Engaging communities in network innovation

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Regen Smart Energy Marketplace

Exeter

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CarbonCo–op

CO-OPERATIVES UK

MEMBER

About Carbon Co-op

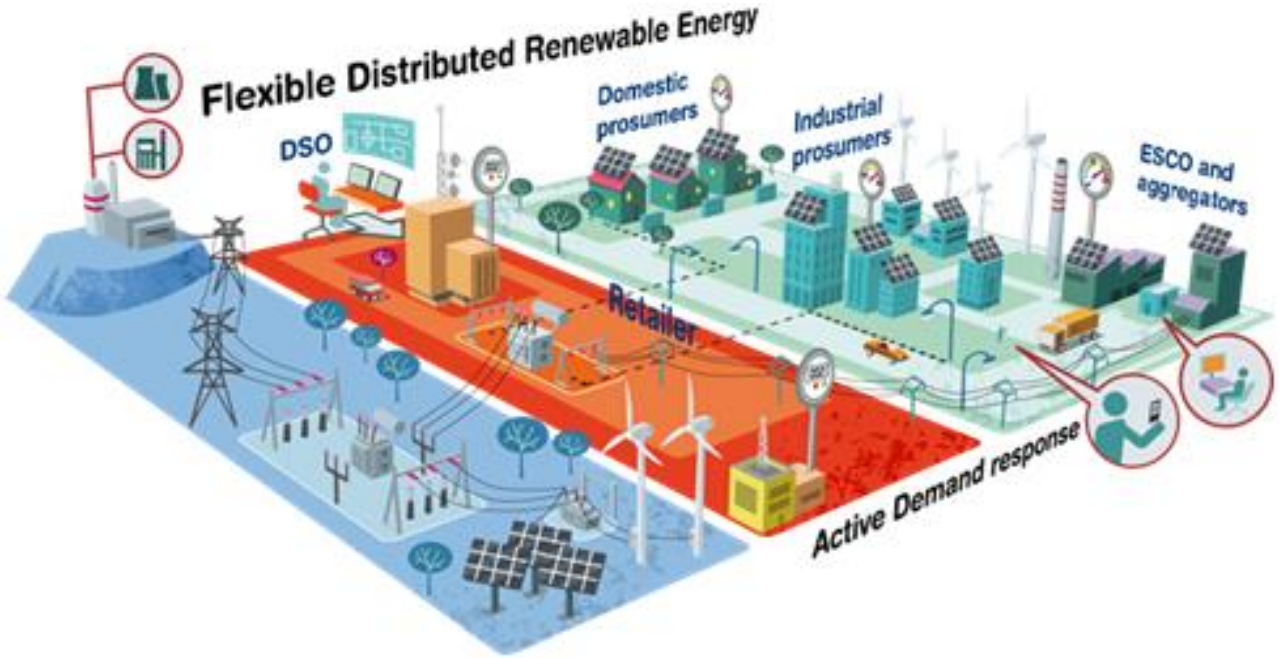
- Created by a group of householders in 2008 in Greater Manchester.
- Aim was to achieve 2050 emissions reductions today through deep retrofit of houses.
- Currently over 100 members and 7 staff working together to reduce their collective CO2 emissions.
- Also working on building energy models, energy and environmental monitoring, and community smart grid systems.
- A prototype for a community energy services co-operative?

How can communities engage in network innovation?

- Community energy groups have important role to play as **trusted intermediaries** in complex network innovation schemes.
- Examples:
  - Smart meters
  - Manual demand side response (DSR). Time of use.
  - Smart appliances, batteries, EVs.
- A lot depends on smart meter rollout and future market reforms.

Nobel Grid

- Horizon 2020 project.
- Technology development – new smart metering/HEMs/CEMs concepts.
- Testing new LCTs in-field – DR for batteries/heat pumps/electric vehicles.
- Testing manual demand response to achieve both social/environmental and financial objectives.
- Testing business models for community/co-operative aggregator/ESCOs.



Learning from previous trials

Themes

- Purpose.
- Incentives.
- On-boarding process.
- Users in Control.
- User interface.

Purpose

- Is smart energy technology and DSR most cost effective way to achieve energy demand reduction? Smart energy should not be a substitute for energy efficiency improvements.

