

Flexibility and OpenDSR



Community Energy, The Next Generation

Cardiff

Wednesday 6th March

Ben Aylott

@CarbonCoop

CarbonCo-op

CO-OPERATIVES UK
COOP
MEMBER

About Carbon Co-op

- Created by a group of householders in 2008 in Greater Manchester, UK.
- Aim was to achieve **2050 emissions reductions today** through **deep energy efficiency retrofit** of houses.
- Still the aim!
- Now over **170 members** and **9 staff** working together to **reduce** their collective **CO₂/GHG emissions**.
- A proto-domestic-aggregator/ESCO-op ??





Retrofit



Energy
Systems

Home energy training programme

September 2017 – December 2018



Education



Policy
(Manchester/NW/U
K)



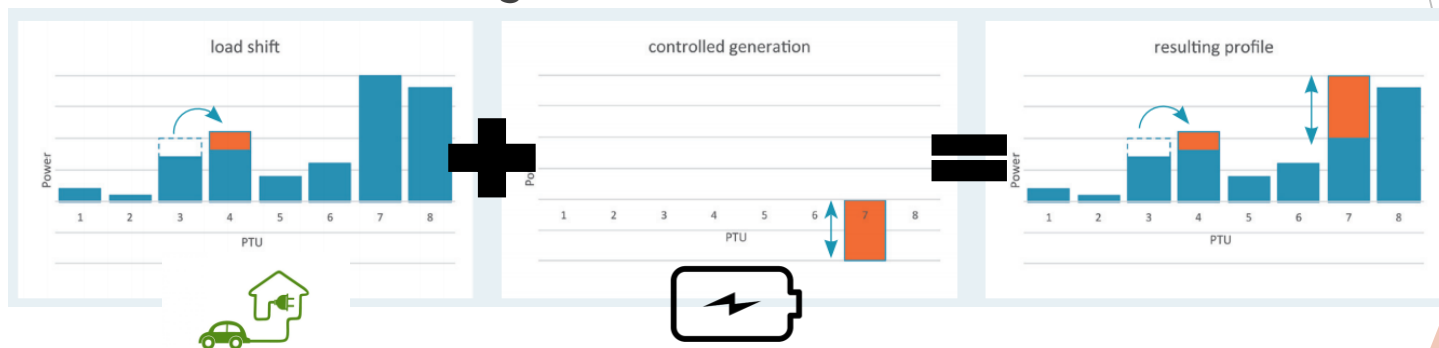
Renewable
Generation



Consultancy

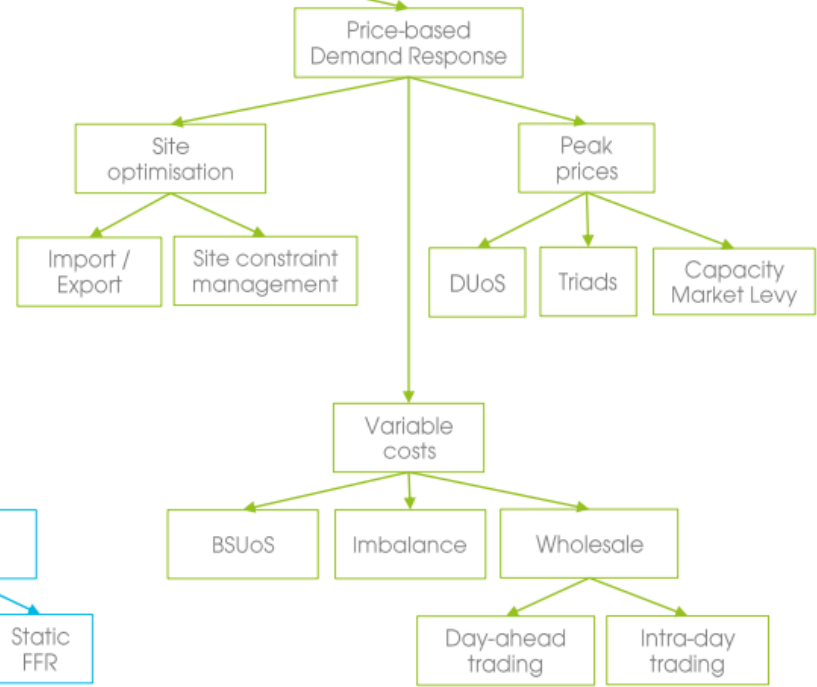
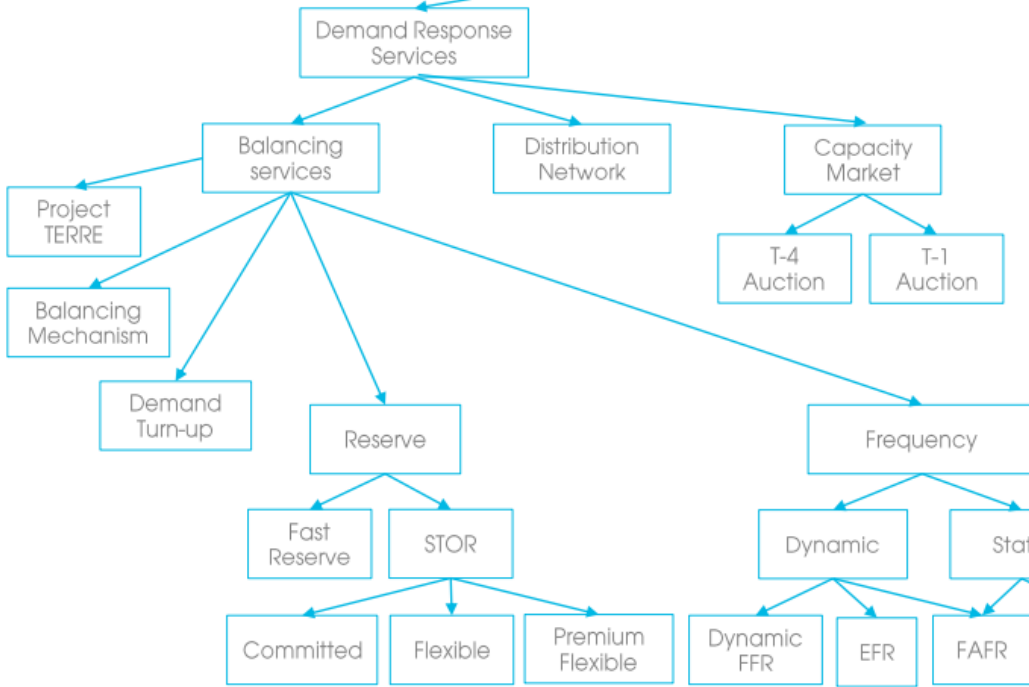
What is flexibility?

- ▶ Flexibility is the commoditised ability to increase or decrease 'demand' dynamically in response to pre-defined criteria or external signals.



- ▶ Flexibility has a range of uses within the energy system.
- ▶ Different actors in the energy system can benefit from purchasing flexibility - DNOs, National Grid ESO, suppliers.

