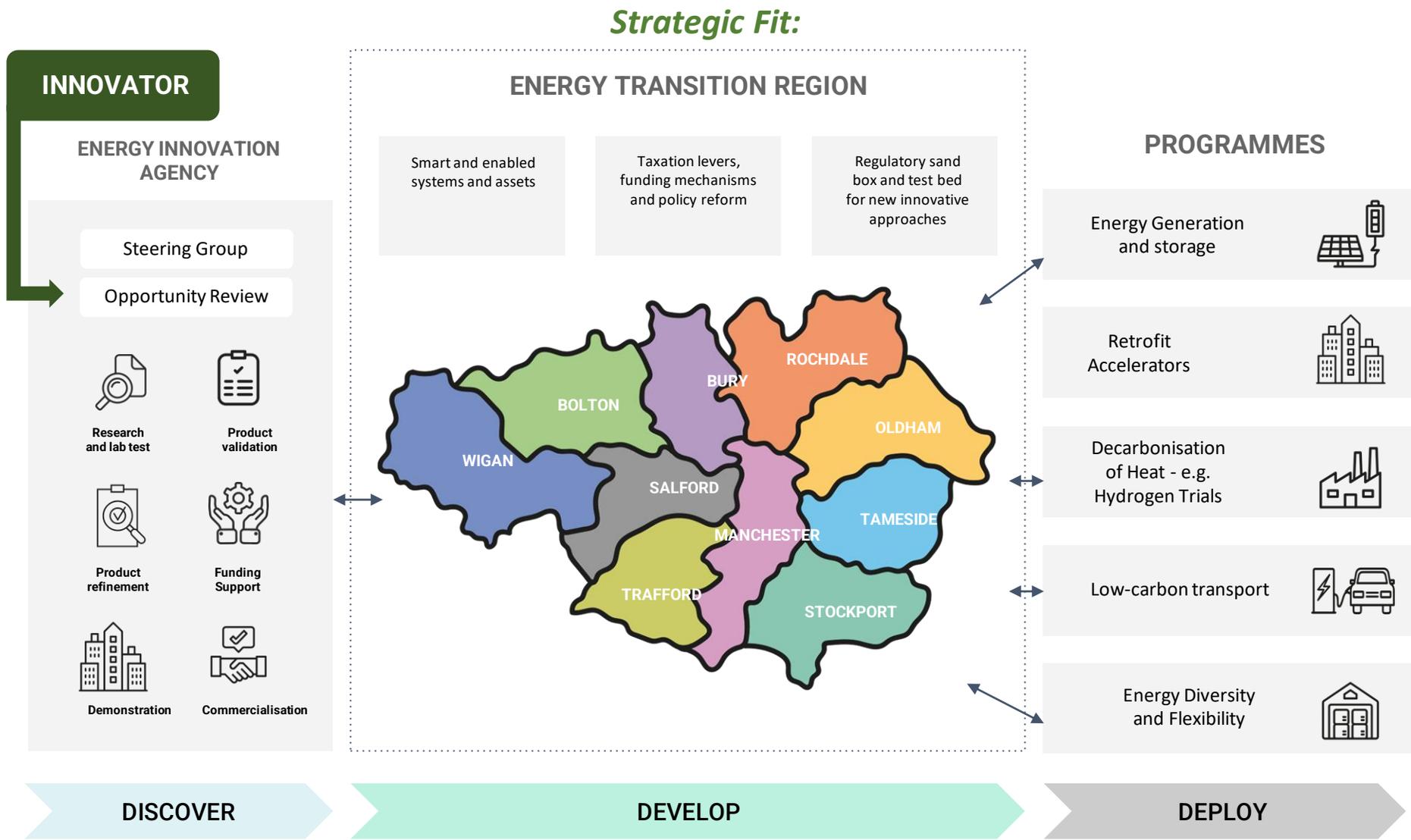


HITACHI
Inspire the Next



The University of Manchester

1. Agency Introduction





2. University of Salford – EH 2.0 Introduction

Introduction:

- £16m research facility at the University of Salford, Greater Manchester – launched 2023
- chambers with homes built by Barratt Developments and Bellway Homes
- Allows new LC products and services to be tested and developed under controlled conditions

Why?

