Communities and their role in local flexibility markets

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Carbon Co-op

CarbonCo–op

CO-OPERATIVES UK

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 **150 members** and **8 staff** working together to **reduce** their collective **CO_2/GHG emissions**.
- A proto-domestic-aggregator/ESCO-op

Our work

Retrofit

Energy Systems

Education

Policy

Renewable Generation

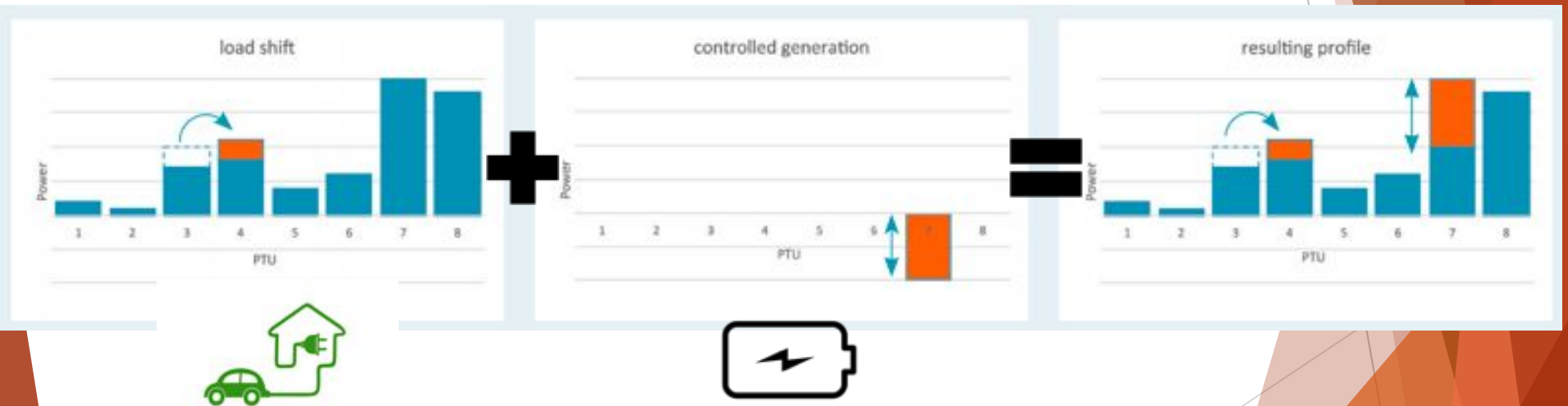
Consultancy

There are no techno-fixes!

Demand reduction first!

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.