- Which domestic users should we focus DSR measures on? Can look like energy rationing for people on low incomes.

Incentives

- Money has not proven to be a strong motivator to date.
- Competitive gamification shows some promise but can also promote stress, resentment, and dis-engagement.
- Other incentives, such as achieving common social or environmental objectives have been shown to be equally as effective in some contexts.
- Should be designed so as to avoid user fatigue and dis-engagement over long period.

Case Study: Nobel Grid and Lancaster Cohousing

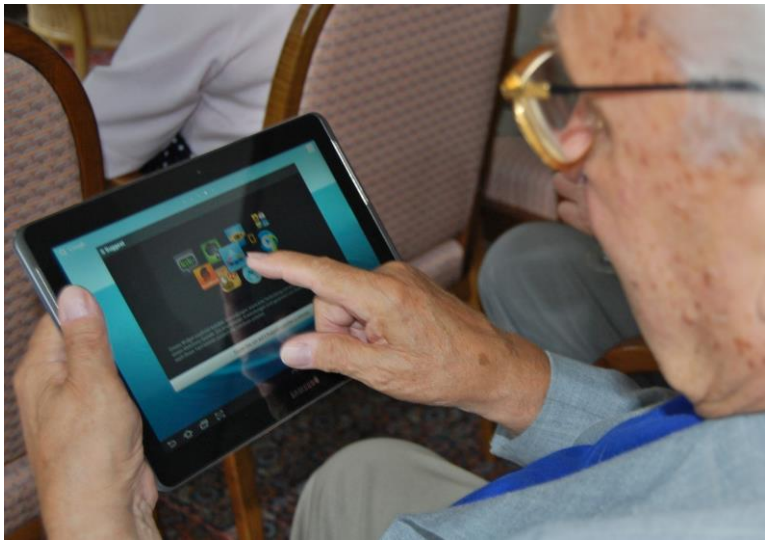
- 45 residential / 20 commercial units on private electricity network with 90kW PV + 150kW hydro.

- Providing system for billing, fault finding, energy monitoring, and DSR.

- Navigating existing community organisations difficult but essential!

On-boarding process

- Recruitment is more difficult than traditional community energy schemes. Hard to communicate complex ideas about smart energy.
- Users must have positive experience of installation.
- Technology needs to be *perceived* as working from beginning. There is little sympathy amongst consumers, even for research projects.



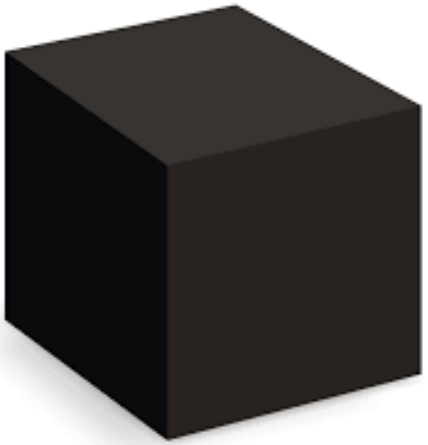
Solution: An engagement framework/context?

- Carbon Co-op links its ongoing engagement with members to recruitment programme for Nobel Grid so that participation in network innovation is understood as part of the wider purpose of Carbon Co-op.

Ecohomelab

Carbon Co-op Socials

User in control



- Users like to *feel* in control but this doesn't have to mean a reduction in availability of flexibility.

- Control of heating/cooling/refrigeration systems in well insulated houses *can* have minimal or no effect on comfort.

- But if users do not understand their operation in first place this can reinforce negative perceptions.

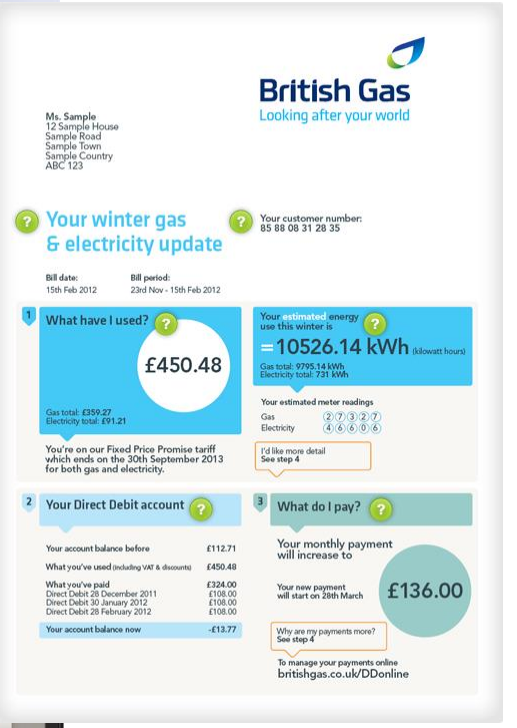
Case Study:
Heat Pumps in Social Housing