- Buildings – one of the largest emitters of carbon in the UK
- UK's built environment – reduce energy consumption by 80% - 2050 target
- Support for construction industry to change approach – buildings, systems, performance of domestic property – new and retrofit
- Support Greater Manchester – Low-Carbon City Region 2038



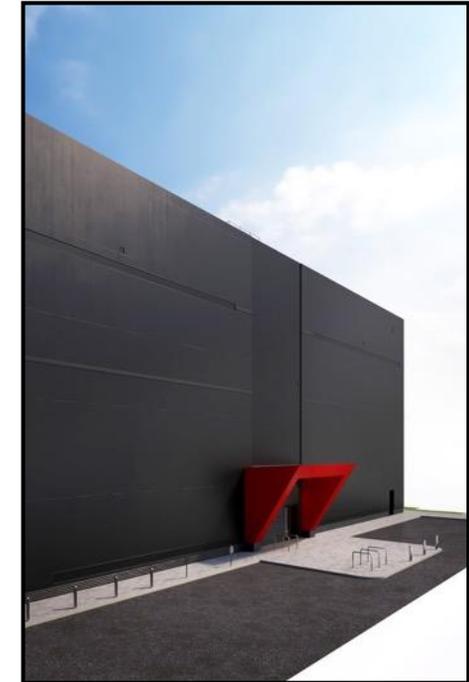
5. Energy House Labs

**ENERGY
HOUSE**

**THERMAL
MEASUREMENT
LABORATORY**

**SMART
METERS** > **SMART
HOMES
LAB**

**ENERGY
HOUSE** 2.0





3. The need for EH2.0 – builds on work of EH1.0

SALFORD ENERGY HOUSE 2011



Carbon emissions mitigation – Climate Change Act 2008

Existing homes – 70% standing in 2050

Problem of assessing retrofit solutions

Field trials – difficult and expensive

Repeatable experiments

High data quality – more than 300 data points – not just performance but the underlying reasons

Ability to change house – even build in defects and take more risks



3. The need for EH2.0



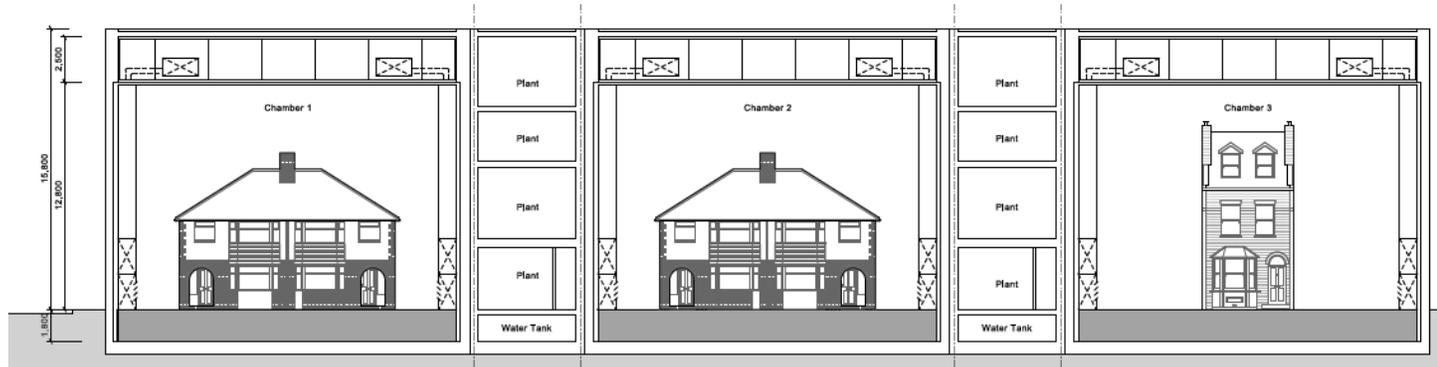
ENERGY
HOUSE
LABS

- Salford Energy House is a fixed asset reflecting 20% of UK housing.
- Limited weather profiles -12°C – 30°C.
- Waiting time sometime more than a year.
- Approaches from other universities.
- Create a new facility to retain leadership of the approach.

