

Community energy and local flexibility markets



Democratic, Decentralised, and Decarbonised Energy Systems with WPD

University of Nottingham Innovation Park

13th February 2018

CarbonCo-op

CO-OPERATIVES UK
COOP
MEMBER

About Carbon Co-op

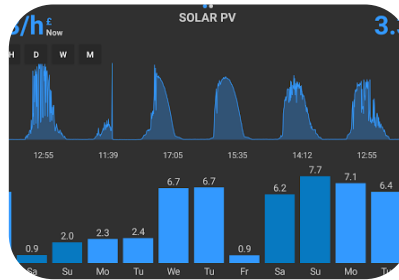
- Created by a group of householders in 2008 in Greater Manchester.
- Aim was to achieve **2050 emissions reductions today** through **deep retrofit** of houses.
- Over **130 members** and **8 staff** working together to reduce their collective **CO₂/GHG emissions**.
- A proto-domestic-aggregator/ESCO-op (!?)



Our work



Retrofit



Energy Services

Home energy training programme

September 2017 - December 2018



Education



Policy



Renewable Generation



Consultancy

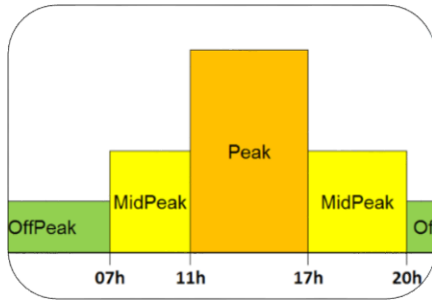
What is flexibility?

- ▶ Flexibility is the ability to increase or decrease 'demand' dynamically in response to signals.



- ▶ Flexibility is potentially cheaper (in some cases) than upgrading grid infrastructure or building more capacity.

What is the best way to incentivise flexibility?



Time of use tariffs?