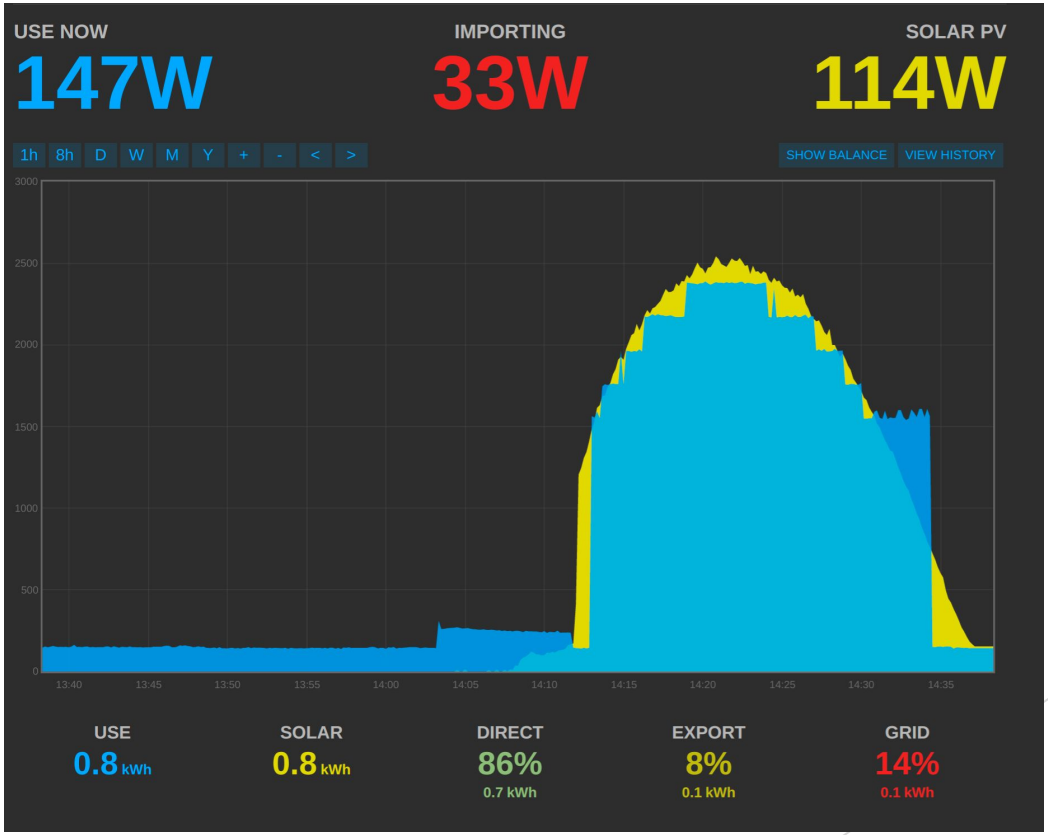
- Different actors in the energy system can benefit from procuring flexibility – DNOs, National Grid, suppliers.

Case study: Open EVSE car chargers

- Open source hardware and software
- Flexible system that can be installed to meet needs of householder
- Carbon Co-op trial with members

