

Cynulliad Cenedlaethol Cymru Pwyllgor Amgylchedd a Chynaliadwyedd	National Assembly for Wales Environment and Sustainability Committee
Dyfodol Ynni Craffach i Gymru?	A Smarter Energy Future for Wales?
Ymateb gan Ynni Cymunedol Cymru (Saesneg yn unig)	Response from Community Energy Wales
SEFW 12	SEFW 12



## Re: Consultation - A Smart Energy Future for Wales?

### 1. The energy mix

- How can we decarbonise our energy system at a sufficient pace to achieve the necessary reductions in emissions?
- What mixture of distributed generation resources best meets Wales' renewable energy needs in respect to the supply of a) electricity, b) gas, and c) heat?

**1.1** As an ideal we would support the work carried out by Zero Carbon Britain<sup>1</sup> who detail how using current technologies we can become a zero carbon society by 2030.

**1.2** The report details a technically robust scenario in which the UK has risen to the challenge of climate change by rapidly reducing greenhouse gas emissions to net zero. It demonstrates that we can do this using only currently available technology, whilst maintaining a modern standard of living, eating well, and meeting our energy demand at all times with 100% renewable UK energy sources.

**1.3** In their scenario electricity supply from renewables exceeds demand 82% of the time. However, it also requires us to reduce the total energy demand by 60%. They propose managing variability to meet demand 100% of the time by:

- Shifting energy demand by using 'smart' appliances, demand management, and short-term energy storage (pumped storage, batteries, heat storage and hydrogen) for storage over hours or days. This means supply meets demand a further 3% of the time.
- Using **long-term energy storage** (for weeks or months) in the form of **carbon neutral synthetic gas** to cover demand the remaining 15% of the time. This represents only 3% of total electricity supply, but is crucial to managing variability as it can be dispatched quickly as and when necessary.

**1.4** The **ZCB energy model** used to develop this scenario is one of the most detailed studies of energy variability to date. The model uses hourly weather data (sunlight, wind speeds, temperatures etc.) over ten years – a total of almost 88,000 hours – to test the scenario under real life conditions.

### 2. The grid

- How does the grid distribution network in Wales enable or restrict the development of a new smarter energy system?
- What changes might be needed in terms of ownership, regulation, operation and investment?

---

<sup>1</sup> <http://www.zerocarbonbritain.org/ZCBrtf%20-%20Executive%20summary.pdf>

**2.1** It is clear that one of the most significant factors holding back the deployment of renewable energy in the UK is grid capacity. In Wales a number of Community Energy Projects have been abandoned or constrained by grid capacity. By way of example: Upper Conwy Valley hydro with 920kW potential constrained to 100kW by grid connection and now unlikely to be built; Ogwen hydro 900kW re-sized to 499kW; Anafon hydro with 500kW capacity re-sized to 270kW due to the connection costs. In addition to these mid-scale schemes, countless small community and farm scale schemes will not be built because of grid constraint or connection costs. As an example one 18kW scheme on a farm in Mid Wales near Builth Wells was quoted a connection cost of £5.7 million for line re-inforcement due to grid constraints. This scheme would have cost £100,000 so the connection cost was totally out of proportion.

**2.2** Some active network management (ANM) can be beneficial in maximising the capacity in the network. However, ANM should not be used as a reason for delaying strategic grid investments. It is particularly costly for small schemes (£20,000) and it constrains the outputs of generators reducing the return for the generator.

**2.3** Active network management and storage may provide future opportunities to resolve some of these issues. However, they are currently immature technologies that are not able to deliver carbon reductions in the short term. We support continued research and any pilots in the effectiveness of these options where they could ease pressure on the grid. This should not be used as an excuse to stop strategic grid investment now. If we are to see continued investment in Renewable Energy in Wales then some investment into the grid needs to be made for the general benefit and should be paid for by means other than existing and new connection customers. It is worth noting that other strategic networks all receive state funding for part of the infrastructure development, for example trunk roads and rural broadband. It seems perverse that one of the vital national infrastructure networks that is hampering our ability to meet our climate change commitments is actively prevented from supporting strategic reinforcement by its regulator.

### **3. Storage**

- How can energy storage mechanisms be used to overcome barriers to increasing the use of renewable energy?

**3.1** Again referring back to the Zero Carbon Britain report<sup>2</sup> they have carried out extensive research into options available to us with current technologies. In particular the section on balancing supply and demand provides detailed analysis of the options available to us. We should invest in technological advances in this area but for now we need to implement what technologies already exist.

**3.2** In their scenario electricity supply from renewables exceeds demand 82% of the time. They manage variability to meet demand 100% of the time by:

---

<sup>2</sup> <http://www.zerocarbonbritain.org/ZCBrtf%20-%20Executive%20summary.pdf>

- Shifting energy demand by using 'smart' appliances, demand management, and short-term energy storage (pumped storage, batteries, heat storage and hydrogen) for storage over hours or days. This means supply meets demand a further 3% of the time.
- Using **long-term energy storage** (for weeks or months) in the form of **carbon neutral synthetic gas** to cover demand the remaining 15% of the time. This represents only 3% of total electricity supply, but is crucial to managing variability as it can be dispatched quickly as and when necessary.

