Bath & West Community Energy
Generating local energy

Bath & West Community Energy

DRAFT Business Plan Overview to March 2021

In Transition - Beyond the Feed in Tariff…..

Presented by BWCE's Board for Public Distribution
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1 Purpose of Paper

This paper summarises the key elements of Bath & West Community Energy's (BWCE's) business plan to March 2021. It is the result of discussions with our members and partners over the last 12 months. We would welcome feedback or comment. Please send any comments to info@bwce.coop. The final version will be presented at our AGM in September.

2 Executive Summary

BWCE is a successful community enterprise, offering a radically different way of doing business. We deliver sustainable energy outcomes that benefit local communities.

We are developing our business strategy for the next few years to March 2021. A longer period to 2026 offers context and takes into account market conditions and our longer-term aspirations.

BWCE has generated enough community-owned renewable energy to meet the equivalent annual electricity demand from around 4,000 homes. We have also used our experience to support other community energy groups to develop their own projects.

Market conditions and changes in the subsidy regime will make the scale of renewables development achieved over the last few years very difficult to continue in the short term. However, impending changes in the energy market structure may offer opportunities for strengthening our approach to community energy.

The principal aim for this next business plan period will, therefore, be to create a foundation in our local area for rapid growth into new markets beyond 2021. A foundation based on piloting new technologies and market opportunities and at the same time expanding our community outreach to increase local engagement with these new services.

Table 1 summarises our vision, goals, objectives and targets, with further supporting information including sources of funding outlined in Sections 7 & 10.

3 BWCE's Area of Interest

Our main area of operation is Bath and the surrounding area. In practice, this means the whole of Bath & North East Somerset (B&NES) and parts of Wiltshire and South Gloucestershire around the eastern and northern borders of B&NES. Annex 1 offers a fuller description of this area, including statistics on population and household numbers.

The extent of this area reflects BWCE's origin in community groups in Bath and Corsham. It also offers an area big enough to (a) create a balance between both rural and urban and (b) offer the potential to develop enough renewable energy to make a large contribution towards the energy demands of the whole area. It's also an area with well-established social and economic links and networks.

Within this area, we will continue to work with other community energy groups interested in working at an even more local scale.

Table 1: Vision, goals, objectives and targets

Vision	Goals	Objectives	Targets to March 2021
Clean local energy, community owned for the common good. "Our vision is for a local area able to supply decreasing local energy demand with increasing generation from renewable energy, driven by collective action and community ownership."	**Maximise Community Renewables** Maximise the contribution of community owned renewable energy as part of a decentralised and decarbonised energy system. **Strengthen the link with energy supply** Raise awareness and importance of energy issues within local communities by strengthening the link between energy supply and its use in homes and work places **Increase local benefits and engagement** Ensure local communities benefit and take part as widely as possible in all aspects of our energy future, through local governance, new technologies and smart grids. **Creating a sense of collective purpose, 'we are all in this together'** Generate collective purpose and momentum around tackling climate change and energy security	Launch a local supply tariff	• 5000 customers
		Expand renewable electricity capacity to match local electricity supply customer base	• 15,500 MWh/yr[1] supplied by BWCE owned renewable electricity projects (now 12,350 MWh/yr[2])
		Maximise opportunities for electricity market innovation	• 1-2 large scale storage projects • 1-2 peer to peer trading projects • Domestic scale storage and demand management community pilots if viable
		Test potential new business models around renewable heat and energy efficiency	• 1-2 community scale renewable heat projects • Domestic scale heat and energy efficiency and community pilots if workable
		Broaden and deepen BWCE's reach within local communities	• 50% increase in membership with at least 75% from BWCE's local area[3] • Doubling newsletter circulation[4] • Active volunteer programme
		Strengthen BWCE's capacity to deliver	• Sustainably financing community outreach staff • Reduce weighted cost of capital by 1% plus other project running cost reductions • Establish full social and environmental impact reporting

[1] Assumes a typical household has an annual electricity demand of 3,100 kWh/yr based on Ofgem figures
[2] Based on current BWCE generating capacity of 12.35MW of solar PV
[3] BWCE now has 650 members and 400 bondholders, with significant overlap between the two
[4] BWCE now has newsletter circulation of around 1,250

4 Vision

Clean local energy, community owned for the common good.

BWCE's vision is for a local area able to supply decreasing local energy demand with increasing generation from renewable energy, driven by collective action and community ownership.

This vision can be broken down into four interlinking and overlapping goals.

