

Microgrids moving forward

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Bristol
Power
Co-op

It's time to take
the power back



Share Offer 2 • April 2014

www.bristolpower.coop



Lockleaze

Size: 64.3 kW

Location: Lockleaze, Bristol

Installed: July 2012 - July 2013

Annual generation: 55,096 kWh

*Clean power
station here.*

Yes please.



www.bristolpower.coop

Why install new, local generation capacity?

The cost of energy is rising faster than inflation

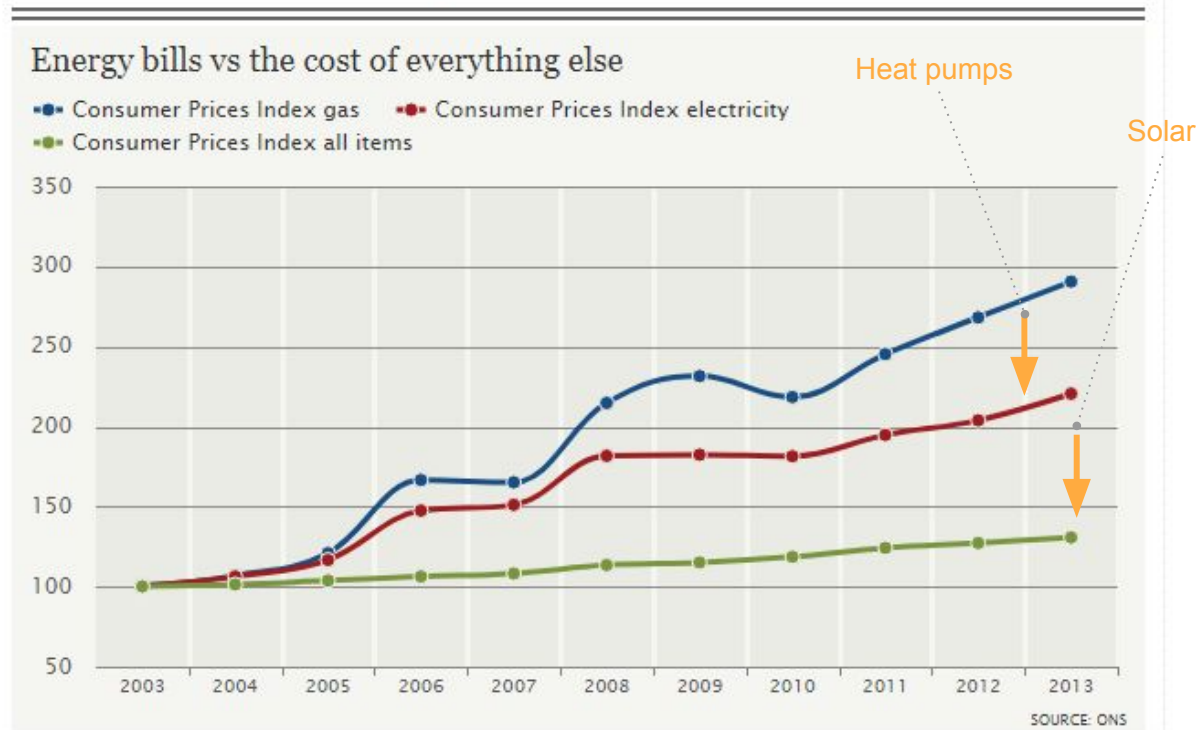
Long term trends are that gas prices are rising faster than electricity which is rising faster than inflation

New homes that integrate electric heat pumps, heat networks and maximum density PV are more decoupled from this increase in primary energy cost

