Welcome to our Webinar:

Energy Services Fit for Future Energy Consumers

CATAPULT Energy Systems

- **Why Services?** Laura Sandys
- **Lessons From Customers** Rebecca Sweeney, Living Lab
- **Services in Practice**

  James Williams, Sero

  Julian Wiley, Social Energy
- **Panel: How to unlock Energy Services**

  Matt Robson, BEIS

  Jemma Baker, Ofgem

  Sero

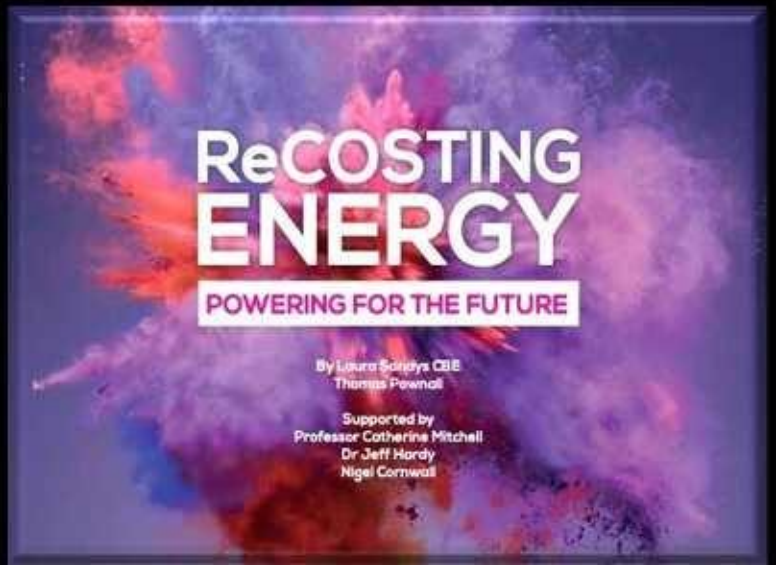
  Social Energy

  Matt Lipson, Energy System Catapult
- **Next Steps: What is needed to move forward**

Please Ask Questions and make suggestions in the Chat Box

This is going to be recorded

LIVING LAB



Purpose of this Event:
Kick off to Unlocking Services

- To promote the opportunities of introducing more consumer focused services and tailored propositions
- To profile who is already delighting customers with services
- To highlight what are the real barriers – and the perceived barriers
- To identify the key issues that need addressing – and creating an action plan to address them
- To inform us to do deeper dives into each of the barriers and risks
  - Consumer Protection – where does it exist elsewhere – and is it appropriate?
  - Regulatory Barriers to Services: What can be done now or into the future
  - Action plan to open up to services

The New Complex Consumer Experience

From the 400 to the 100 million

Consumers Actions playing a role throughout the system

Capital Assets changing the COST base of energy throughout the system

Blended Assets

Free feedstock, high CAPEX, low OPEX

MIND THE VALUE GAP

Blended Assets & Services the new VALUE

Multi-actor Management

Demand and Supply equally valuable

MIND THE VALUE GAP

Consumer Models changing how energy is PRICED

Varied Business Models

Tailored Services & Products replacing commodity pricing

Why Services?

Control and Choice and Convenience

Enabling Customers to own / deploy decarb products

Tailoring to customers diverse needs

Unlocking Value to Customers – and the System

Distancing them from complexity

Providing longer term predicable bills

Incentivising energy providers to sell less energy

Significant System Wide Benefits

Nothing we are proposing is new in other markets

Unlocking Consumer Action helps reduce the Whole System Costs

These example figures should not be interpreted as "generic" estimates of the whole system impact of a class of technologies. Whole system impacts are dependent on the wider electricity system and when technologies are assumed to be built.

An EV van example

THE VALUE OF AN EV VAN TO THE SYSTEM
An electric van could deliver up to £500 per year value to the system through displaced generation costs, capacity adequacy value, balancing opportunities and reduced distribution network reinforcement costs

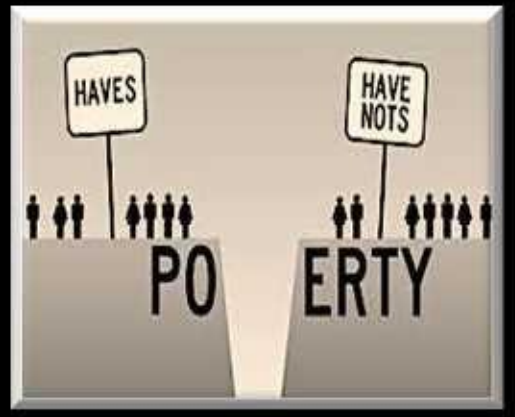
THE VALUE TO THE OWNER OF THE VAN
The owner of the van would be able to capture these benefits, through fully cost-reflective prices for energy and network access, and be able to participate in the Capacity Market