Goal 1: **Maximising Community renewables -** Maximise the contribution of community owned renewable energy as part of a decentralised and decarbonised energy system.

Goal 2: **Strengthening the link with energy supply -** Raise awareness and importance of energy issues within local communities by strengthening the link between energy supply and its use in homes and work places

We have an energy system that prioritises centralised energy generation. As a result, the system promotes the use of carbon intensive and nuclear fuels and undermines our energy security in the face of an increasingly unstable energy market.

Meeting our carbon reduction targets needs an electricity grid capable of dealing with electricity generated locally from technologies like solar PV and wind turbines. However, this means that many more people are closer to electricity generating plant. So, while the opinion polls still offer strong support for renewable energy, local projects are meeting more opposition. If renewables projects are also owned and run by commercial companies, then profits leak out of the area with little local control or benefit. Without a positive connection with local projects and increasing distrust of the energy market, there is a growing sense that people's 'backyards' are making significant profits for someone else.

Centralised energy generation also happens a long way away from the majority of consumers, obscuring the relationship between supply and demand for most people. As a result, it's so much easier for us to lose sight of and so ignore the impact of our own energy use.

Community energy can help to underpin the more rapid roll out of a decentralised energy supply system by giving local people a stake in local projects. Community owned renewables can create a stronger link in people's minds between energy supply and energy use.[5] A local supply offer that offers people the opportunity to make a positive choice to match, as far as is possible, their demand with locally sourced electricity can emphasise this link even more strongly.

In the short term, the regulatory framework does not make it easy to supply electricity directly to local people from local projects on a large scale, without a direct connection via a private wire. However, this is changing, see below.

Goal 3: **Increasing local benefits and engagement** - Ensure local communities benefit and take part as widely as possible in all aspects of our energy future, through local governance, new technologies and smart grids.

[5] *For example, a survey of BWCE members in 2015 suggested that being a BWCE member had encouraged or helped 72% talk more to friends, family and colleagues about community energy, 63% talk more about climate change and 50% take more actions to reduce their own carbon emissions.*

Goal 4: **Creating a sense of collective purpose, 'we are all in this together' -** Generate collective purpose and momentum around tackling climate change and energy security

Large corporations who view their customers only as consumers, rather than active participants, have dominated the energy market, whether generating or supplying heat, electricity or transport fuels or selling energy efficiency products and services. By fostering large scale delivery, the energy market drains economic value away from where it's created and loses the opportunity to create a stronger connection with local areas. Our ability to influence the source of our energy is severely constrained, and our control over who benefits from its supply is virtually non-existent.

The management of the electricity network is changing, forced by the connection of much higher levels of decentralised and intermittent generation, through solar and wind, to local grids. There is a shift in thinking towards developing smart systems, energy storage, electric vehicles and more localised balancing of supply and demand including time of day tariffs and demand management.[6]

These changes offer exciting opportunities for creating and deepening the link with local projects through, for example, direct electricity sales from generator to consumer over existing grid networks or peer to peer trading.[7] But these changes also create important challenges around mitigating the impact of fuel poverty and ensuring that opportunities for participation are open to all.

We believe that community energy can play a vital role in this move away from centralised generation and system operation. Community energy offers a fundamentally different way of doing business on energy by maximising community ownership and control and localising benefit.

As a result, community energy has the potential to draw people in, not just as consumers but also as active participants, or partners, in the process of change. Partners because people share in the benefits, have some say in how things happen, are actively involved and feel a connection with the outcomes.

Community energy has the potential to do this by creating a sense of collective purpose amongst local people who increasingly feel:

- I see 'people like me' involved, whether family, friends, neighbours, community members, work colleagues
- I keep hearing about opportunities for involvement through many different routes, it stops being unusual and becomes 'what happens around here'
- I trust the people delivering the projects, I see them around, they're local
- I can see tangible benefits for my local area and/or my interest group
- I can see tangible benefits for me

This sense of collective purpose can help to normalise the adoption of new approaches to active participation in electricity markets. Participation that includes energy demand shifting and reduction as well as encouraging the take up of energy efficiency measures.

For further comment on the opportunity for, and the importance of, active and positive consumer involvement within local energy markets see 'Market Developments' below.