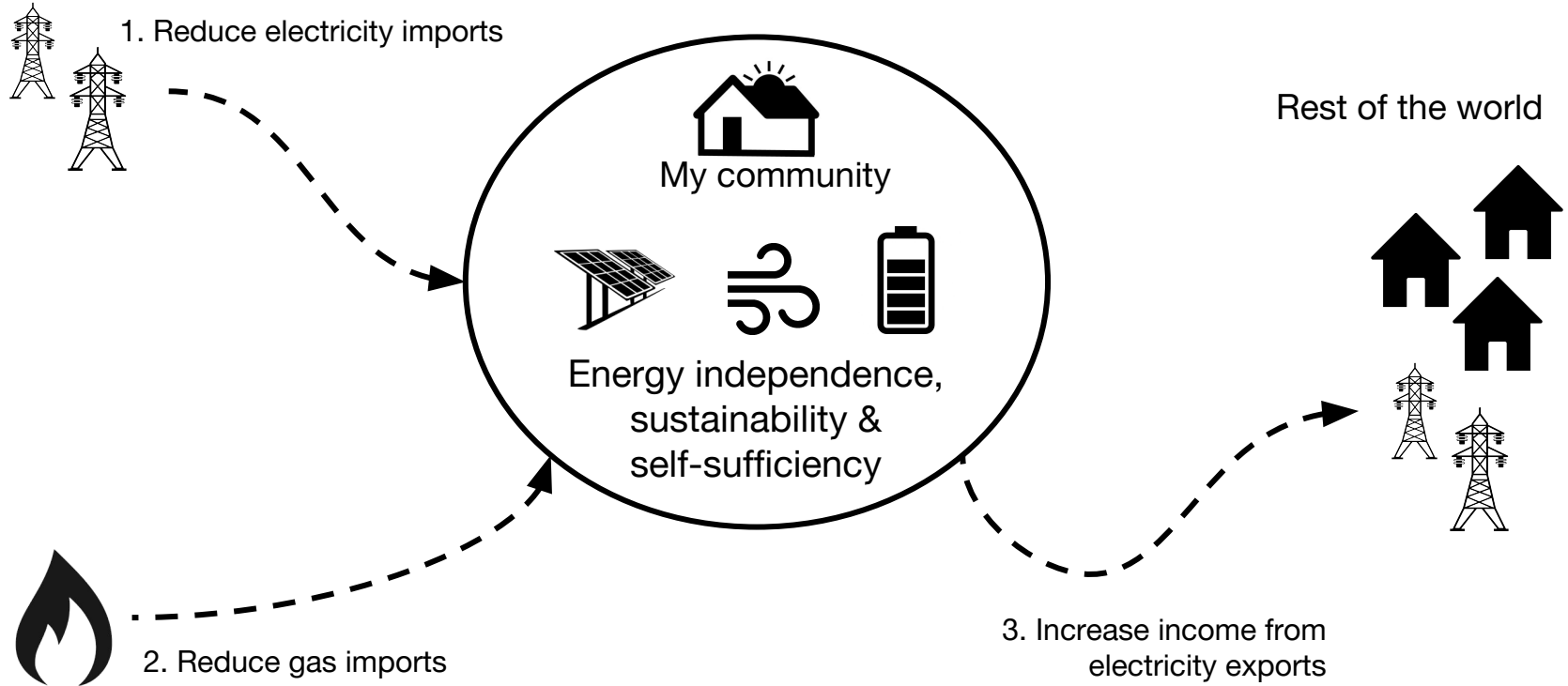
Parameters	
kWh per kWp	950
Panel degradation	0.50%
FIT rate inflation	2.00%
Gas rate inflation(*)	4.46%
Electricity rate inflation(*)	3.38%

