Green Community Buildings

Interim Report

February 2022

Prepared for:

NICRE, RDC & CAN

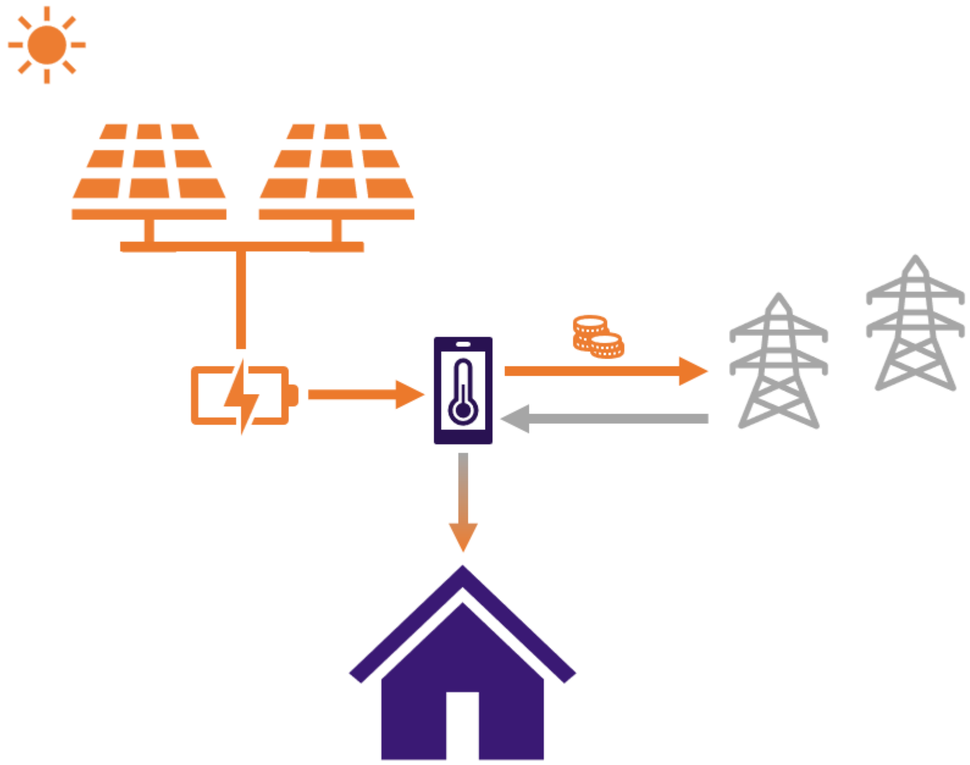
Urban Foresight

Document Contents

Section 1.
Energy Model

The aim of this project is to develop a model to link renewable energy, battery storage and intelligent building management.

- The proposal is to link Solar PV panels to a battery storage system which supplies the community building
- The aim is to make the buildings as financially and environmentally sustainable as possible. This should also make them socially sustainable.



Work to Date

The first phase of this project has concentrated on building a model to investigate the financial feasibility of the model

PHASE ONE: BUILDING THE MODEL

The model uses the industry standard calculations for Solar PV yield in the UK

Building on this we have added modelling to understand how best to use the battery storage.

In phase one we collected additional data on use pattern for community buildings.

The data from the HE Servicing surveys has been added to the model and initial outputs calculated.

The initial results show the project is financially feasible.

However it was not possible to optimise the model for different outcomes, i.e. do minimum, do maximum and preferred options.

PHASE TWO: TESTING THE MODEL

Phase two.

We are now adjusting and testing the model to try and optimize the combination of Solar PV and Battery Storage in the different types of building.

We are also looking to future proof it to take account of opportunities that may present themselves in the future.

BUSINESS CASE

The final stage will be a detailed financial model that will inform the business case.

Section 2.
First Results from the model

Snapshot of the model

This section has been removed due in the short term, as the model is being updated, and more energy use data is being added.

Section 3.
Legal & Governance Options

Legal & Governance Options

The research has highlighted a series of steps that need to be taken to achieve the overall goal.