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[6] *The UK Government and Ofgem's Smart Systems and Flexibility Plan, July 2017* www.gov.uk/government/publications/upgrading-our-energy-system-smart-systems-and-flexibility-plan

[7] *For example, the microgrid in Brooklyn USA.* http://brooklynmicrogrid.com

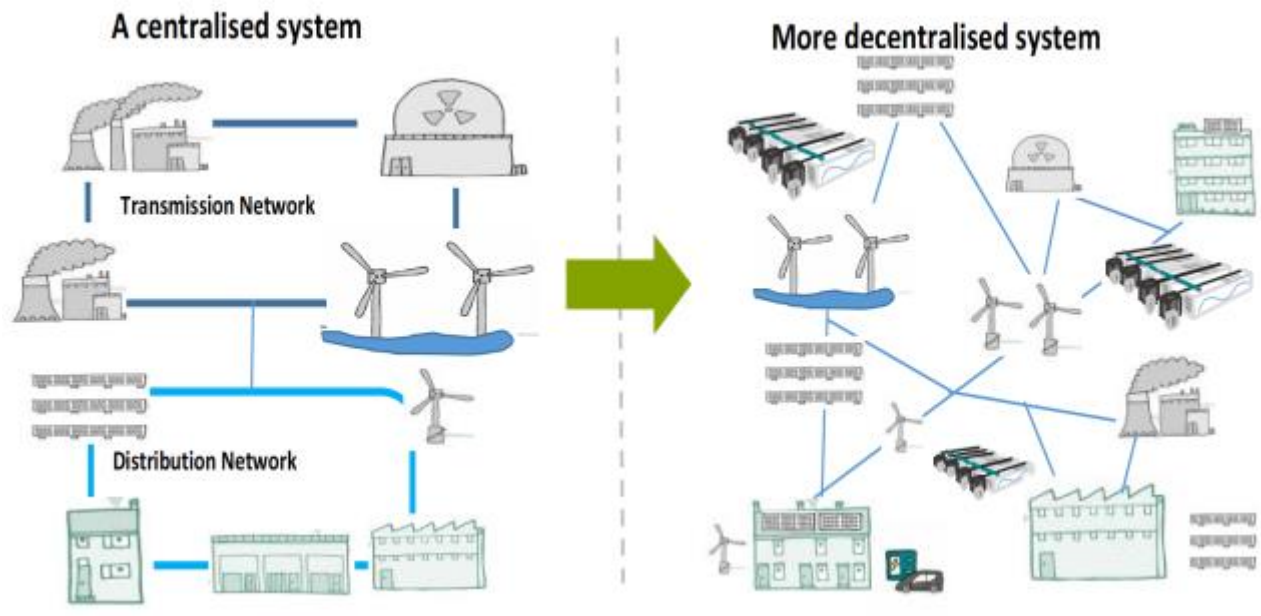
5 Market Developments

The setting up of BWCE coincided with the launch of the Government's Feed in Tariff, a subsidy mechanism that has since supported a rapid growth in renewable electricity across the UK.

The Government has severely cut back the Feed in Tariff, and this has had a significant impact on the rate of new renewable energy installations. Some scales of roof mounted solar PV are still possible in certain circumstances, though these opportunities will reduce unless there are further significant reductions in installation costs. There is a transition towards subsidy-free projects, as technology prices fall. But subsidy cuts have been rapid, and it will take some time for the industry to catch up. This transition will be easier for some technologies than for others.

There have also been significant increases in the planning conditions set out by Government for onshore wind energy. Conditions that make it even more difficult for wind energy projects to be successful in our area.

The subsidy regime for Renewable Heat (the Renewable Heat Incentive or RHI) is still running and for community scale projects, the RHI offers long, secure RPI linked contracts. However, heat projects are more difficult to make work than electricity generation projects, as there is little opportunity for exporting heat to offer financial security (except in some limited cases such as community heating schemes). As a result, on-site demand must be more than enough to consume all heat supply. There are also more complex supply chains with more things that can go wrong. However, heat supply is crucial to the process of decarbonisation, and therefore we must have an increasing focus on community scale heat networks and developing workable business models to deliver renewable