Graphic: How your energy bills have soared in ten years

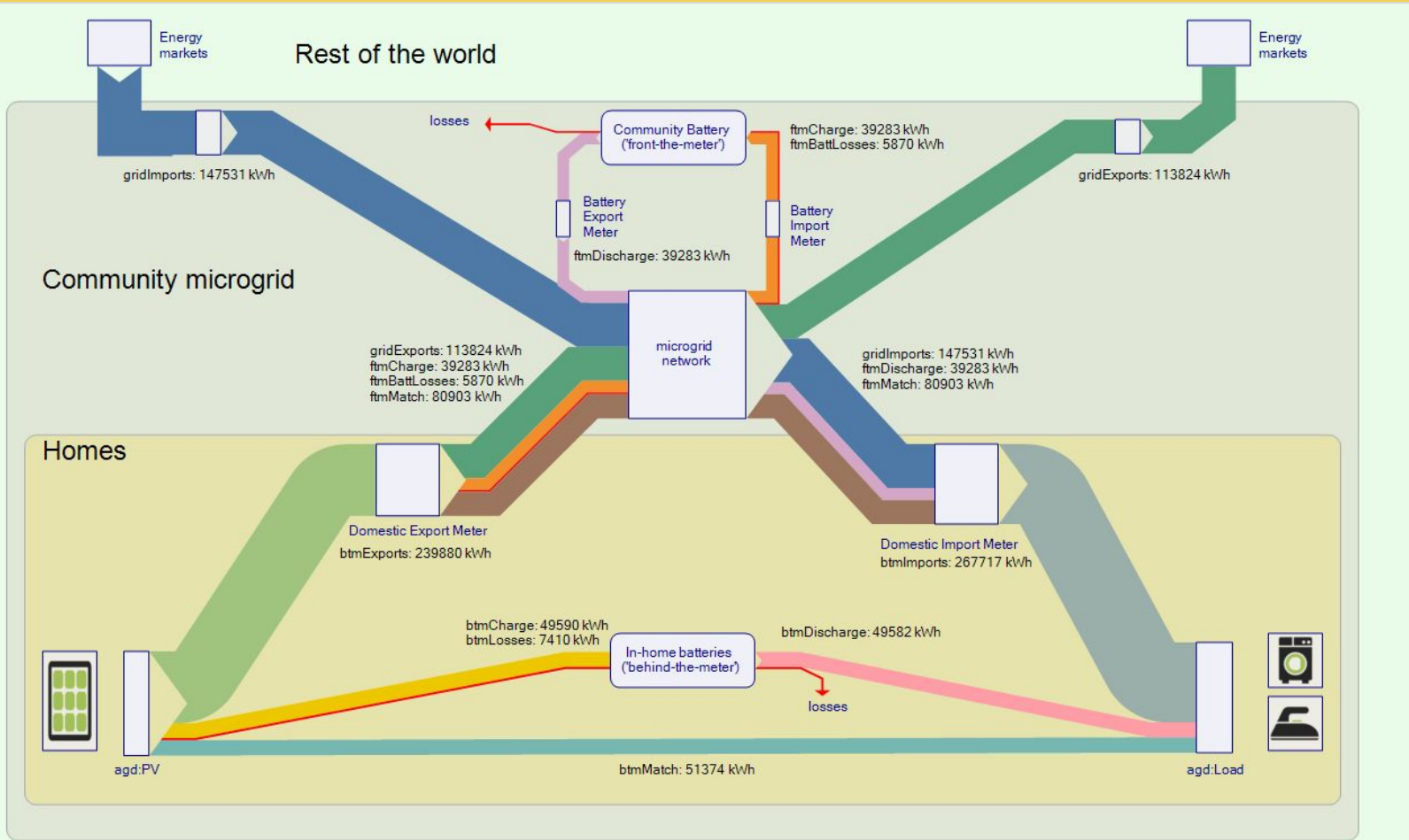
Gas bills have almost tripled in ten years, outstripping the cost of all other goods and services, official figures show.



Why install new, local generation capacity?



Community microgrids increase match between generation and demand



Homes connected to the Kilburn Street substation:

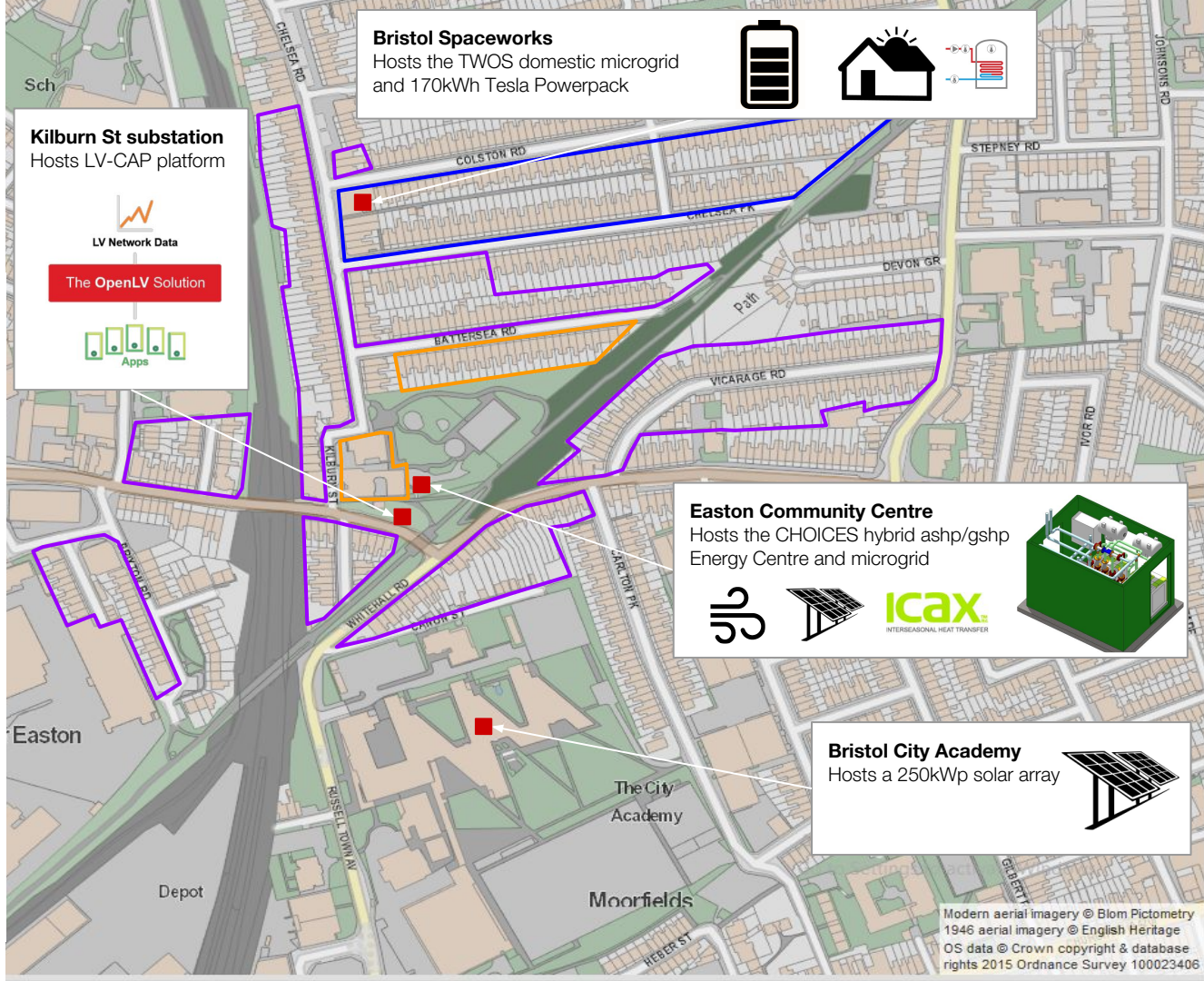
VALUE tariff homes



CHOICES tariff homes



TWOS tariff homes



Owen Square Community Energy

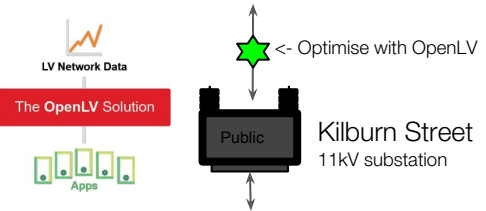
Overview of sub-projects being developed as part of this initiative



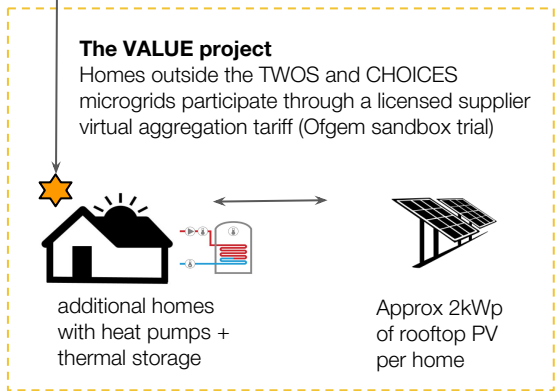
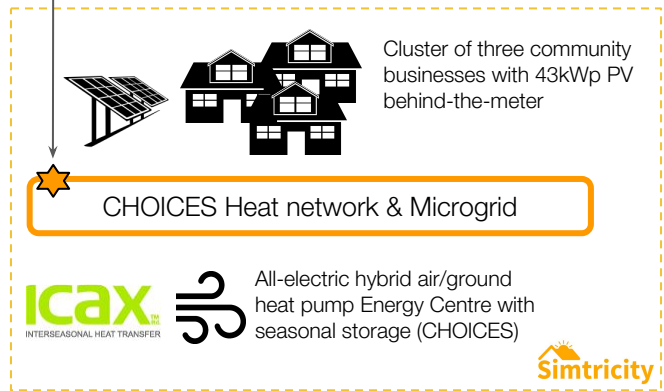
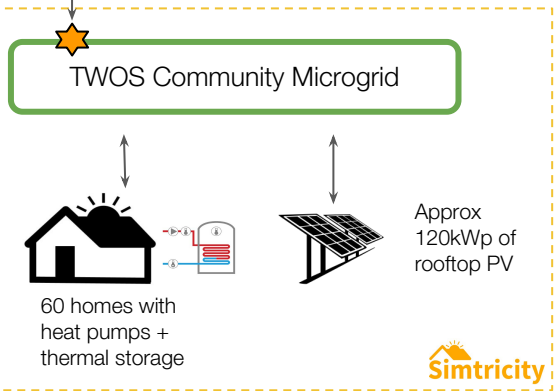
Feeder Road A
33kV substation

<- Optimise with OpenHV?