Direct contracting



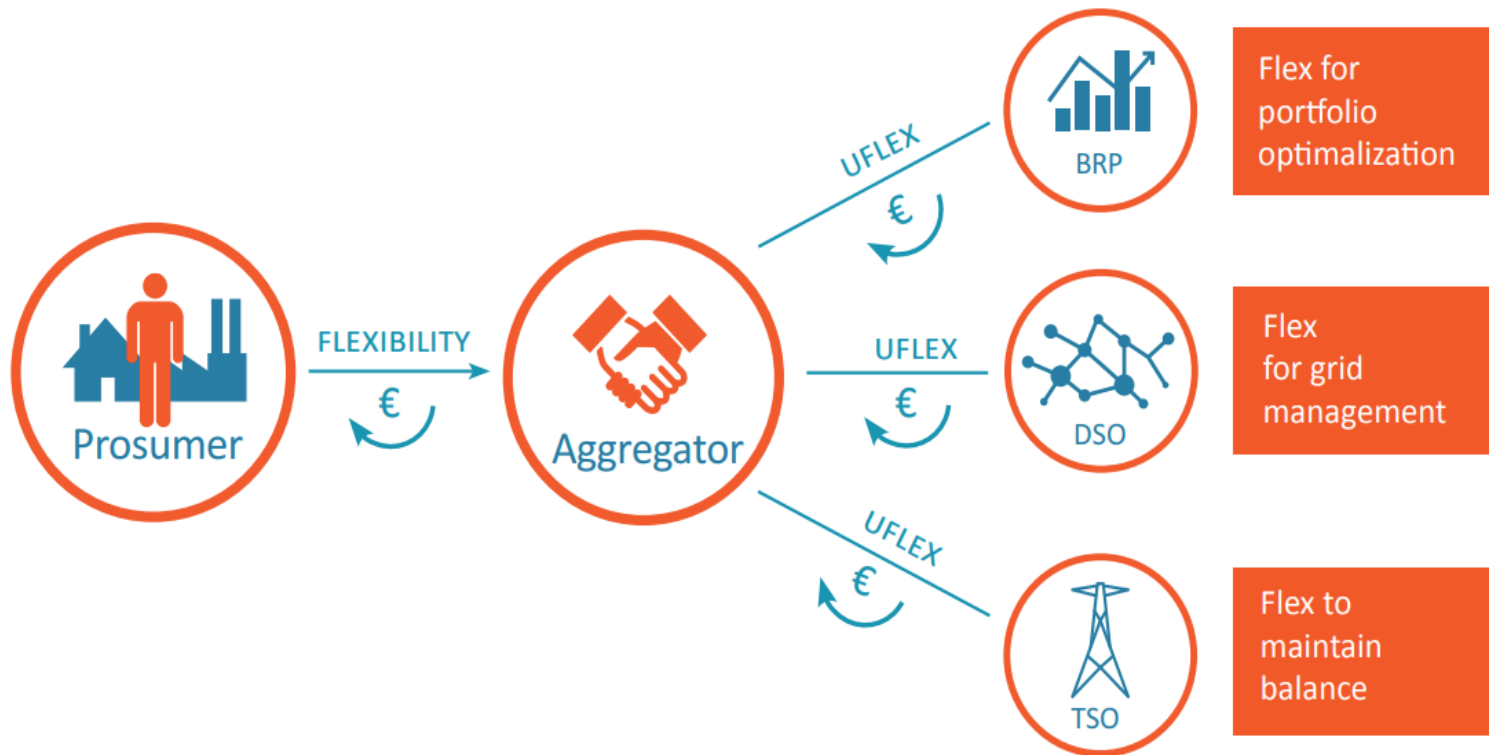
Auctions



Markets

How do we enable domestic and small commercial to access the value of their flexibility?

What is a flexibility market?



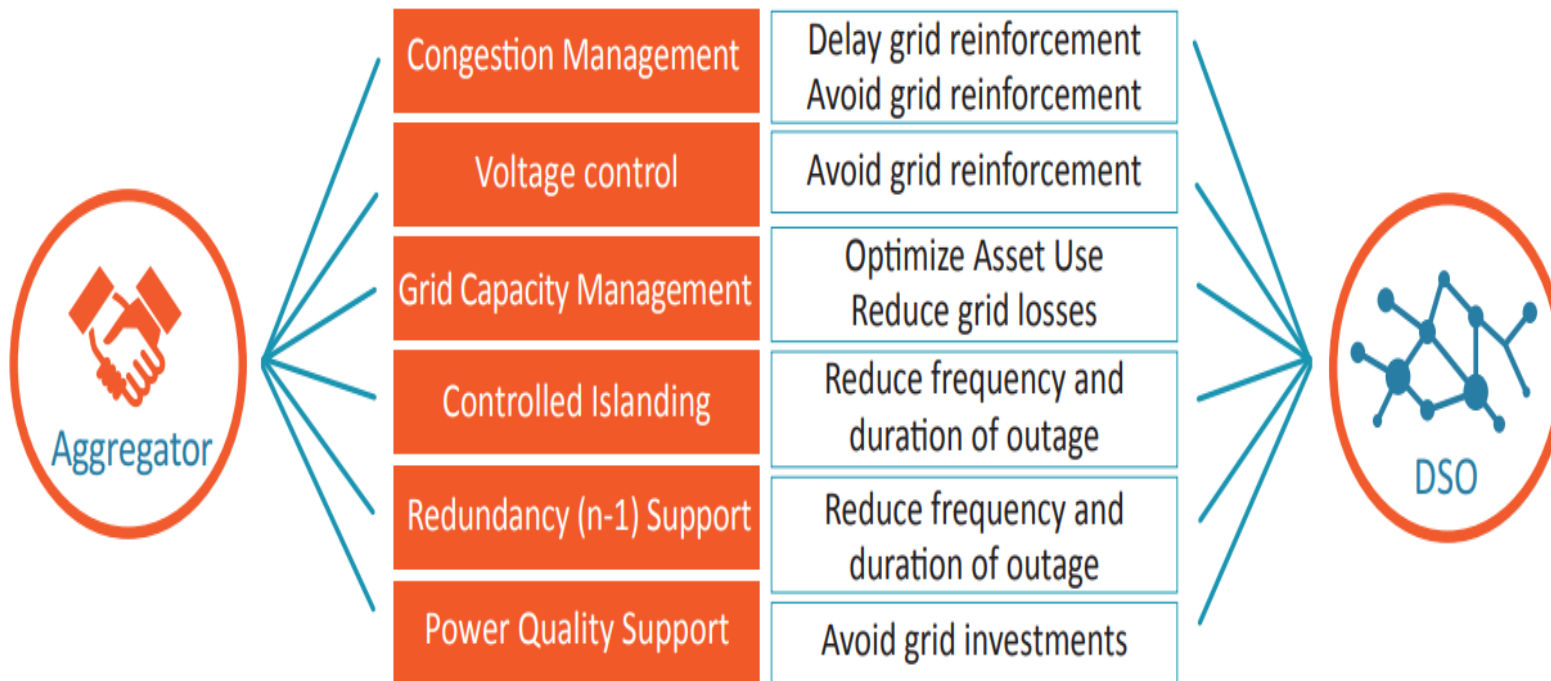
- ▶ 'Prosumers' sell flexibility via an intermediary - the aggregator.
- ▶ Different energy system actors can access flexibility. Price is used as a means of efficiently allocating flexibility as a resource.

The role of the aggregator

- ▶ The role of the aggregator is crucial in demonstrating and accessing the value of flexibility.
- ▶ Parallels the role of supplier in normal electricity market. Reduces risk to prosumer of not delivering flexibility.
- ▶ Qualifies, monitors, and meters flexibility assets.
- ▶ Billing and payments.
- ▶ Synthesis with ESCO activities.
- ▶ In theory a prosumer could do this on their own ...