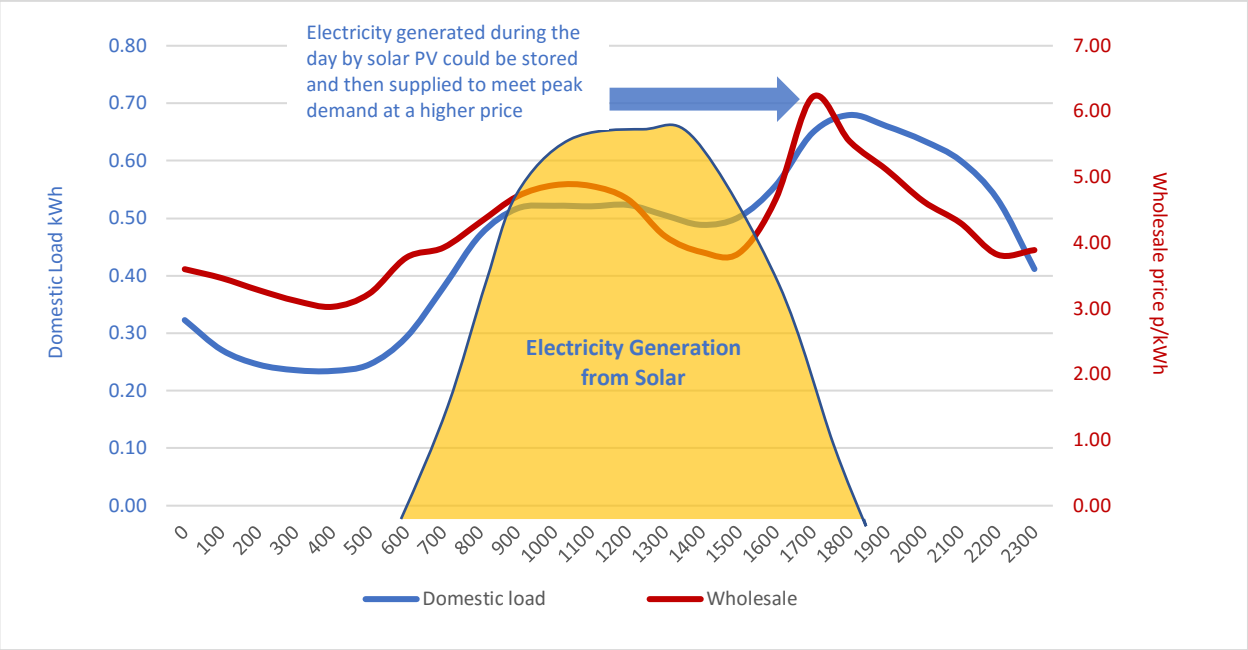
heat.

There is a sea change happening within the electricity system as it shifts from a total reliance on centralised electricity generation in large power stations, to increased capacity coming from smaller scale generating plant connected to local electricity networks.

Within the next 5-10 years we are likely to see many changes in the way we use electricity with the introduction of smart meters, electricity storage in home and businesses, growth in electric vehicles, and possibly electric heating, domestic time-of-use tariffs and local trading of electricity.

But more widely, this sea change in system operation will need the electricity system to become far more dynamic and interactive. We believe that many small organisations will drive these changes, with consumers selling services to the system through a process of balancing supply and demand that is far more local than it is now.

Figure 1: Balancing solar generation with peak demand



New technologies like energy storage, and opportunities to sell electricity directly to electricity consumers through peer to peer trading, may also help increase the financial viability of renewable energy as subsidy regimes reduce.

This more localised approach to energy system operation is already occurring elsewhere in both Europe and North America. It is also recognised and supported by much of the UK electricity industry and most political parties as a key contribution towards keeping the lights on and meeting our legally binding targets around carbon reduction. However, there are examples of regulatory, pricing and policy changes that conflict with this direction of travel.

There are also different views of how to implement changes that will need significant levels of active engagement from energy consumers to be successful. Many think that all we need to do is automate as much as possible. Then price signals will encourage people to shift their demand away from peak times and embrace storage and local trading. But, the low level of tariff switching, even with significant financial savings available, suggest price alone will not be enough to create major behaviour changes.

Maybe this is where local trusted energy enterprises can play an important role in helping people engage with new electricity markets and take advantage of the opportunities that will exist.

6 Achievements to Date

6.1 Successes

BWCE was set up in 2010, with the aim of creating a financially sustainable community enterprise delivering renewable energy, energy supply and energy efficiency projects via a strong community model.

Since 2010 BWCE has:

- Installed 14 roof mounted solar PV systems across schools and community buildings, five ground mounted solar PV systems and one hydro scheme
- Installed 12.35MW of renewables capacity, generating enough to match the equivalent annual electricity demand from around 4,000 households
- Raised £9 million through community fund raises and £6 million through debt to fund these projects
- Helped set up three community energy enterprises and supported others to raise a further £6 million plus debt to build nearly 8 MW of solar PV, generating enough electricity to match equivalent annual demand from a further 2,500 households
- Set up Mongoose Energy to support other community energy groups to deliver community energy across the UK
- Set up an independent charity to distribute £115,000 of cash surplus as grants to other local community projects focussing on fuel poverty and carbon reduction

We have met our business plan targets to date and proved that our community model for renewable electricity projects is deliverable and financially sustainable.

