Learning from how people use heat at home to reduce UK CO_2 emissions

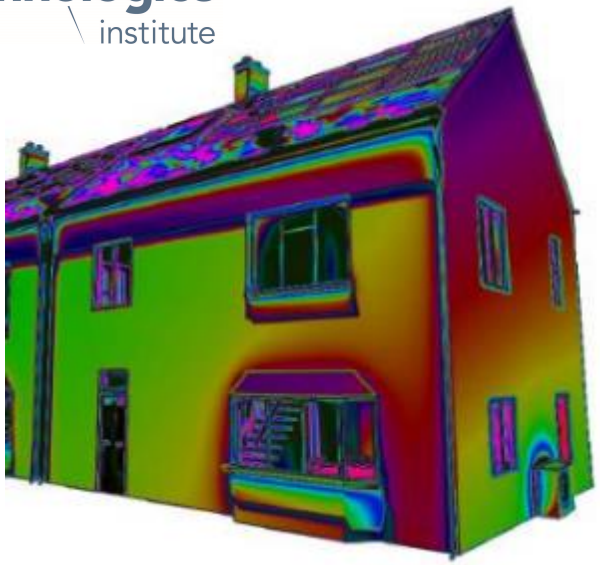
Scotland Heat Summit

Matthew Lipson
September 2016

ETI's Smart Systems and Heat Programme

Delivered by CATAPULT Energy Systems

energy technologies institute



"Creating future-proof and economic local heating solutions for the UK"

- Connecting together – the understanding of consumer needs and behaviour with the development and integration of technologies and new business models into…
- Delivering enhanced knowledge amongst industry and public sector
- Resulting in industry and investor confidence to implement from 2020 which enables a UK heat transition

ETI members

bp, CATERPILLAR, EDF ENERGY, Rolls-Royce, Shell, Department for Business, Energy & Industrial Strategy, EPSRC Pioneering research and skills

ETI programme associate

HITACHI Inspire the Next

The Energy Systems Catapult will deliver Phase One of the SSH programme as a supplier to the ETI following the transition of the SSH programme team to the Catapult. From 2017 the Catapult will be responsible for delivery of Phase Two of the programme independently of the ETI.

Decarbonising heat is the most cost effective way to tackle climate change in the UK, but

Today fewer than

4%

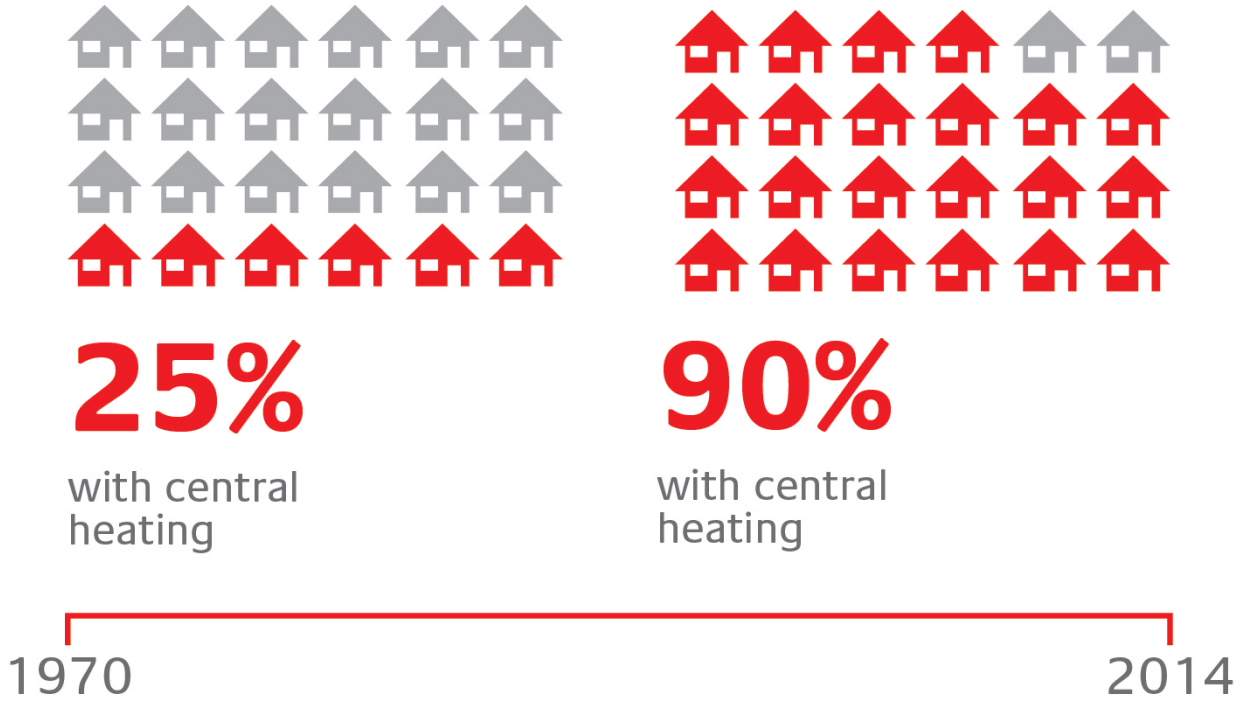
have low carbon heating

and

90%

prefer gas central heating given the choice

Rapid change is possible



We must focus on tackling 3 key challenges

1. Improve low carbon heat experiences
2. Simplify installations
3. Enhance control

Based on 5 stages of consumer research

CATAPULT Energy Systems

Stage 1

Build on evidence (>500 papers)