Half-hourly settlement battery meter	★
Half-hourly settlement demand/generation meter	★
OpenLV feeder monitoring system	★



Community Battery:
Support local balancing and provide ancillary services to the grid

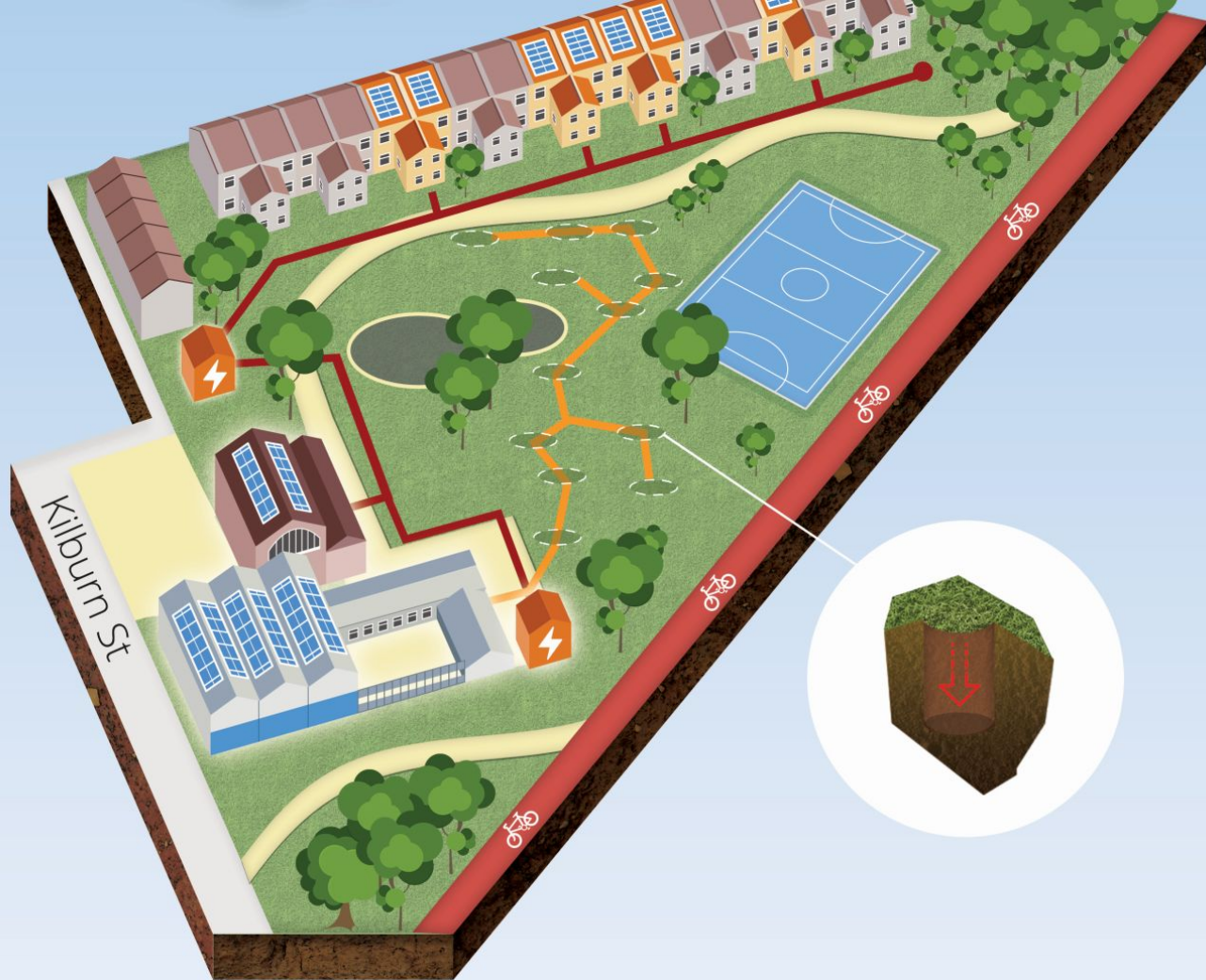


The CHOICES project



In 2016 the project team constructed a pilot all-electric CHOICES Energy Centre - a hybrid air/ground source heat pump system rated at 140kW

A heat network supplies local community buildings and will be extended to local homes



