Next Generation end of project case study: Bath and West Community Energy – Flex Community

About Bath and West Community Energy:

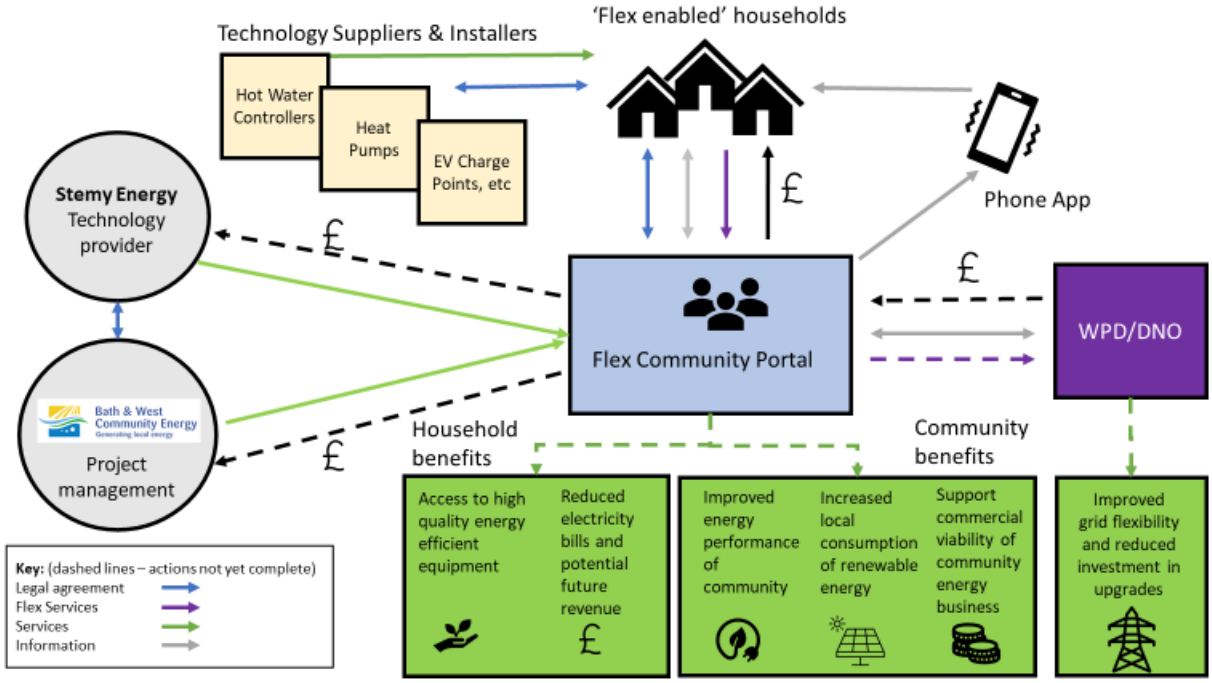
Bath and West Community Energy (BWCE) is a not-for-profit community benefit society, owned and run by its members for the benefit of the community. BWCE's community energy vision is to supply local, renewable energy direct to local people and so reduce the demand for high carbon electricity generation delivered via a congested electricity network.

About this innovation project and its impact

To help deliver this vision, BWCE wanted to explore the potential for establishing a community of participants able to offer flexibility to the electricity grid – a 'flex community'. If successful, this could help expand the community energy model beyond just the ownership of community renewables to embrace revenue from facilitating or aggregating flexibility services for the local community. Key elements of the Flex Community project were to:

- recruit households willing to install key energy technologies; heat pumps, electric vehicle charging points and to switch to electric water heating;
- facilitate demand side response by remotely monitoring and controlling electricity demand of the identified energy technologies, incorporating supply at the domestic level from existing installed PV;
- test the role of a community aggregator by working with a smart platform provider to act as an interface between the participating householders and the local grid;
- prepare and test a community aggregator business model.

The diagram below shows how the project operated. The dotted lines show aspects that weren't completed within this pilot.



The project successfully set up and piloted the Flex Community Portal in partnership with Stemy Energy. BWCE recruited householders that were willing to install new 'smart' technologies i.e. heat pumps and EV charging points, but delays and barriers to installation meant that the project had to rely on households that already had these low carbon energy technologies installed. 12 households were directly involved in providing flexibility during the trial. The project simulated the energy optimisation savings and trading income potentially available to these households through provision of flexibility to Western Power (the local Distribution Network Operator) and to the national electricity grid (via the Balancing Mechanism for electricity). Trial results were used to assess the viability of community aggregation as a business model for community energy. BWCE's experience with this project was instrumental in securing three-year funding from the EU for the ReDREAM research project to maximise the use of locally generated renewable energy, including peer-to-peer trading of electricity.

Advice for other groups considering setting up a flex community

Setting up a flex community is a demanding and complex process. The learning from this project has been integrated into a Flex Toolkit (see link below).

The business model: this Next Generation project explored a business model for community flex. In summary, analysis of the business model hypothesis, and validation with data that the project was able to collect, emphasised the importance of cloud-to-cloud communications, the need for scale (e.g. aggregation of flexible capacity from 500-1000 households), multiple revenue streams (rather than just from trading flexibility), and/or increased market value to creating a financially sustainable community business strategy. See link below for more details.

Recruiting participants: the concept of flexibility is complex so clear messaging and a more nuanced approach to targeting that draws in participants that are not already effectively flexing their demand or whose needs do in fact match the level of flexibility service being offered, is required to successfully recruit households to a flex community.

Supply chain: good quality installers of both energy technologies and smart devices are limited, are exceptionally busy and have limited capacity to focus on new approaches, so good working relationships establishing clear expectations on both sides around workflow and non-standard installations where necessary is essential.

Key messages for policy makers:

The Community Role: the project confirmed the value of the intermediary role that community energy can play, generating interest and building on local trust and credibility to address participant concerns and retain enthusiasm and confidence in a long project that didn't always go to plan and faced a number of challenges during delivery.

Changes needed for the wider energy sector to facilitate community flex: the project made a number of specific recommendations for the wider energy sector, such as:

- Increase the compatibility of flexibility services offered by both national and regional markets to maximise the potential to stack revenue streams
- Speed the adoption across all Distribution Service Operators of standardised systems, expectations, and services with regards flexibility
- Improve smart meters such that data can be recorded at a level of resolution that will facilitate flexibility at a domestic level, or adapt domestic flexibility services to rely on lower resolution data (e.g., WPD's Sustain-H)
- Adapt electricity supply regulations such that the sale of electricity to local consumers can be recognised within the market and value can be attributed to the reduction in distribution and transmission costs

Further recommendations are presented in the final report (see link below).

If you want to know more:

- The Flex Toolkit, the project final report and other resources can be found on https://www.next-generation.org.uk/resources
- Contact Alison Turnbull alison.turnbull@bwce.coop