The Big Climate Challenge: Powering Up Customers

HM Treasury

Net Zero Report

"Liquidity constraints occur where people are willing to make an investment that is cost saving but do not have access to the capital to pay for it"

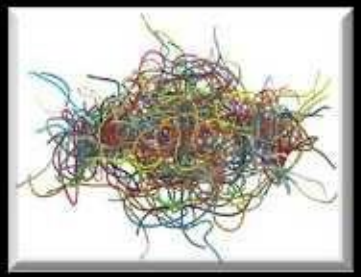


Millions of assets & interventions "required" by hard pressed consumers



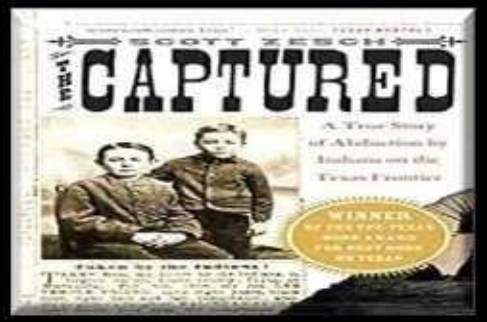


HOW?

Great Opportunities for Consumers & Climate Change

New Risks For Consumers



Where to Make Money?

Increased Margins:

- Comprehensive Utility Services
  - Energy generation and Management
  - Broadband
  - Water Management
- Blended Equipment Provision
  - Car Leasing
  - Solar / batteries
  - Retrofit
  - Heating & Lighting
- Automated Energy Services
  - Smart Controls
  - Annual Service Contracts
  - DSR – Whole System Value
- Energy Supply

Risks:

- More Moving Parts
- More that can go wrong
- People Intense
- Services require new skills

Opportunities:

- Revenue Stacking potential
- White Label energy optimization package for others
- Wrapper on other service providers

Business Models

- Embedded Energy
- Equipment Leasing
- Subscription Model
- Service & Maintenance Retainers
- Energy System Services

Turning homes/offices into mini power stations

Example for EV's (Mobile phone model)

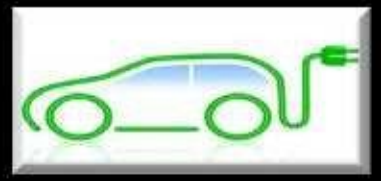
Reduce price for car

Very cheap miles

Leasing Contact

Agrees to optimize charging

Car Plus x Miles per Week



Adding Capacity at Peak
Micro Capacity Market Payment reducing the asset costs

Flexibility Purchase Agreement
Flexibility Purchase Agreement or Traded DSR

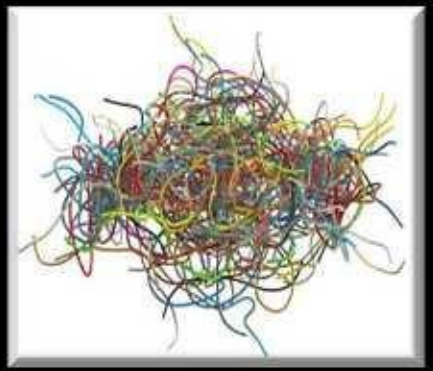
Lowest Cost Commodity
Leasing company incentivized to buy energy at very lowest price

Reduces overall system costs
Positive impact on available capacity, local constraints, balancing, peaks and curtailment from an asset already purchased for a non-energy purpose

Recognition of new Business Models by Regulation
Appropriate protections for consumers
Linkage between leasing arrangements, financial services regulation & energy regulation

Why have we not seen more services in Energy?

- **Tradition:** We have always sold a KwH – isn't that what consumers want?
- **Business Model**: Business models designed around quantity of commodity sold to largest number of customers & less focus on margins
- **Regulation:** Supplier License a barrier - one size fits all with greatest focus on KwH & how it is sold. Limited regulation on product standards, new forms of service consumer protection
- **Complexity:** More moving parts & deeper consumer contact in services
- **Consumer Proposition Expertise:** We have not been very sophisticated in consumer proposition development or innovative business models
- **Comparison Sites & Switching:** The market is driven by price not service, with focus on switching that erodes long term investment in customers