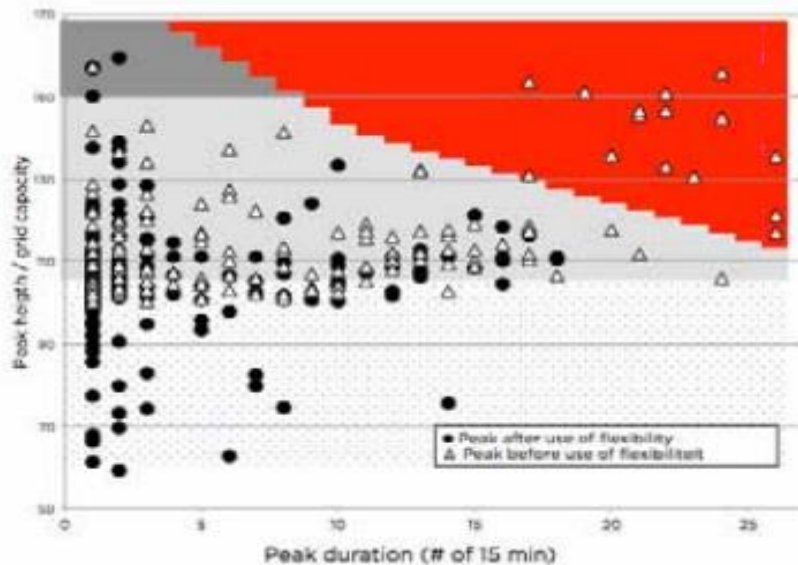
Why local flexibility markets?

- Flexibility will be valuable to DSOs...

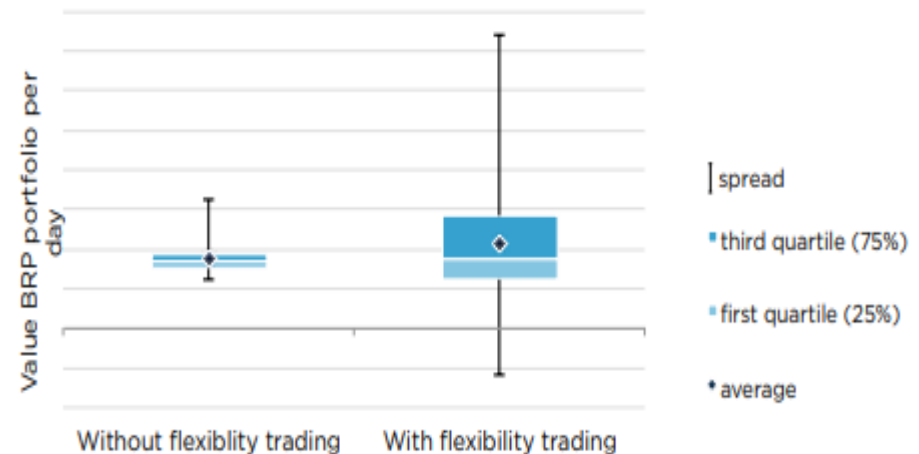


Case Study: Energie Koplopers (Netherlands)

- ▶ Real world implementation of a local flexibility market within the Universal Smart Energy Framework (USEF).
- ▶ Smart appliances, Solar PV, water heaters used.
- ▶ Flexibility sold simultaneously to BRP (supplier) and DNO.



Flexibility was able to increase the value of the BRP portfolio



Obstacles to creation of flexibility markets

- ▶ In theory we could create flexibility markets today.
- ▶ In practice for it to be viable there are several things missing:
 - ▶ Creation of appropriate and proportional regulatory framework for aggregators.
 - ▶ Lower costs for qualification, monitoring, metering, validation of flexibility assets - requires UK smart meter system fully up and running.
 - ▶ Lower costs for control systems - needs standards-based approach like internet (e.g. OpenADR). Maybe also product standards.
 - ▶ Publishing of real-time data from distribution network - already being trialled e.g. OpenLV!
- ▶ Are consumers ready? Will they want to participate?

Energy Community Aggregator Service (ECAS)

- ▶ Community energy groups currently lack scale, resources, and expertise to participate in flexibility markets.
- ▶ However, they are well placed to participate in local flexibility markets due to their status as trusted intermediaries and geographic focus.
- ▶ We would like to see community energy organisations that bridge the gap (as well as commercial entities).
- ▶ We are currently investigating what would be involved in setting up a domestic aggregator with a community energy focus, potentially owned and controlled by community energy groups.

Thanks for listening

- ▶ If you are a community energy group interested in unlocking the value of your flexibility we would love to hear from you!

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