The CHOICES Energy Centre, microgrid and heat network commissioned 2016



1. Planning



2. Construction



3. Operations

New physical microgrid: OSCE TWOS offer

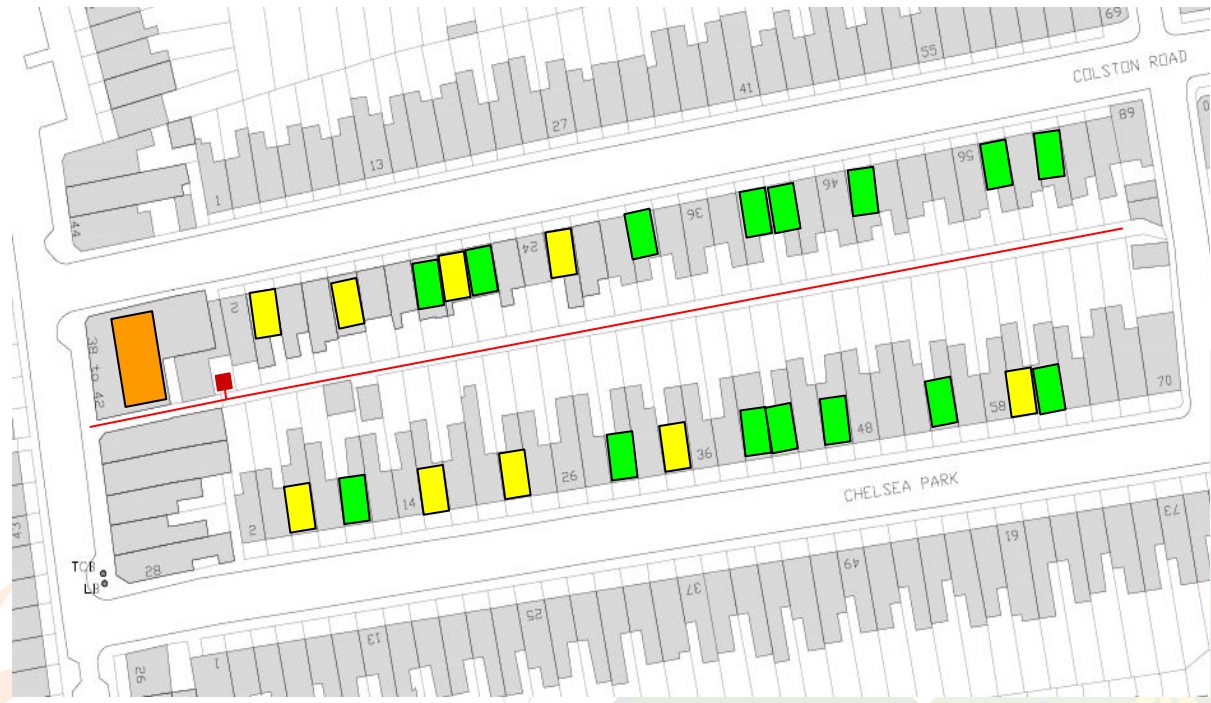
Supported by a DECC grant from the
Urban Community Energy Fund

Department of Energy & Climate Change

COMMUNITY ENERGY for BRISTOL NEIGHBOURHOODS

PAY LESS
for the ENERGY YOU USE

TWO STREETS OF SOLAR
twos.org.uk



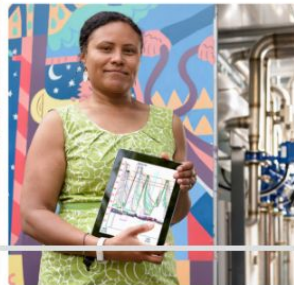
Key:

- Battery location
- Domestic microgrid consumer / PV host
- Domestic microgrid consumer
- Non-Domestic microgrid consumer
- Microgrid network

We are working with the OpenLV project to engage residents and relieve grid constraints



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Get involved in OpenLV

The groundbreaking project that's making local electricity data openly available.