Nothing we are discussing is new in other markets


TIME
for
Change

LIVING LAB

Living Lab

A national asset for
home energy innovation

Becky Sweeney – Living Lab Business Lead

Part of
CATAPULT
Energy Systems

We've built a Living Lab to help better understand what consumers need

LIVING LAB

Simple interaction with consumers

Easy to modify to include new technologies

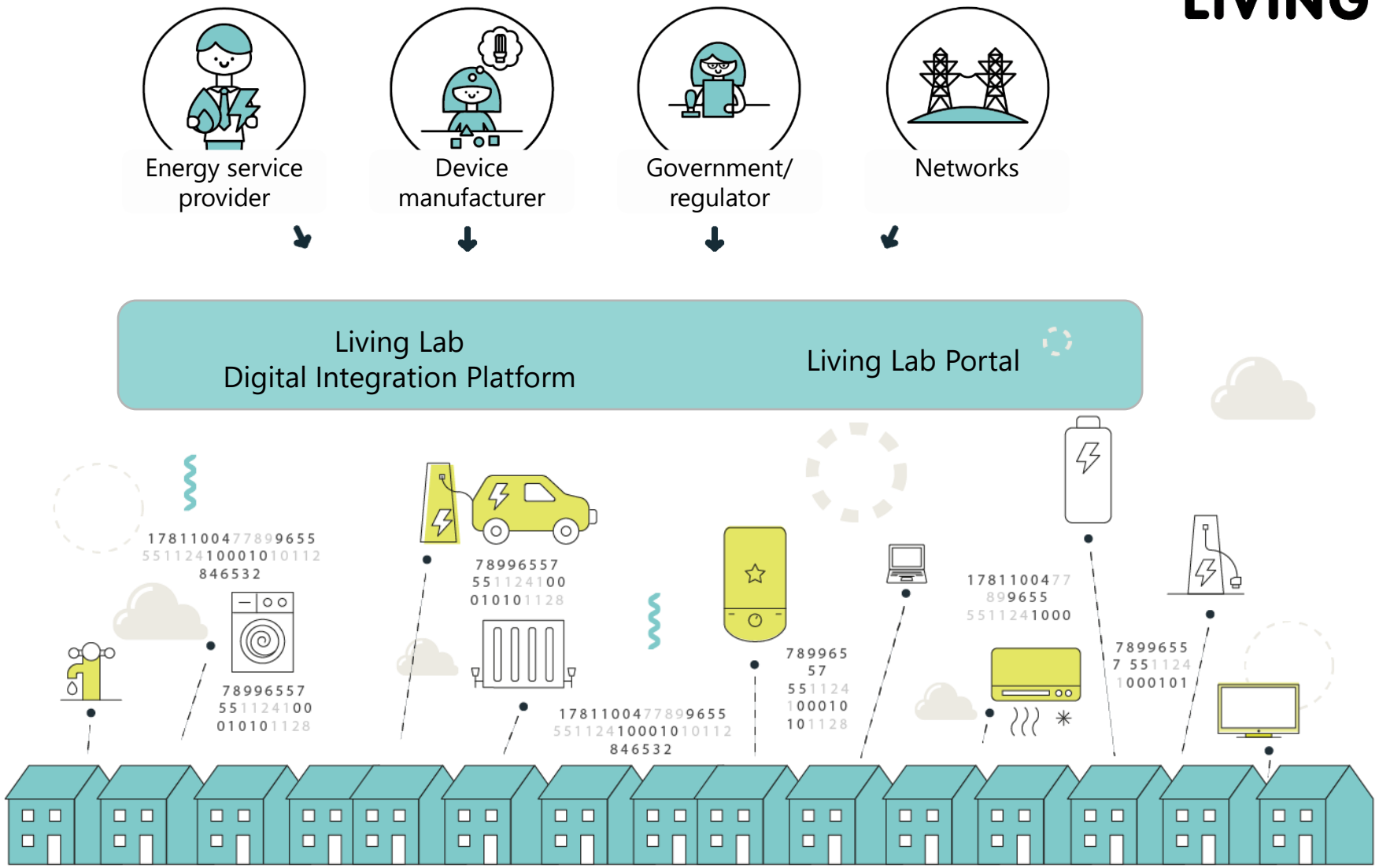
Supports multiple trials

Over 200 homes have signed up to take part

Variety of consumers, homes and technologies

Scalable to '00s of homes

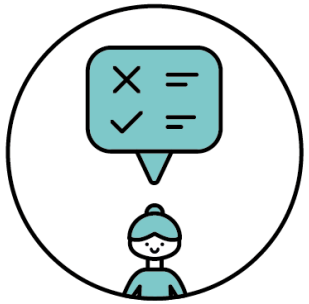
Combines consumer insight and digital analysis



The Living Lab has delivered a wide variety of domestic energy trials

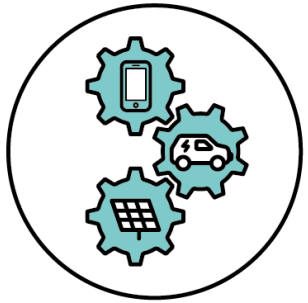
LIVING LAB

Product Performance
How does my product perform in real homes?