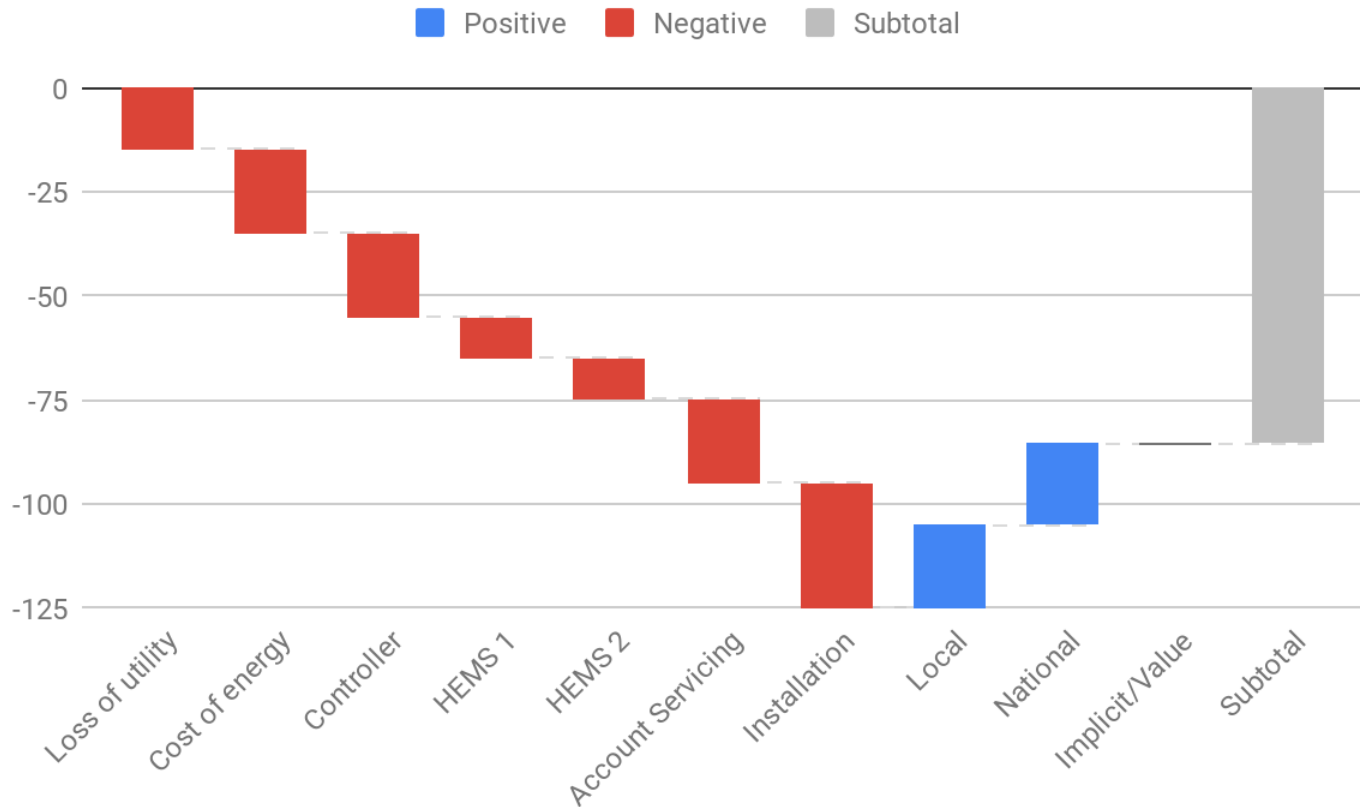
Demand Response Markets 2018



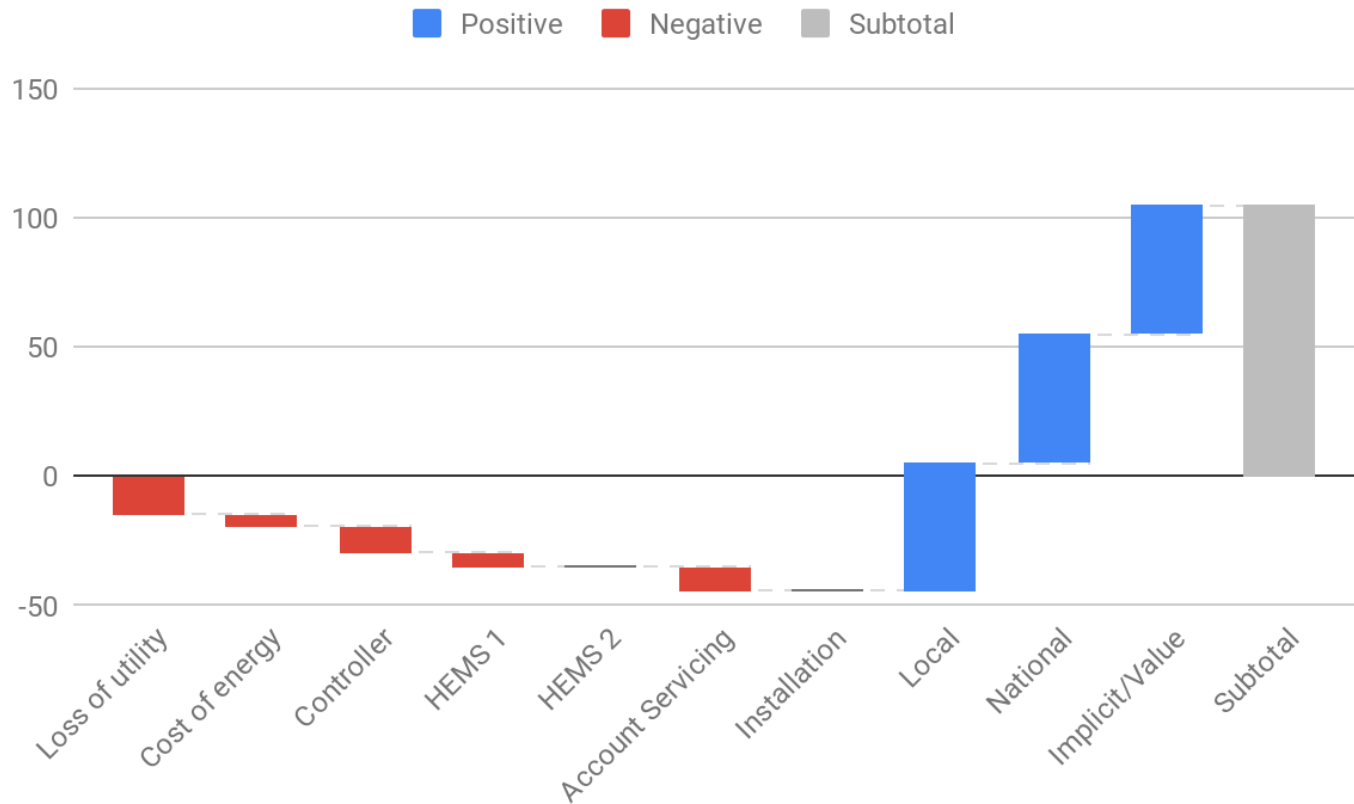
- Acronyms**
- BSUoS: Balancing Service Use of System
 - DUoS: Distribution Use of System
 - EFR: Enhanced Frequency Response
 - FAFR: Faster Acting Frequency Response
 - FFR: Firm Frequency Response
 - STOR: Short Term Operating Reserve
 - TERRE: Trans-European Replacement Reserve Exchange

Contact:
 Sebastian Blake
 Sebastian.blake@openenergi.com

Current costs vs. benefits (10kW flex)