#### 4. Ownership

- To investigate the desirability and feasibility of greater public and community ownership of generation, transmission and distribution infrastructure and the implications of such a change.

Having **ownership** of an energy asset in your community can help you:

##### 4.1 Deliver Social & Economic Purpose, because it:

- Allows generation of income that can be re-invested locally
- Provides jobs, training and business opportunities
- Can reverse economic decline of areas and attract investment
- Enables more intensive use of assets and services when control is closer to community
- Allows better stewardship of local assets because the community owns and uses them
- Enables local people to make ethical investments that support the local economy
- Local ownership ensures that interest on shares is re-distributed within the local economy

##### 4.2. Change Attitudes and Relationships, because it:

- Gives the group credibility with funders / other stakeholders
- Heightens the group's profile and improves perceptions of it
- Instils a renewed sense of pride and confidence in the community
- Provides local people with a meaningful stake in the future development of the place in which they live and/or work
- Can increase participation - membership, volunteering, attendance at meetings
- Encourages, through its success, further ideas and activity – ripple effect!

##### 4.3. Move towards financial self-sufficiency, because:

- The organisation can generate income from the asset
- Can benefit directly from free or low cost energy if the Energy source is linked to Community Building.
- There is incentive to invest to reduce running costs of buildings - e.g. energy efficiency

- It gives your Balance sheet strength - which you can use as security

#### **4.4 Build organisational sustainability through:**

- Independence/ control over future of asset allowing you to make long-term plans
- Leverage, enabling you to negotiate further investment
- The development of skills and capacity locally that taking on and managing a building encourages
- Attracting new people with additional skills
- Building long-term support from community

**4.5** To illustrate some of these points we can look to Scotland where Community Land Scotland who represents Community Land Owners in Scotland has produced a report on the impacts of the transfer of land to community ownership. Of 12 Community organisations surveyed they demonstrated the significant impact of Community Ownership in general as they were able to increase the value of the land by 244%, increase their total turnover by 254% and invest in a range of improvements such as affordable housing, business units, tourist facilities and Communications infrastructure. By far and away the biggest investments they had made were in Renewable Energy, at least 48% of all investment was in Renewable Energy and at least 40% of future investments was planned to be renewable energy. These schemes have provided a steady income and although modest in scale are around 20 times more valuable economically to them than if they were privately owned and they were provided with a Community Benefit fund<sup>3</sup>. This also highlights the benefits of social ownership in general and how it can revive once declining areas into prosperous places with job opportunities.

**4.6** In a report commissioned by the National Trust<sup>4</sup> they also highlighted some of the key benefits of Community Ownership as providing: Autonomy; Resilience; Community Empowerment; Education; Sense of Place and support to the Local Economy.

**4.7** A recent report highlights the economic benefit of Community Hydro Projects. As well as the economic benefit of the Development itself, they also look at the economic benefit of how these schemes use the surplus they create to re-invest in the local community. They estimated that for every mW installed it would provide £300,000 of Gross Value Added and provide 10 Full time Equivalent (FTE) jobs. It was identified that the annual surplus was used for a mix of educational, community retail and recreational activities, along with a

---

<sup>3</sup> <http://www.communitylandscotland.org.uk/wp-content/uploads/2014/06/FINAL-Community-Land-Scotland-Economic-Data-Report-140414-For-Release.pdf>

<sup>4</sup> <http://www.nationaltrust.org.uk/document-1355801605221/>

good proportion of physical refurbishment and ‘pump priming’ for further, low carbon investment<sup>5</sup>.

**4.8** These figures are subject to change particularly given the recent proposals announced by DECC in July and August 2015 on FIT pre-accreditation and FIT levels. If these changes go ahead it is likely to threaten the viability of the majority of Community Energy schemes in Wales, unless we can look at alternative ways of financing them.

**4.9** However, in the UK we could be benefitting more by enabling Community Energy groups to distribute their energy directly to the Communities they are based in or to their members. Community buildings can benefit from free or low cost energy if the installations are connected to them such as Egni PV Co-operative.<sup>6</sup> However, at the moment it is incredibly difficult and impossible without an intermediary for local households to purchase electricity directly from the community owned generators. If we are to support more local people (particularly those that have less or no capital to invest in schemes) to benefit from Renewable installations we need to make this process a more feasible opportunity for Communities. It may be possible to develop models similar to those that already exist and are being used by Local Authorities to buy electricity from local generators to benefit local householders as well. CEW are looking to explore these opportunities further:

- Through the Piclo scheme being trialled by Open Utility ([www.openutility.com](http://www.openutility.com)) it should be possible for electricity exported from schools to be sold on to other public estate users (such as council offices) at a discount.
- Rooftop solar can be funded by power purchase agreements (PPA). Here the company or organisation installing the system meets all of the capital cost. The building occupant pays for as much or as little as wanted of the electricity generated (at a discounted rate compared with grid electricity) and any surplus electricity is exported to the grid.