Customer Experience
Will consumers like using my product?

Business Model Testing
Will I make be able to make a profit?



Interoperability
Will my device work with other technology?

Energy as a Service
Can I bundle my product with other services?

Energy Flexibility
Can I provide network flexibility with my product?

We support innovators who want to test their service with consumers

Some examples: Selling Heat as a Service

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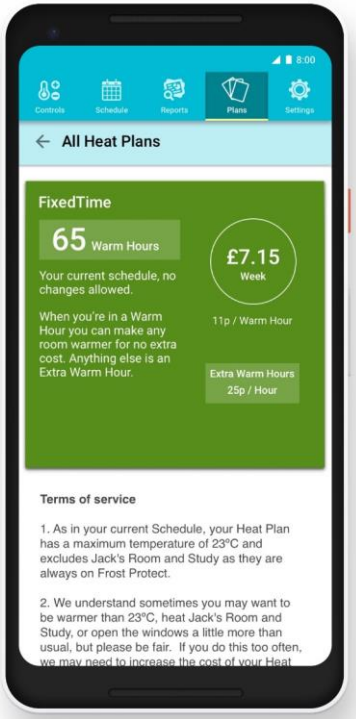
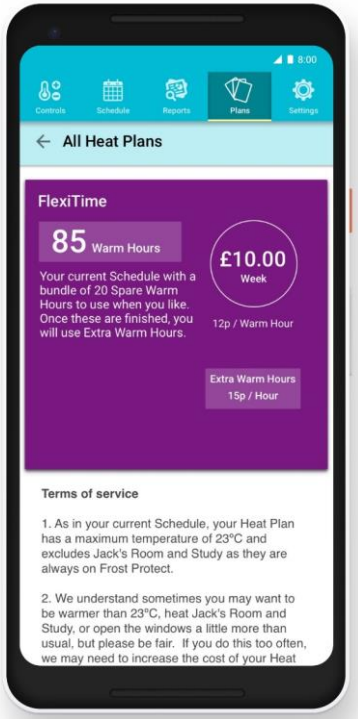
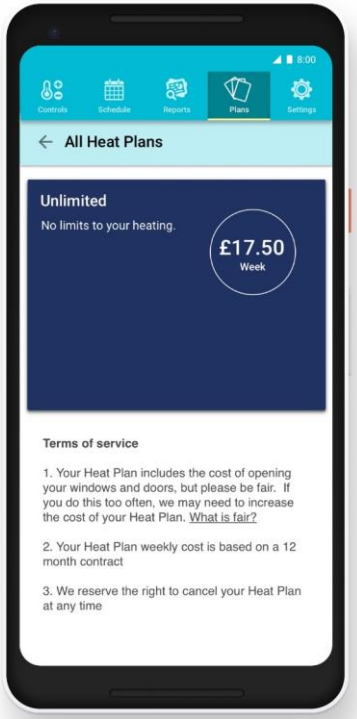
BRISTOL energy