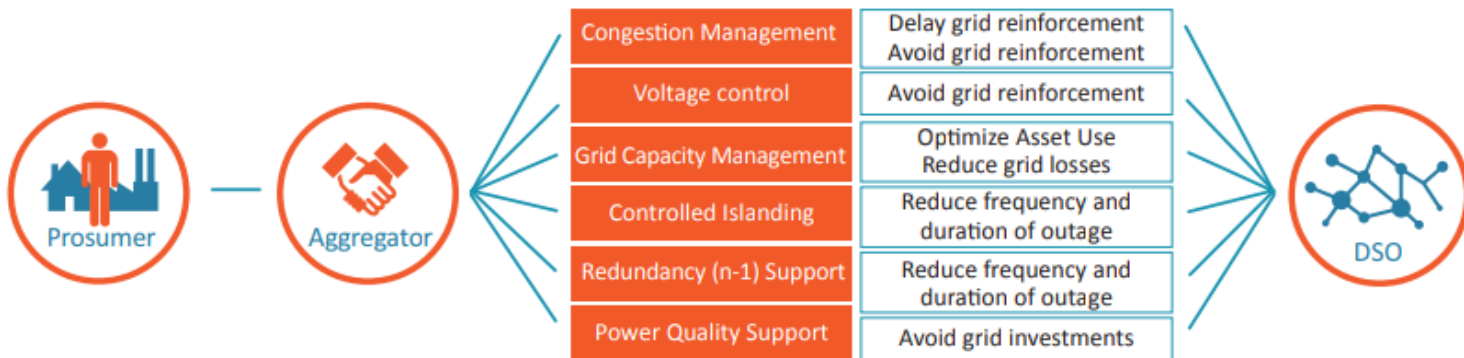
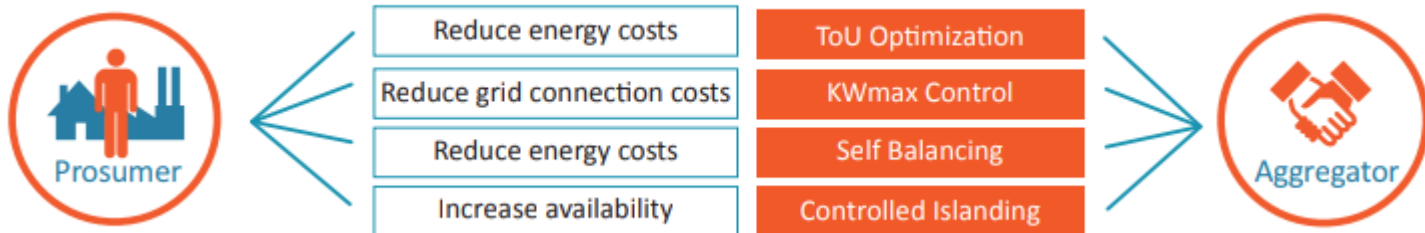
Future costs vs. benefits (10kW flex)



Obstacles to viability of domestic/community aggregation

- In practice for it to be viable there are several things missing:
 - Harmonisation/unification of flexibility tenders/markets. Equal access.
 - Standardisation of flexibility products.
 - Lower costs for qualification, monitoring, metering, validation of flexibility assets – requires UK smart meter system and half-hourly settlement up and running.
 - Creation of appropriate and proportional regulatory framework for domestic aggregators.
 - Lower costs for achieving control of systems – needs mandated standards-based approach like internet (e.g. OpenADR). Better smart product standards.
 - A smart grid! Visibility and situational awareness in distribution network.
- Are consumers ready? Will they want to participate?

Value of flexibility not realised



OpenDSR

The background features a series of overlapping, semi-transparent geometric shapes in various shades of orange and brown. These shapes are primarily located on the right side of the frame, creating a layered, abstract effect. The colors range from light peach to deep, dark chocolate brown. The overall composition is clean and modern, with the text 'OpenDSR' positioned on the left side of the white background.

Our Partners

Megni

Energy Monitoring



What is OpenDSR?

- A BEIS funded innovation project led by Carbon Co-op building on our previous trials in smart energy and grids.
- A technology demonstrator.
 - Testing the efficacy of a standards based approach to demand side response - OpenADR - which has been proven commercially in the US and Canada.
 - Integrating with the UK smart metering system.
- A policy intervention.
 - Promoting open standards, interoperability, and open source in demand side response.
 - Against 'walled gardens' in smart energy.
- A capacity building initiative.
 - Developing technical expertise and knowledge within the CE sector instead of outsourcing it or buying it in.

Developing new services and viable business models.

What will we do in OpenDSR?