There are three possible governance and legal options.

Each hall will pursue their own project with help from NICRE, CAN and RDC.

Using the surveys from H E Servicing Ltd each hall will fund raise to find the money to install their own system.

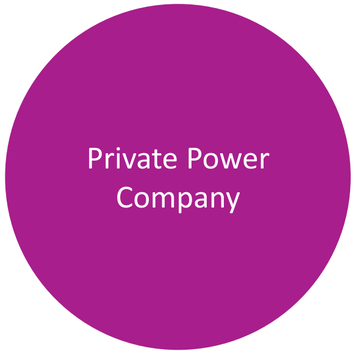
A Community Power Company is formed to manage and deliver the project

The CPC will ‘rent’ space on and in the building to install the solar PV panels, the battery and ancillary equipment.

The CPC will supply the building with all its electricity through a power purchase agreement. It will source this electricity through a combination of generated, stored and imported electricity.

The power purchase agree will supply the electricity at below the market rate guaranteed for a number of years.

The CPC will be owned by the buildings and any surplus funds invested to expand the project and/or returned to the buildings as a dividend.



A Private Power Company is formed to manage and deliver the project

A Private Power Company would deliver and manage the project in a similar way to the Community Power Company.

The main difference between the two would be the ownership structure and the ability to raise the money from a wider range of sources.

Legal & Governance Options

The research has highlighted a series of steps that need to be taken to achieve the overall goal.

There are three possible governance and legal options.

Pros:

- Complete control.
- May be able to act faster to install the PV & Battery

Cons:

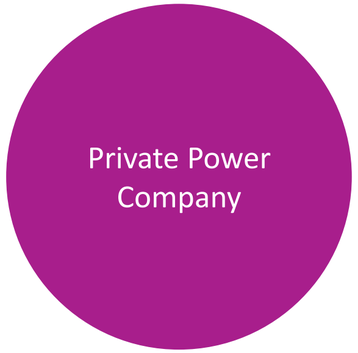
- Responsible for the equipment and installation
- Not every hall will be financially viable.
- Lower Feed in Tariff level
- No opportunity to offer grid balancing services

Pros:

- All the responsibility is taken on by the CPC.
- Ability to support buildings which otherwise would not be able to install renewable energy
- Able to gain economies of scale buying equipment
- Able to access Green New Deal Fund
- Can offer additional services: grid balancing, EV charging etc.

Cons:

- Will take time to set up and establish
- Less control for individual halls over the project.



Pros:

- All the responsibility is taken on by the PPC.
- Able to gain economies of scale buying equipment
- Able to access Green New Deal Fund
- Can offer additional services: grid balancing, EV charging etc.
- Wider range of financing options.

Cons:

- Will take time to set up and establish
- Very little control for individual halls over the project.
- Less options for value to be recycled back to halls.

Section 4.
Next steps

Develop the prototype

The next stage will be to develop a more detail business case for the prototype.

Refine the model and complete the financial appraisal

The financial model is still in the process of being refined. We need your data to make it better:

- Ideally, we'd like to understand how electricity use varies over the course of a day, week and month.
- If that's not practical we'd like to get an idea of your energy use over the course of a year.
- Once the prototype is up and running, we will be able to collect detailed data to continue to develop the model.

The external situation is changing all the times. Energy prices are rocketing and new products for grid balancing etc are being developed.

The results of the model will be used to make the financial investment case for the project.

It will also show the carbon savings for the buildings which is needed for the Green New Deal Fund

Agree a governance and legal structure

- The buildings need to agree a suitable and agreed legal and governance structure to take forward the project. This needs to be in place before the funding bid is made.
- May be worth speaking to other similar organisations: B4RN or Community Energy England to get their advice on possible governance structures
- The governance structure has an impact on the strategy so important to think about both.
- Need to discuss the power supply aspect of the model. What energy tariff would be acceptable for the buildings? This needs to be balanced with the financial security of the Community Power Company.
- How to raise the balance needed for the project: Wind Farm Funds? Share Offer? From reserves?

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