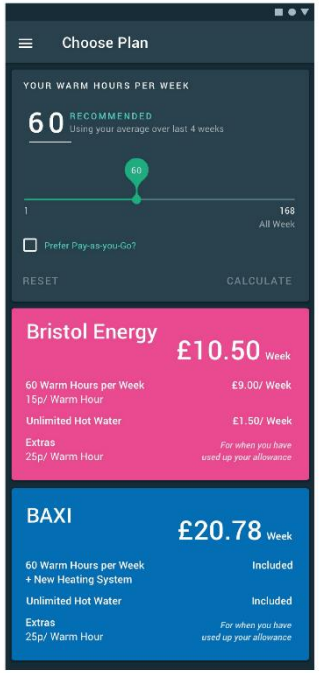
BAXI

Designed and trialled Heat-as-a-Service for BEIS, Bristol Energy and Baxi









Attract customers

Increase uptake of heat pumps

Increase participation in DSR

Target support for fuel poverty

Increase openness to energy retrofits

Another example : AmpX Smart Home Platform

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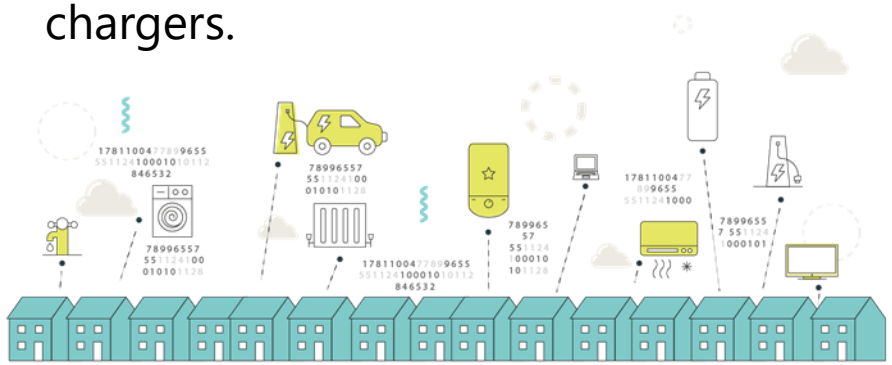
Advising an SME on potential for its **in-home digital energy platform** to facilitate demand side response, reduce carbon and reduce energy bills. Using the **Living Lab** to gather consumer feedback and test the interface between the platform and a variety of in-home dumb and smart devices including EVs, smart meters, appliances and HVAC controls.

Trial:

- Install monitoring equipment in 60 homes to study energy demand
- Test impact of their technology on energy consumption, customer bills, and DSR.
- Solve technical challenges with integrating their platform and EV chargers.



Technical solutions to EV integration

AmpX can sell flexibility to the grid

Smart, consumer-centric decarbonsiation

More customers for AmpX

Investment in AmpX

What do we hear from consumers when exploring new energy services

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Consumers testing managed ev charging told us they could be flexible on time of charge

Consumers appreciated improved comfort and control that heat plans gave them

Easier to access heating control is important to consumers – needs to be designed well

Consumers switched to heat as a service because it gave them certainty of price

We hear from our work on Warmth on Prescription that people with conditions exacerbated by the cold had to 'work around' their heating systems to get comfortable.

But it can be challenging to implement these services

It's complex to agree a derogation and as an SME I don't have the time or money – I'll just find a different way to implement

What happens If the regulator changes the rules – my business model is gone !

I have to 'team up' with a supplier to be able to offer my energy service

There are such complex market arrangements in place – where do I even start ?

The tech I need to install to offer my service is £££ - how do consumers pay me for this over time

With a mixture of real and perceived barriers.....

We are here to support innovators …

We want to accelerate the roll out of novel services

We want to help you understand whether consumers will take up your service

And we want to help innovators explore how these services could be implemented in the market