**4.10** If Community Energy generators were able to do this more easily then it could provide a way forward for Community Energy that is not so reliant on Government controlled schemes such as the Feed in Tariff (FITs). A great example of a future vision for communities in Wales is Feldheim<sup>7</sup> a small agricultural village with around 130 inhabitants located 80 km southwest of Berlin. It owns and manages its own heat and electricity networks through an independent local utility company established in partnership with a local private developer, (Energiequelle Ltd.), local agricultural cooperatives, the local government and the citizens of Feldheim. Feldheim hosts a number of wind turbines (74.1 MW) which were developed by Energiequelle, some of which feed into Feldheim's

---

<sup>5</sup>

<http://regenwales.org/upload/pdf/071015091201Impact%20of%20Small%20and%20Community%20Hydro%20in%20Wales.pdf>

<sup>6</sup> <http://egni.coop/>

<sup>7</sup> <http://www.gov.scot/Publications/2014/08/1223/8>

community-owned electricity network. The community owns a biogas plant (500 kW) which runs on the by-products of pig and cattle farming and feed into Feldheim's community-owned district heating network. The output of the plant is in turn used as agricultural fertilizer. The town has a woodchip boiler and an electric battery in planning stage for back-up of heating and electricity respectively.

**4.11** Among the many benefits of Feldheim's approach is the considerable lower cost of energy compared to normal private utility rates (17€ct/kWh vs. 28€ct/kWh - a 40% saving) increasing local value to the region in the form of local tax revenue, job creation, and long-term security of energy supply. This demonstrates the potential benefits of local ownership and how it can provide a model to support areas with high levels of fuel poverty.

**4.12** Germany provides a vision of how things could be in Wales. In Germany in recent years their 'Energiewende' (energy transition) strategy has led to cross party political support for targets including one for a 50% reduction in primary energy use by 2050 and one for achieving an 80% renewable electricity share of total consumption by 2050. In early 2012, around 25% of Germany's power was generated from renewable sources; in 2011, over 380,000 people were employed in the renewable energy sources industry; Only 13% of Germany's 60 GW of renewable energy is owned by utilities, with the rest being owned by households, communities, and farmers among others.

## **5. Energy efficiency and demand reduction**

- How can the planning system and building regulations be used to improve the energy efficiency of houses (both new build and existing stock)?
- What would the environmental, social and economic impacts be if Wales set higher energy efficiency standards for new build housing? (e.g. Passivhaus or Energy Plus)

**5.1** Building regulations could ensure all new build properties and renovations met minimum energy efficiency standards. We would be supportive of significantly increasing this requirement on energy efficiency as we need to reduce our energy useage by 60% if we are to achieve Zero Carbon Britain's vision for the future. We have the technology to create zero carbon homes as demonstrated by Passivhaus standards and the Solcer House developed by Cardiff University<sup>8</sup> at a cost acceptable to Social Housing benchmarks. This will also enable the diversification of the housing sector with new innovative companies taking the opportunity to break into the market.

## **6. Communities - making the case for change**

- How can communities, businesses and industry contribute to transforming the way that Wales thinks about energy?" Does the answer to this challenge lie in enabling communities to take greater responsibility for meeting their future energy needs?

---

<sup>8</sup> <http://www.solcer.org/>

**6.1** Yes, there are currently over 80 Community Groups in Wales that are looking to take control of their energy future in Wales through developing Community Energy projects. Community Energy Wales has created a database of these organisations.

**6.2** There are many communities that are looking to take action on climate change, over 320 community groups and organisations across Wales have contacted Renew Wales for support in taking action on climate change.

**6.3** One of the main motivating factors for Community Energy is that Communities want greater responsibility for their energy. We want to work with Local Authorities to identify what potential opportunities exist for developing opportunities to create renewable energy that is locally owned. We need a grid and an electricity distribution system that supports local people to be able to purchase energy locally when available. This will particularly benefit those in areas of Fuel Poverty.

**6.4** We want to support Local Authorities and other public bodies to make best use of public assets such as roof space, unused land etc. We would support a Welsh version of Community Rights which exists in England. However, we feel that these rights could go further and we can build on what exists currently in England and extend it. A useful reference is the latest Community Rights report which suggests ways it could be used more effectively.<sup>9</sup>

**6.5** We also need a better replacement for Green Deal. There is an excellent example in Wales of the public sector, business and communities working together to improve energy efficiency. Robert Owen Community Banking Fund's zero interest loan finance scheme to improve energy efficiency or generate renewable energy is a great example of how we could do things differently in Wales.<sup>10</sup> Often schemes like the Green Deal would exclude those that were less well off as they were unable or uneasy about taking on the rates of interest that were available through this scheme.

---

<sup>9</sup> <http://www.publications.parliament.uk/pa/cm201415/cmselect/cmcomloc/262/262.pdf>

<sup>10</sup> [https://www.rocbf.co.uk/zilf\\_faq](https://www.rocbf.co.uk/zilf_faq)