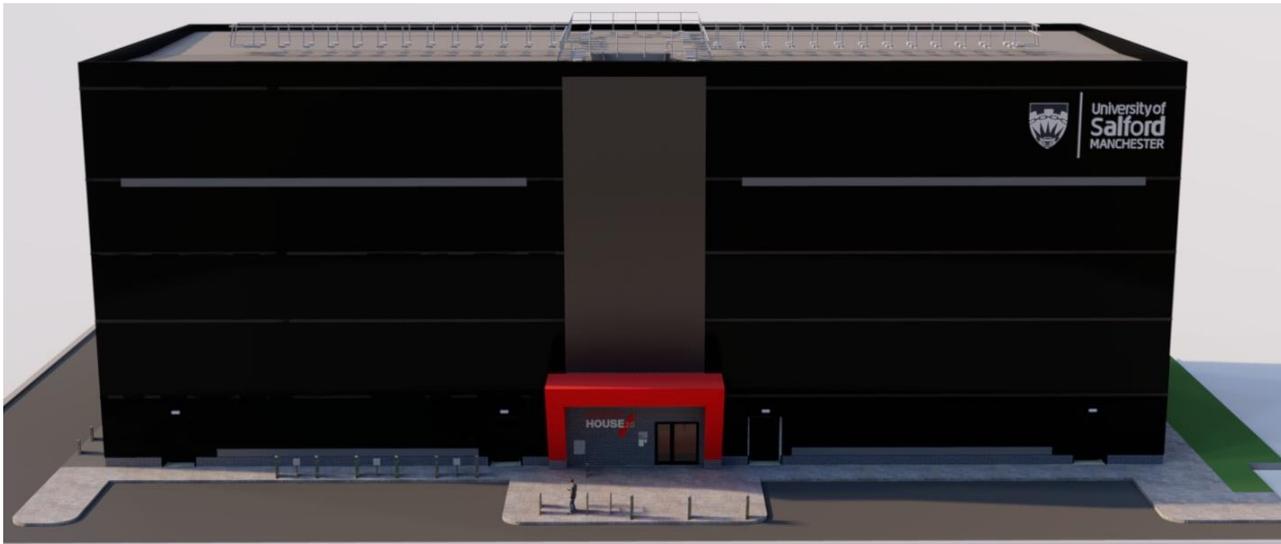


3. The need for EH2.0 – concept and final design

2016 Concept



2018 Final Design





4. EH2.0 – Inside the test chamber



6. Why are the Agency and EH Labs relevant?

Addressing systematic housing issues:

- Need to improve performance of new and existing domestic properties
- Consider non-technical barriers – warranties, liabilities, finance, behaviours, attitudes
- Impact on policy makers – GMCA and National
- Need re-train and develop a new skilled workforce
- Addresses Fuel Poverty
- Supports carbon-neutral and net-zero targets

Supporting development of innovative and emerging LC solutions for the housing sector

- ✓ Connecting innovators and innovative products to businesses
- ✓ Utilising the world class research support to develop and validate products, with support from industry partners
- ✓ Creating a real-world testbed in the commercial environment, to allow new products and models to be demonstrated
- ✓ Access business support to enable products to reach the market in the most effective and efficient way

7. Conclusions

- Support development of Low-Carbon buildings technically
- **Understanding performance of whole systems:**
 - Materials
 - Energy generation / renewables
 - Integration of digital technology
- Address scale-up Issue – lab to market
- Gain understanding of social and technical challenges for low-carbon homes
- Fast track emerging LC products and services to market
- Support net-zero and carbon neutral targets

“Anyone with an idea/currently developing a new innovative green product or service should speak to us – EH2 one example of the opportunities to test, develop, deploy in GM”

Contact Information

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*13 July – EIA Event in
Manchester*

*Connecting Innovators
and End Users + Discuss
“How to Achieve Net-
Zero”*