livinglab@es.catapult.org.uk

sero

Comfort-as-a-Service

James Williams | 7th June 2021

Co-founder & CEO

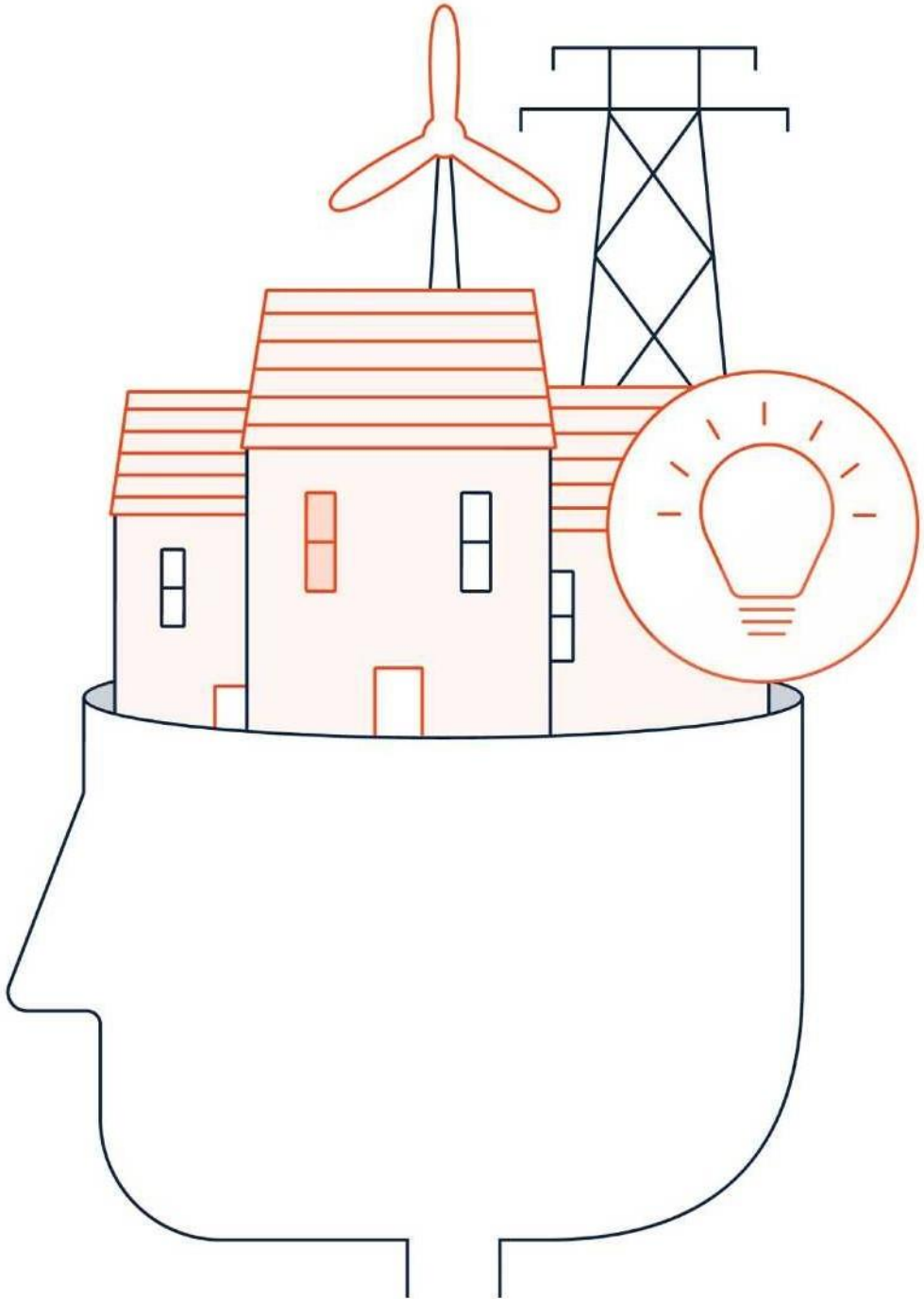
About us

Helping to deliver Zero Carbon lifestyles

We're a UK-based new business with big ideas.

Founded in 2017, we're disrupting residential energy and housebuilding and retrofitting from our home in South Wales.

We're trying to decarbonise every home in the UK to help battle the Climate Emergency and the Ecological Crisis. But we also believe we can do all that whilst making people's lives easier and energy bills smaller…



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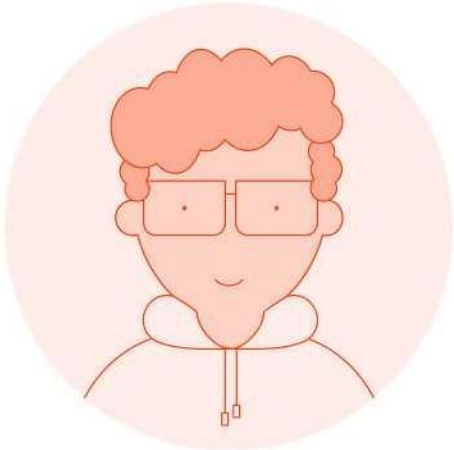
About us

We're a technology company that develops, partners and supports customers in reaching Net Zero.

sero projects

Homes that we build and retrofit in partnership with other housing providers

sero life



Our customer technology platform and comfort service

sero homes

Development Company.
True Zero Carbon homes that we develop ourselves

Sero Projects

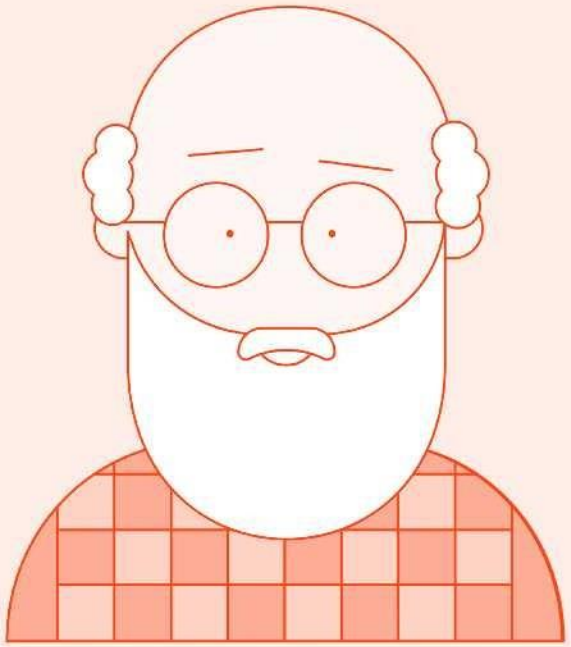
Building optimisation starts at the design stage.