Local electricity network improvements



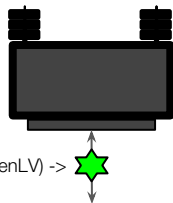
Community development



Development of apps

Ofgem Sandbox derogation

Overview of proposed Owen Square community battery derogation & trial

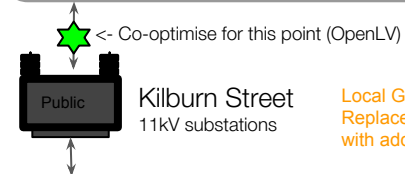


Feeder Road A
33kV substation

Co-optimize for this point (OpenLV) ->

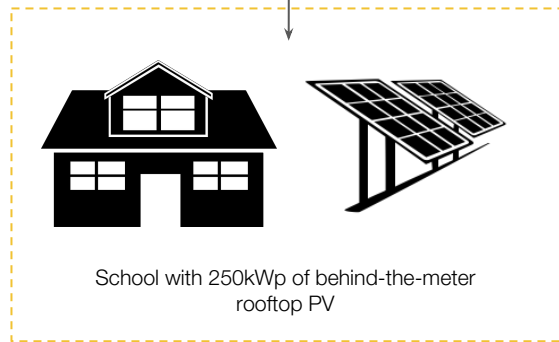
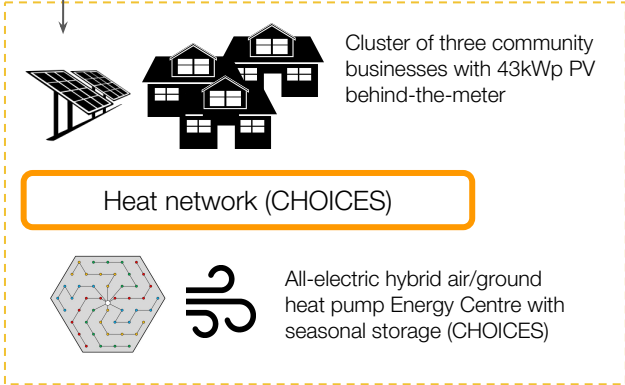
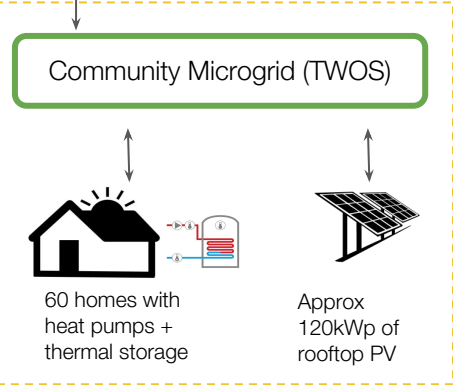
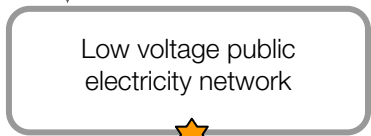
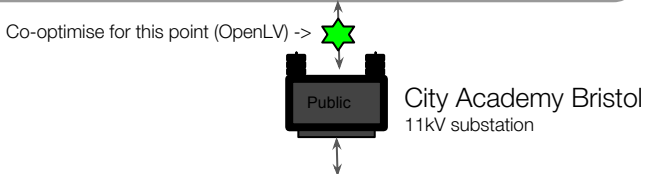


Derogated HH Settlement battery meter	★
Derogated HH Settlement demand/generation meter	★
OpenLV feeder monitoring during sandbox trial	★