- Large number of air exhaust heat pumps deployed across Greater Manchester in social housing.
- Controversy over performance and large reported increases in energy use post-installation.
- Potential to improve user control and perception of system and maybe use for DSR.

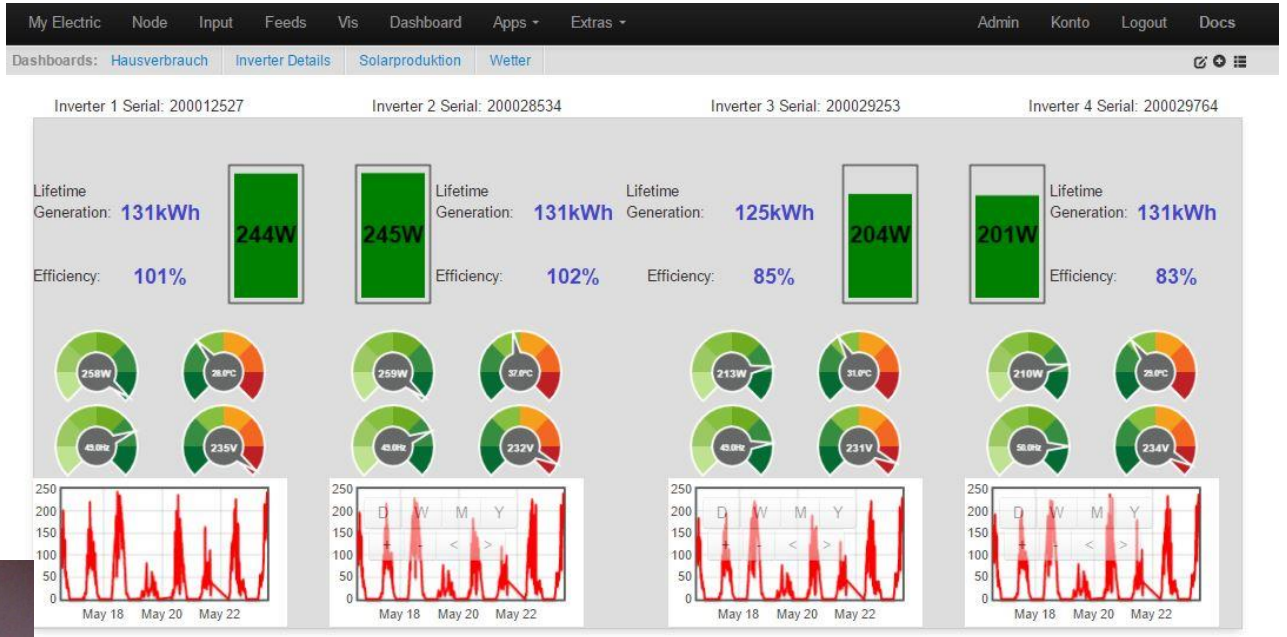
RIP OFF BRITAIN
REPORTS ON SALFORD
HEAT PUMP DISASTER

User interfaces

- RTDs successful but not very customisable/adaptable.
- Mobile apps have potential to be more convenient and better at promoting demand response, but not all users have smart phones.
- Well constructed bills/statements can be very effective. A bill is a user interface!



Solution: Open source customisable re-usable user dashboards and RTDs?



Conclusion

- Community energy organisations can build business models around being **trusted intermediaries** in complex network innovation schemes.

- Adopt a user-centric approach across the board, particularly in design of user interfaces. Avoid tech dumping.

- Structure incentives in a way which reflects the extra requirements for ongoing participation and to avoid user fatigue.

Thanks for listening!