- Work with housing providers, local authorities, social landlords.
- Technology agnostic.
- Buildings have an enhanced metering and monitoring package.
- Ensure projects produce a quality outcome through a whole building commissioning.
- Currently delivering 2,500 homes in 2021 across new build and retrofit.
- Capital costs can vary between £15-30k depending on Net Zero target (i.e. which year).

sero projects

Home comfort service

Comfort, not kilowatts



sero life

Comfort as a subscription

- Energy Purchase
- Intelligence
- Customer Support
- Maintenance
- Building Passport
- Finance

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Home comfort service

Reducing costs for customers (3 bed)

sero

Challenges & Opportunities

- Cost to Serve on a residential tariff – double counting.
- Requires a participating Licensed Supplier, which can dictate the pace of innovation.
- Full value not yet realised, i.e. forecasting and demand flexibility.
- Services tied to technology and manufacturers.
- Unlocking flexibility aggregator vs Supplier vs flex operator (VLP).
- Energy bills may have a greater proportion of fixed costs in the future.
- Socialising energy performance across a housing portfolio.

- We're in a better position to support customers with more data and an increased scope.
- The Virtual MPAN? aggregating a sub-set of customers (B2B).
- Direct savings should not be the only measure, value of forecasting and flexibility.
- Help enable local energy systems
- Financing Net Zero.

sero

James Williams
Co-founder & CEO

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Thank you

socialenergy

The Virtual Power Plant of tomorrow, today…

Proof that residential Distributed generation and Domestic Demand Side Response is a viable option for both customer, Utility and grid

The only Battery & Solar system Verified by the energy saving trust to **Save average of 70% off energy bills**

- Highest export Tariff of 20p*
- Longer Battery Warranty,15 years
- Fully automatic
- Over 7000 installed

*Subject to fair use policy

Making residential homes part of Virtual Power Plants

Delivering True Green Energy viably

Unlocking new flexibility revenues for Utility's through solar, batteries and other electric devices.

Reducing the need for Grid infrastructure upgrade.

Predicting intermittent Solar and wind, reducing curtailment.