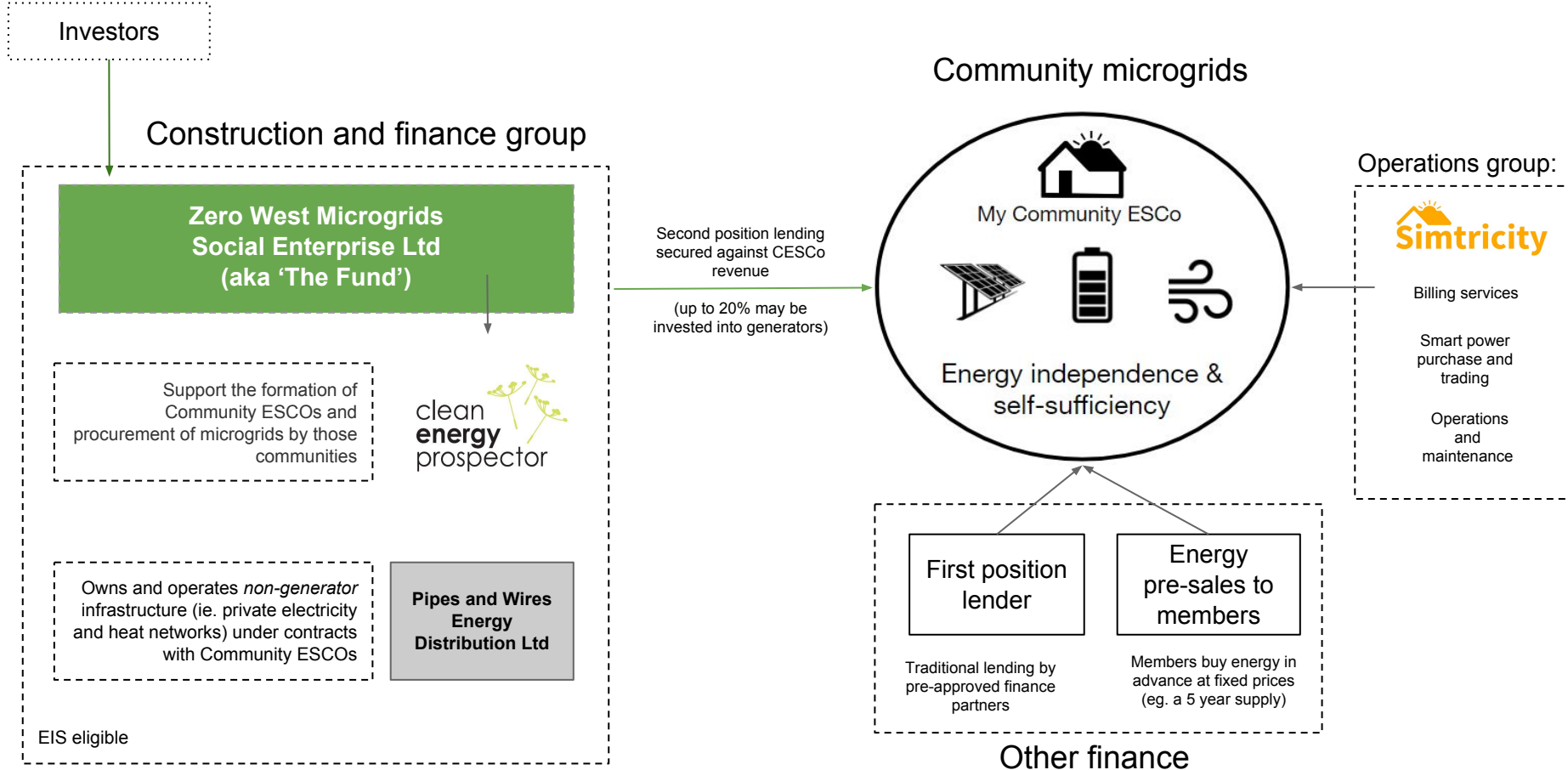


Local Generation/Demand:
Replace variable network charges with additional fixed charges

Community Battery:
Compensate flows matching local generation and/or local demand



Zero West 'Community Microgrids' project



Building Resilience

Community energy business models
for a world post FIT



Easton Energy Group

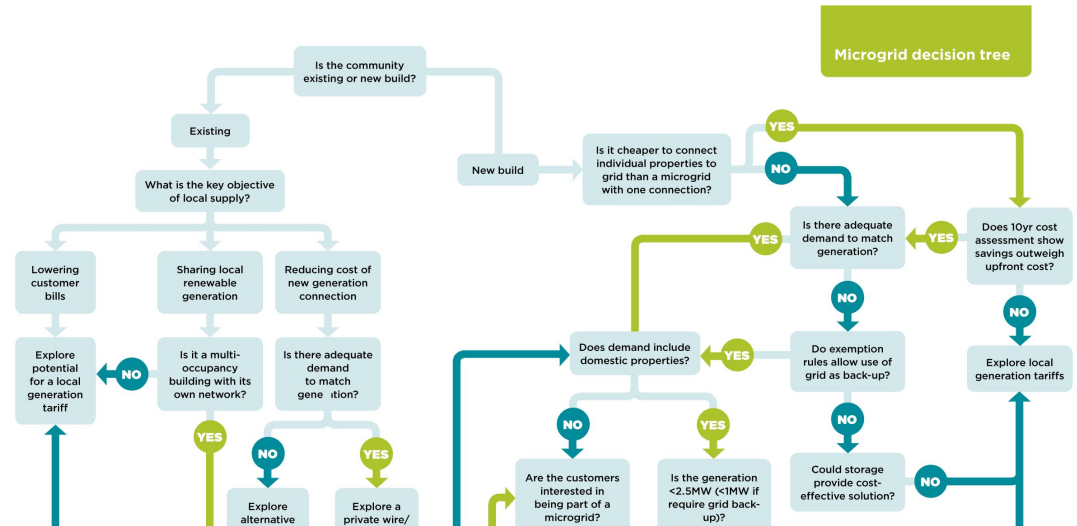
Laying a brand new
grid in Bristol

The Innovative Local Energy Models project



Foundational criteria supporting a microgrid approach:

1. Your goal is to install **new and local** generation
2. You have adequate, **all-electric** demand
3. The **private wires are free** (or very low cost)
4. Technical skills or ability to buy-in those skills



Wider engagement in Spring & Summer 2017



Replication partners



HADLEY PROPERTY GROUP



Supplier and industry partners



Owen Square Community Energy
www.owensquare.coop

Powered by: **Simtricity**



Community and dissemination partners

Technical team