



Energy Local Opportunities

An assessment of the potential for Energy Local Clubs in Powys

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Energy Local Opportunities

The Green Valleys Community Interest Company are Powys-based specialists in developing renewable energy solutions for communities. This report details the opportunities that exist in (Local Group Area) to establish an energy cooperative that will enable households to buy electricity from local generators, an innovative service known as Energy Local.

Introduction to the Energy Local model

Energy Local is transforming the electricity market for communities and small-scale renewable generators. The aim is to help communities get more value from small-scale renewable generation by using the electricity locally. Energy Local has designed a means to have a local market via Energy Local Clubs. This enables households to club together to use local clean power when it is generated. The scheme gives generators a better price for the power they produce, keeps more money in the local economy and reduces household electricity bills.

In recent years many farmers, homeowners and businesses have taken advantage of the Feed-in-Tariff (FIT) to install renewable energy systems such as Wind, Biogas, Hydropower or Photovoltaic. When they aren't using the power they generate on site it has to be sold back to the Grid for about 5p/kWh and then bought back at well over twice the price by someone living next door. Both the generator and the local community are not getting the true value from their investment nor are they retaining the maximum amount of money in the local economy.

With Energy Local, the local community can form a legal cooperative organisation, an Energy Local Club, and negotiate with an energy supplier so that the electricity from local generators can be tracked and used locally at a lower price. The system relies on there being enough electricity being produced locally as well as using smart meters to track who is using the power. These smart meters would be fitted by the supplier that the local cooperative is dealing with.

The great thing about smart meters is that they show when households use power as well as how much, so the cooperative can show which members were using power when local power generators were producing electricity. The consumers pay an agreed "match price" to their energy supplier, who then pays this to the generator. The benefit of this approach is that the local community can set the price for the local electricity, and then at other times when they aren't generating local power the supplier sells each member the extra power they use.

As well as saving on energy bills, the community creates a local market that can encourage more investment in renewable energy, creating an energy system that retains money locally as well as helping to tackle climate change.

Mapping the Energy Local Opportunities in Powys

This report is based on our research into the amount of renewable energy that is generated in each area across Powys and whether there is potential to establish an Energy Local Club. A combination of planning records, abstraction licenses and Feed in Tariff registries have been used to determine where schemes are located. For most schemes only the first letters of a postcode is publicly available, which means some substation areas are presented together as they share similar postcodes. Further club development and working with generators will enable groups to determine the exact location of generators and form a club from members in the appropriate area.

In order for the local energy club to work all of the members and generators will need to be in the same local energy network (an area that is all supplied by the same substation). The Green Valleys have mapped out all of the 34 substation areas across Powys and used a range of publicly available datasets to establish how much renewable energy is being produced locally. The Energy Local model relies on all of the generators to be connected to the National Grid at the same voltage level as the consumers. Household and small generators are connected at a low voltage and so can form a club. However, large-scale wind turbines and anaerobic digesters typically connect at high voltage and so cannot form a club with domestic consumers.

How Energy Local works

Once an Energy Local Club has been established anyone in the substation area can become a member. A consumers' electricity use and the amount of electricity produced by the generator are measured in half-hour blocks. Any electricity used in the same hour that it is generated can be "matched", with both consumer and generating benefiting from the match price.

For example, between 2:30pm and 3pm a household uses 1-kilowatt hour (kWh) of electricity. Over that time the electricity generated by the local generation is shared between everyone consuming power. If your share is 1kWh, all your electricity will be from the local generation. This means that your use is "matched" to local generation and you pay a lower match price per kWh for that electricity rather than your usual price per kWh from your supplier.

Whenever you are paying for electricity that is matched locally this is passed onto the local generator, so instead of the generator getting paid 5p by the supplier and you getting charged 16p (for example), you instead pay the match price to the generator. In essence, all the money stays in the local economy and provides better value for consumers and generators. Prices for Energy can change significantly over time but the match price will lie between the generators regular price for exporting energy and the consumers regular price for importing energy. This ensures that both generators and consumers benefit from participation.

The Energy Zone Reports

We have produced individual reports for each energy zone each. This is so that anyone with an interest can easily locate their area and read our assessment of potential opportunities for Energy Local Clubs. Some reports include two or more areas supplied by local substations, due to the dataset used not providing detailed enough data on the location of generators. The maps are intended to provide a useful guide for initial assessment of Club opportunities. If progress is made to develop a Club, the maps may need more detailed examination, especially in cases where the network is quite complex on the boundaries of substation areas. The Energy Local advisor will help with this as the data is easily available from the network operator, but does require some understanding to correctly interpret.

Not every area has potential for an Energy Local Club due to a lack of suitable generators. New installed generation could create an opportunity in future. Potential future changes to the regulations regarding how the network is paid for could also make Energy Local more attractive to some generators.

Types of renewable generation in Powys and suitability to Energy Local



Photovoltaic Power

The majority of renewable energy installations in Powys are photovoltaic (PV). Most of the PV systems are smaller than 4kW and are found on domestic properties. Because these smaller PV systems usually do not need planning permission they haven't been tracked down as part of our project research. We have used Feed-in-Tariff data tables and Planning Permission searches to locate all of the known PV systems in your local area that are larger than 10kW.



Hydropower

The wet climate and the abundant hills have meant that hydropower had a renaissance across Powys in recent years. Typically these are systems owned and operated by local farmers using streams that cross their land. These systems tend to produce a lot of power during the winter months and are usually connected to the low voltage network so fit perfectly with the energy local model. We have found records of all the hydropower schemes that required planning permission and an abstraction license in the area.



Wind

The majority of wind turbines in Powys are large scale and connected to the grid via a high voltage connection, making them unsuitable for the Energy Local model. However, there are a number of smaller turbines connected to the low voltage network that will produce useable local power whenever it is windy. Because these typically need planning permission we have been able to cross reference our planning searches with published FIT tables to estimate how many homes could be powered locally from wind.



Energy from Waste and biomass

A number of farms and commercial operators have developed anaerobic digesters that convert organic material into gas and then use it to produce electricity. Because they produce electricity 24 hours a day they would enable a local energy group to have a reliable source of local power almost all of the time. There locations across Powys have been ascertained through the planning permission files from Local Authorities but have not been included in the analysis due to their voltage connection status being unknown.



New innovations

In the coming years technologies may become available in Energy Local club, such as electric cars being able to charge or discharge power depending on the amount of local energy generation. Whilst there are no known instances of these innovations in Powys at the moment it is highly likely that they would make the Energy Local model an even more important mechanism for generating and retaining money in the local economy.

Links:

Energy Local CIC

Energy Local manages the development of Clubs across the UK and is assisted by local advisors. Energy Local also manages the contact with energy suppliers and a range of technical matters that allow the Energy Local model to function within the regulations of the energy supply market. The website contains a wealth of valuable information on how clubs work.

<https://energylocal.org.uk>

The Green Valleys CIC

The Green Valleys are one of the local advisors who work alongside Energy Local to help form Clubs. We have produced this report to help new Clubs form in Powys. For all inquiries, please contact us via the website contact form.

www.thegreenvalleys.org