Stage 2

Found areas of consensus and contention (workshops with 153 participants in four parts of the UK)

Stage 3

Saw how home life shaped heat use (visited 30 homes 4 times in a year), looked beneath what people say (sensors), related behaviour to energy used (model of 8 homes)

Stage 4

Quantified varying heat practices (surveyed 2,313 households at home)

Stage 5

Assessed solutions (45 homes with insulation, district heat, heat pumps, or 'smart' controls) and discussed smart heat expectations (tested concepts with 30 people)

Sensors

Partners

PRP

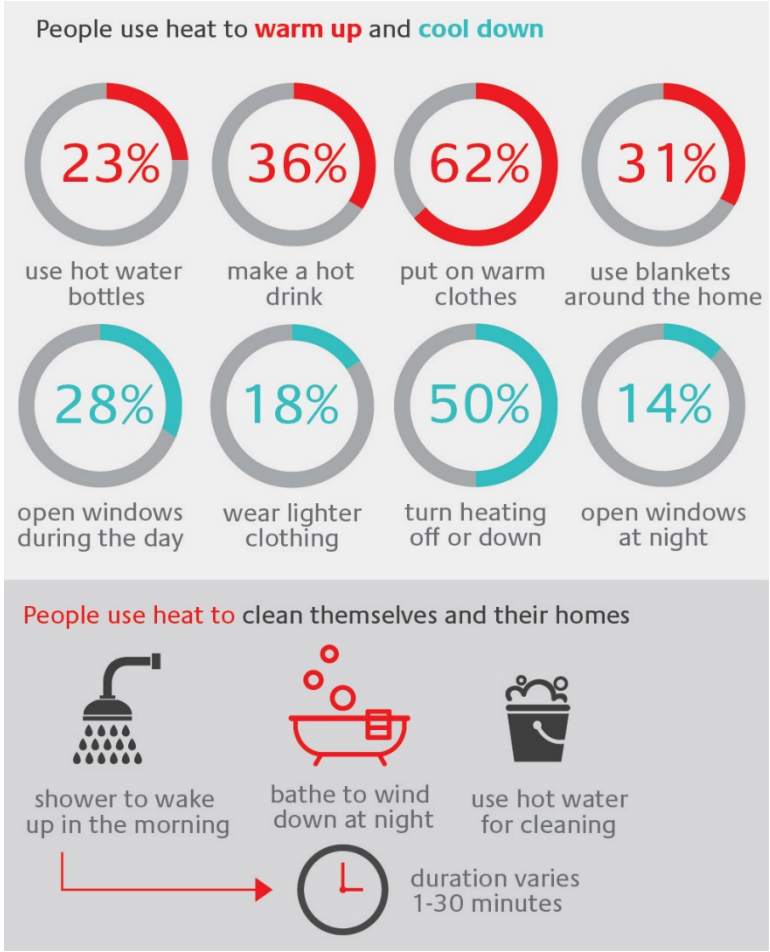
UCL ENERGY INSTITUTE

Loughborough University

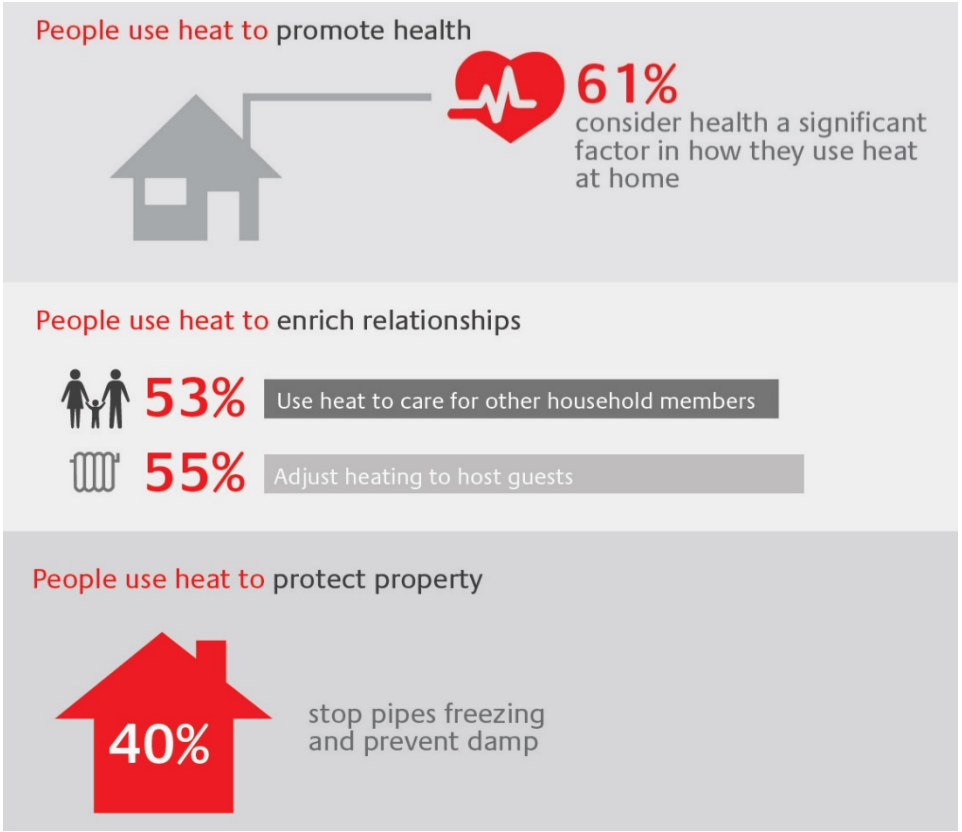
NatCen

new experience
USER EXPERIENCE | RESEARCH & DESIGN

Improve low carbon experiences



- Systems should allow people to use heat to get clean and comfortable in diverse ways



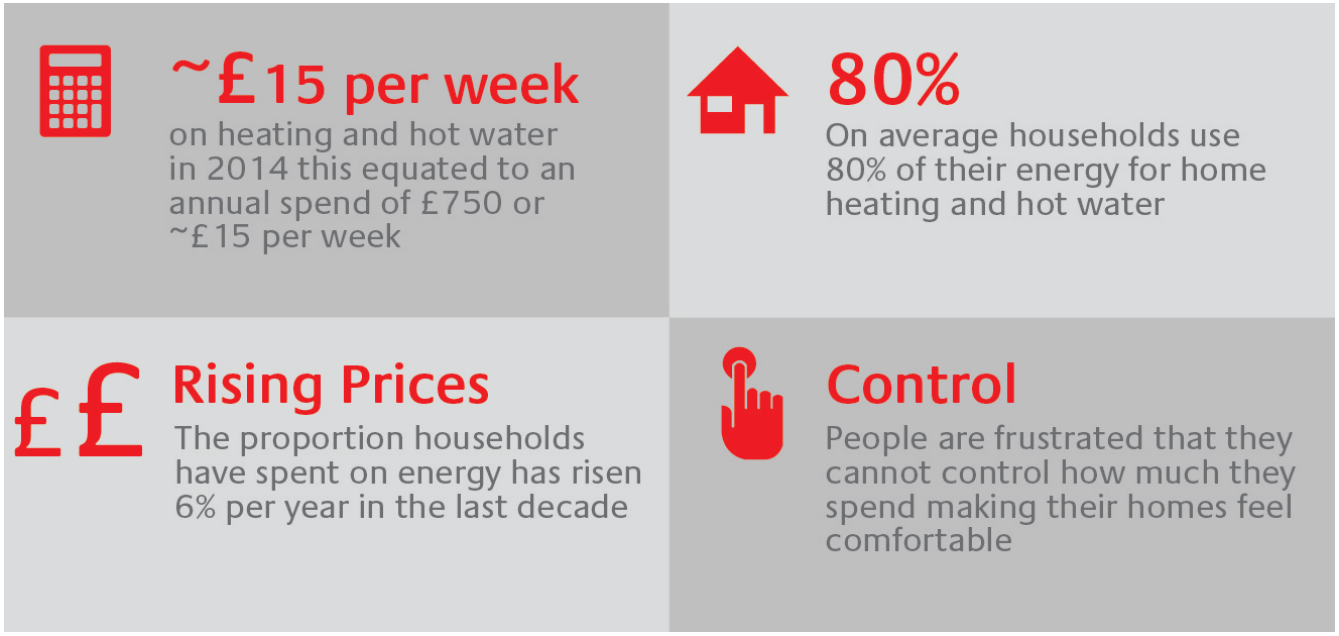
Simplify low carbon heating installations

Location limits what solutions will be available in any area

and many homes will need modifying to make sure solutions work well

- Design solutions that can be installed in a similar timeframe to replacing a gas boiler
- Encourage people to prepare their properties during renovations
- Enable people to consider thermal details when making renovation decisions
- Explain what solutions will work in each area

Enhance control



- Public concern over heating bills conceals private confusion over what heat costs
- People hold very different views on how they think heat should be used
- Controls should help people get the heat experiences they want
- Improved controls could prove key to unlocking deeper decarbonisation

Consumer challenges to decarbonising heat

Improve low carbon heating experiences

Make low carbon heat systems simple to install

Make low carbon heating easy to control

For more information

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CATAPULT
Energy Systems
Thanks