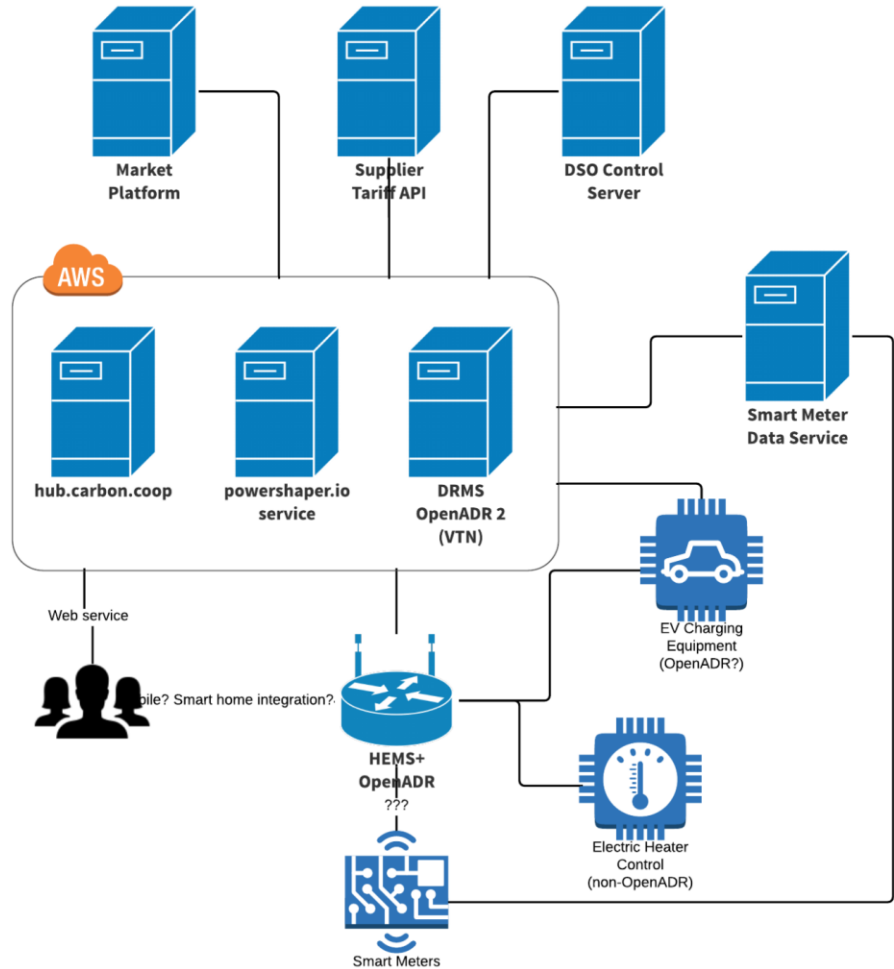
- Develop and integrate existing software and hardware systems to create a demand side response management system based on OpenADR.
- Deploy ~50 smart appliances like smart EV chargers and immersion heater controllers.
- Focus on service design and overlap with our retrofit services.

Yet another trial/demonstrator?

- We are not pretending or claim that we will produce ‘the’ technical DSR system or business model.
- We do not promise to magically make domestic flexibility viable (although we think we can contribute to lowering the costs involved).
- We are trying to show the benefits of a different approach to DSR based on standards and interoperability.
- We are excited to be developing a system that we think is good for our members and is strategically useful for us rather than have one imposed on us that we have no control over.
- The project will release its outputs open source. Public money should be used for public benefit!

OpenDSR Basic Scheme

- Integrated support for both explicit and implicit demand side response schemes.
- Support for different topologies for controlling assets.
- Support for OpenADR 2.
- Integrations for both supplier tariff API, DSO control, and market platforms (likely direction of travel in UK).



Ways to get involved?

- If other community/local energy groups want to try to contribute to development and/or make use of our system please get in touch.
- The project is open source and the technicals will be available in some form very soon.

Thanks for listening

Ben Aylott

ben@carbon.coop