



Next Generation Innovative CE Business Models – External Final Report from Gloucestershire Community Energy Co-Op

20 January 2022

Reflection on original business plan and objectives

Initial proposals

The Next Generation competition sought proposals for community energy projects that offered innovation in both technical aspects and the business model. Our proposal included the following innovative technical elements:

- Deployment of heat pumps in multiple dwellings connected to a shared ground loop attracting the Non-Domestic Renewable Heat Incentive (NDRHI). The heat pumps would replace storage heaters delivering much better energy efficiency and reducing carbon emissions.
- Installation of rooftop PV panels and a battery in the same dwellings, further reducing carbon emissions and energy costs for residents. The battery would exploit their existing Economy 7 contracts allowing benefit to be extracted from the battery all year round given suitable smart control.
- Remote management of the batteries from a suitable aggregator platform would both deliver the smart control and allow the batteries to be employed for grid balancing and demand side response.

To simplify management of the relationship with domestic consumers we planned to work with a social housing agency, which identified a suitable set of dwellings. The business model envisaged these technical assets being funded by the co-op through a community share offer. Investors would be repaid with interest over a 20 year term from 4 income streams:

- NDRHI payments from Ofgem.
- Payment for export electricity from the dwellings under the Smart Export Guarantee (SEG) scheme.
- Payments from a battery aggregator platform for grid balancing/demand response.
- Fixed fee payments from the social landlord reflecting the 50% reduction in energy costs enjoyed by the tenants of the dwellings. This payment could be framed as a service charge for connection to the shared ground loop.

A spreadsheet “PUBLIC-Battery-PV model Economy 7 shared loop BG tariffs.xlsx” is published alongside this document capturing this model. Note it does not necessarily reflect current asset costs or potential revenues.

With the social housing agency, we identified a pilot project in 7 dwellings which we envisaged would demonstrate the model, and establish the key legal relationships. This pilot project would have used a proportion of the Next Generation grant to reduce the capital costs allowing an attractive offer to the social housing agency. With that in place, we hoped to roll out the model on a larger scale, using economy of scale to make it a means of decarbonising gas-heated dwellings.

Challenges and proposal evolution

The first challenge to this plan was of course Covid. This obstructed dialogue with the social housing agency, which had other priorities. Combined with their complex decision making processes, this meant that little progress on building the partnership was achieved during 2020. A second setback was a decision by government (BEIS) not to extend the NDRHI beyond March 2021. This meant that the delays during 2020 made reliance on NDRHI in the business model unsafe.

To keep the project alive a decision was taken to replace the ground source heat pumps in the original technical solution with air source (ASHPs). This enabled the domestic RHI (DRHI) to be claimed, which had been extended by BEIS to 31 March 2022. However this version of RHI is less generous and payments only continue for 7 years. This change also degraded some of the case for involvement of a community energy co-op, since it is generally accepted that community ownership is necessary for a shared ground loop system, whereas ASHPs can be deployed on a single dwelling basis with no dependency on a shared resource.

During 2021 this ASHP based business model was refined, with some improvement as lower costs for PV and batteries were identified. However, it proved very difficult to reach a satisfactory legal agreement with the social housing agency. By late 2021 the impending cessation of DRHI with no replacement, and the termination of the Next Generation grant scheme at the end of 2021, made further execution of the project impossible.

Summary of key learning

Our project did not fail because of a flaw in the original concept, it failed because of Covid, cessation of NDRHI and DRHI, and protracted decision-making by our prospective partner. Community energy in the UK has always struggled with unstable regulation (such as declining feed in tariffs) and probably will continue to do so wherever business models depend on government-funded incentive schemes. So the lesson is to get projects moving at the start of an incentive scheme in the hope of completion before it is impaired by depression or ceased.

The other lesson is to prioritise reaching legal agreements with prospective partners since this is always time consuming and will cause issues to be identified that are best addressed early in the project.

How the business model could work

Shared loop ground source heat pump systems are an attractive solution to the problem of replacing the UK's predominant gas heating with a zero carbon alternative. The other alternative, ASHPs, present aesthetic, locational, and noise challenges for many dwellings. They also require a greater national investment in electricity generation and distribution capacity because their peak electricity demand in winter is higher. So as pressure to act on climate change increases, the role for provision of community-owned shared ground loop systems will become more evident. How this will become manifest in regulatory incentives is not clear at this point, but there is an emerging policy called the Green Heat Networks Fund for which a [consultation has concluded](#) recognising the potential role of shared ground loops. This is expected to operate from April 2022 so hopefully details will be published before then.

Given the recent large increases in electricity tariffs, domestic PV and battery systems can be economic without subsidy for households with heat pumps, as long as the capital cost can be amortised over a sufficient time for some of the savings to be used to pay for the asset. This extended loan is what an energy co-op can offer. So the business model put forward at the start of this project, and sketched in the spreadsheet provided, is potentially viable.

Our difficulty in working with a social housing agency may simply reflect the fact that they have access to capital and do not really need our community fund raising capability. So the future role for a co-op may be in helping local groups of owner-occupiers realise a collective solution to their need to decarbonise their heating that is better and more affordable than they can achieve individually.

Replication

As the above discussion indicates, if this model can be made to work in a single location, it can be made to work anywhere in the country. A key regulatory factor will be the ability to commit a dwelling to pay a fee for use of the shared ground loop on a long term basis. This fee might also include some contribution to the cost of PV and battery systems if provided. Such a monopoly provision of course conflicts with the prevailing ethos of supplier competition and comparison websites, but works in many countries for district heating.

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