A viable real world return for the consumer

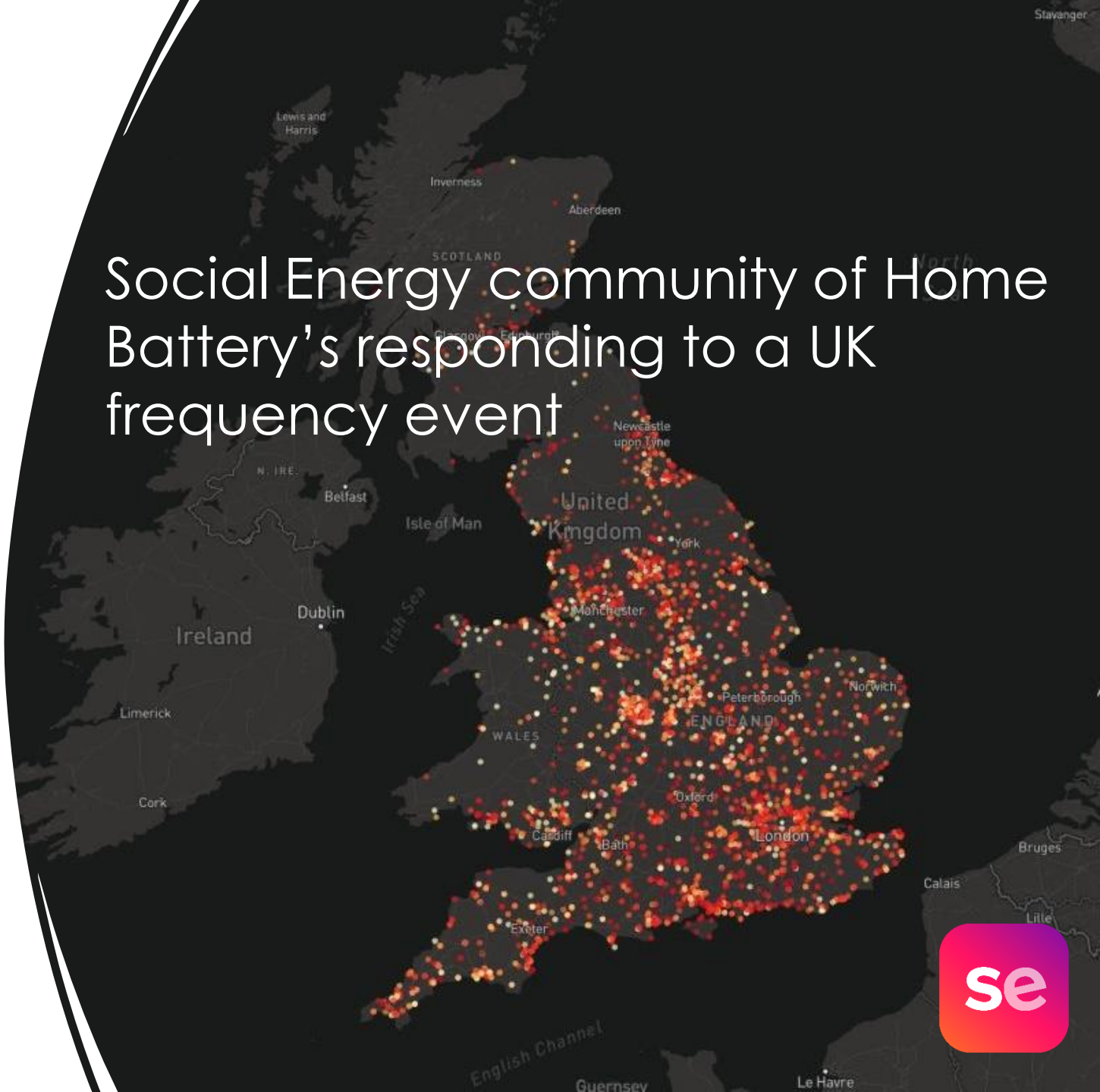
socialenergy

Our 7 years Oxford developed technology enables customers to generate, to trade and store energy to balance the National Grid autonomously

AI and data fed predictive analytics optimize a homes solar generation and energy usage symbiotic to grid needs Reacting to price signals,or API.

Every home receives its own unique Optimisation schedule updated every 5 minutes, re-calculated from secondly data of that home and the grid.

Social Energy community of Home Battery's responding to a UK frequency event



Business model

Social Energy provide customers with a service, providing a turnkey solution that optimises battery and storage (with more assets to come)

We are not reliant on selling more commodity – actually the opposite, we are a net exporter of zero Carbon Energy. We make money through taking a share of the DSR flexibility revenue the home assets participate in.

While we are an energy supplier this is not the core of the business success. Interestingly ,reducing customers bills increases our profitability.

This incentivises us to keep customers systems in working order bringing us highest CSAT and NPS scores in the sector

socialenergy

Our Key Differentiators

We optimise each battery uniquely at a household level but also the optimisation algorithms consider the whole fleet , resulting in a collaborative optimisation process

100,000 energy trades per home per year

600 million data points per home per year

90% trade prediction accuracy 24 hours ahead

Data feeds from industry, events, weather, traffic & more

100%

DSR uptake in the home, compared to 4% industry average

Machine learning learns in home behaviour

Sub-second response times

Only National Grid approved domestic FFR provider

Cloud based platform

Real-time monitoring and control

The barriers blocking innovation models

Final consumption levies: Residential consumers miss out on circa £70 a year in financial benefits due to their prosumer systems having to operate under a supply license.

Regulation regarding private wire, and virtual private wire. There's a huge opportunity to reduce costs by allowing consumers to 'share' electricity in geographically close communities and benefit, but existing regulation doesn't allow for this to work.

Smart metering rollout – To maximise consumers benefits, customers need half hourly settlement. More than half of our SMETS1 meters are still not 'smart' and in the DCC network. The continuous delays to the SMETS1 migration have eroded consumer trust with smart meters, and cost them over £50 P.a in financial benefits per annum.

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Smart Solar and Smart batteries ; Solar on its own exaggerates grid problems. Batteries are needed to reduce peak production outside of peak demand. Low cost dumb batteries are being mis- sold by using the marketing '*SAVE UP TO £600*'. While theoretically possible, most average customers wont and don't achieve these savings.

Smart tariffs / TOU tariffs – are being used with dumb batteries and are at rIsk of creating a cowboy industry because these tariffs are beta tariffs, loss making and not sustainable for the average consumer.

.

Storage – seen as the future, but not part of government 'solutions' – Storage is talked about by BEIS/Ofgem as being a part of the future. There's a big gap between intent and action in the UK plan for utilising storage, and is ultimately slowing the transition towards net zero.

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Loss leading Tariff model by deep pocket Utility's , buy customers then creep margins up, hinders true innovation.

Green washing, confuses the customer who is unaware they are buying a mix of fossil fuel.

Low value of REGO's preventing deals for true green generators.

ROC's – Shouldn't polluters pay more ?

Decarbonisation of Heat ; Heat pumps are over twice the price of gas boilers to buy and to run, their deployment will only increase fuel poverty. They must be coupled intelligence like with solar/ battery which effectively reduces energy to similar to that of gas when mixed with a Heat pump COP.

socialenergy

Thank You

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