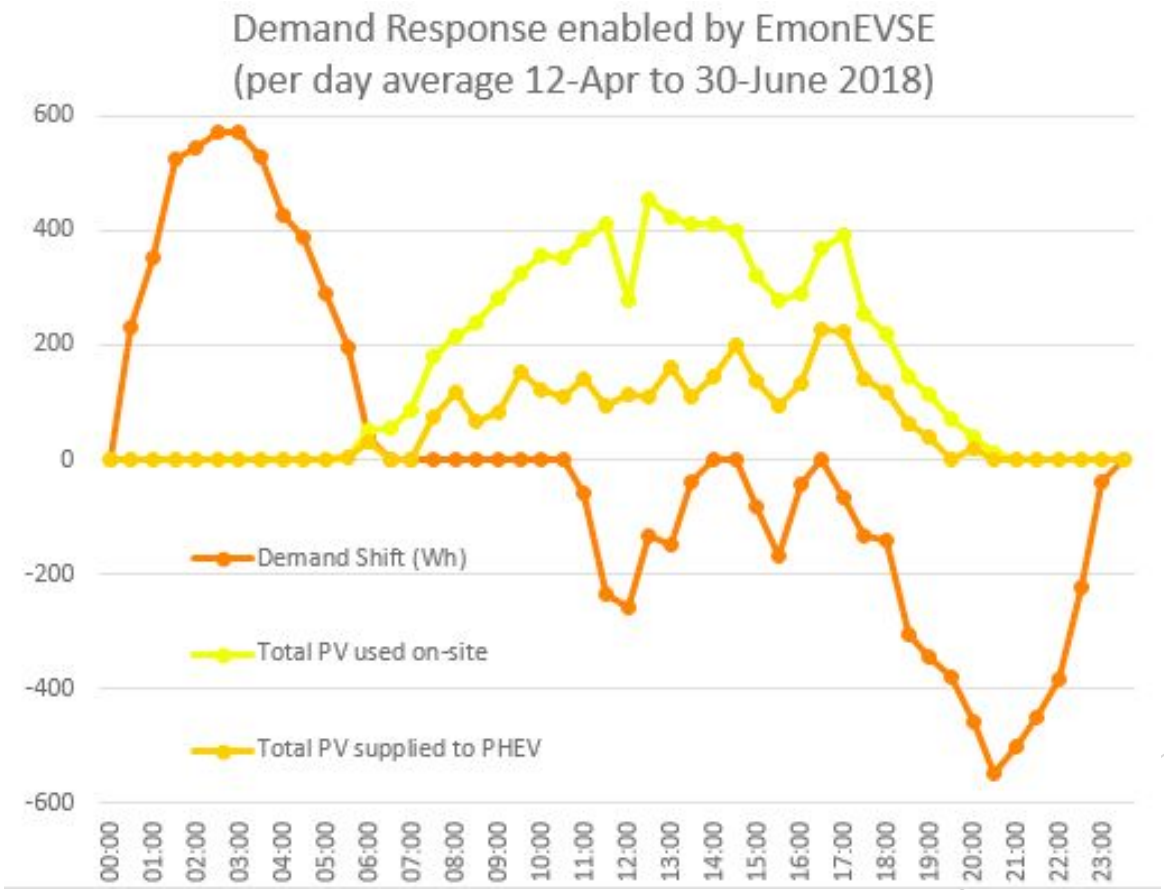
Case study: Open EVSE car chargers

- Can be set to automate and schedule charging to match solar PV output



Case study: Open EVSE car chargers

- Can be set to automate and schedule charging to match or to meet needs to the grid



What is an Aggregator?

- Energy system **intermediary** which manages/operates a **portfolio of assets** which can provide ‘flexibility’.
- Established in **Commercial/industrial** sector
- Secondary markets like the balancing mechanism, capacity market and firm frequency response also pay participants for flexibility.
- **Domestic aggregation** is new activity
  - Much tighter (or non-existent) margins
  - Little regulation

The role of the aggregator

- Crucial in demonstrating and accessing the value of flexibility provided by DERs.
- Parallels role of supplier. 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

How do aggregators make money?

- Balancing services
- Capacity Market
- Balancing Mechanism
- Price-based optimisation (anyone can do it!)
- DNO flexibility tenders (UKPN >500kW, ENW >200kW)

Obstacles to viability of domestic aggregation

In practice for it to be viable there are several things missing:

- Appropriate and proportional regulatory framework
- 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 mandated standards-based approach like internet (e.g. OpenADR).
- A smart grid! Publishing of real-time data from distribution network – already being trialled e.g. OpenLV!

BUT:

- **Are consumers ready? Will they want to participate?**

Community energy and flexibility(?)

Pro?	Con?
Community groups have interest in **long term success of projects**. They can act independently. The domestic aggregator/ESCO 'looks' like a **consumer co-operative**.	Requires **ongoing participation**. Systems for flexibility are **technically complex**. Will require high level interaction with DNO/SO and other actors.
Potential of DSR / smart grids is huge. Community groups have **lower engagement** costs. Potential for **sharing functions** with other groups.	Financial/energy benefits can be **marginal** for a given house/business. How will you **manage expectations**? How will you make any money?!
Smart energy **assets already exist**/may not require much capital expenditure (if being purchased anyway). Alternatively	Is smart energy most **cost effective** way to achieve energy / CO2 reduction? Smart energy should not be substitute for **energy reduction / renewable generation**.

Energy Community Aggregator Service (ECAS)

- Community energy groups currently l**ack scale, resources and expertise**.
- But, well placed to participate in the provision of energy services and flexibility due to their status as **trusted intermediaries** and **geographic focus**.
- BEIS funded feasibility study with REGEN what would be involved in setting up a **federated domestic aggregator** with a community energy focus, owned and controlled by community energy groups.

Flexibility for Communities - what you can do now

- Pilot some **simple projects**: start small and build relationships with customers and technology providers
- Make links with your local **DNO**
- **Get clued up**: gather information online, via CEE and REGEN, make links with universities, open source innovators, hacklabs etc etc!
- Keep an eye out for **new policies and new sources of funding.**

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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