We have not yet been able to make significant progress on other aspects of our core vision, such as energy supply, renewable heat, and energy efficiency.

6.2 Challenges going forward

Community energy faces a challenge in its aspiration to be locally focussed. The level of funds needed to develop renewable energy projects is significant and more difficult to raise within a small area. This led us to using web based crowdfunding platforms with a national reach, which has, in turn, reduced the number of members living in the local area to around 60%.

We have also worked outside our area to support other community groups to develop their projects and to deliver two of our solar arrays. We did this because we could use our track record and experience of working at scale to deliver projects in a short timescale before cuts in government subsidies announced in 2015 made those projects unviable. Partnerships with local community groups in the development of both of BWCE's 'out of area' projects will enable these local partners to buy all or part of the project over time.

BWCE's business model has so far focussed on raising finance through community fundraises to help build community renewables projects. This, of course, concentrates our activities around the better off within local communities who can invest and is only partly mitigated by our community fund. The fund supports projects that help the wider community, including projects that help alleviate fuel poverty.

This next business plan period offers the opportunity to refocus and expand our activities within our local area to create the foundation for future growth. A foundation based on broadening the range of BWCE's activities to include for example energy supply, and deepening and widening our approach to community outreach to reach beyond our core investor constituency.

7 BWCE Objectives & Targets

BWCE faces major challenges. The Feed in Tariff subsidy regime on which it has built all its projects to date is rapidly reducing (although existing projects will not be affected) and the long-term future of renewable energy subsidy is uncertain. So, if we are to develop new projects, we will need to find ways of moving away from a reliance on subsidy. Energy markets are changing, offering the opportunity for new ways of creating value for our projects. There are also opportunities to bring about our wider vision for community energy, moving from just owning energy assets to also supplying energy and so strengthening our ability to support carbon reduction and alleviate fuel poverty.

This business plan period will be vital in creating the foundation from which BWCE will be able to develop scalable services from 2021 and beyond.

The focus of delivery will be around taking advantage of short term opportunities, laying the foundations for future growth, and strengthening BWCE's capacity to deliver.

BWCE's board has set a range of objectives by which it can check progress during this business plan period (see Table 1). These objectives are:

1. Launch a local energy supply offer
2. Expand renewable electricity capacity to match local electricity supply customer base
3. Maximise opportunities for electricity market innovation
4. Test potential new business models for renewable heat & energy efficiency
5. Broaden and deepen BWCE's reach within local communities
6. Strengthen BWCE's capacity to deliver

The targets outlined below and in Table 1 offer quantifiable goals where objectives are scalable, and a clear focus on outcomes where objectives are more strategic.

The two areas where services are already scalable include renewable electricity, where BWCE has a proven model, and electricity supply where BWCE can enter a mature market in partnership with others. Innovation in electricity markets will be central to future growth but will need development and testing.

As can be seen in Table 1, we have set growth targets for renewable electricity and electricity supply and more strategic development targets around the other key objectives.

7.1 Launch a local energy supply offer

Creating a local supply tariff is a central part of our vision. It gives the mechanism for broadening the reach of the organisation, both to engage with households that would not be able to invest in BWCE and to reach out to people that had previously not been aware of the organisation. In this way, we will be able to engage with and offer new services to, a much larger proportion of the communities in our area.

BWCE had been working with Mongoose Energy to set up an electricity supply company that was majority owned by community energy enterprises across the country. This idea has been discussed several times with members who had been broadly supportive. Earlier this year Mongoose Energy decided to not enter the market on its own supply licence because of market volatility and the resulting need to raise more finance to underwrite increased risk.

BWCE and Mongoose Energy are now investigating options for partnering with existing energy suppliers to launch early in 2018. Activities in this area would generate income through fees per customer for each sign-up and for every year they are still a customer.

The target would be to encourage 20% of households to switch to the new local tariff by 2026, or 23,000 households across the whole local area.

By the end of this business plan period, March 2021, the target will be to have secured 5,000 customers on a local tariff. These are challenging targets as a percentage of the local market.

The intention would be to balance the amount of electricity generated from BWCE's renewable electricity projects with that used by consumers, on an annual basis. Because of regulatory constraints, initially this will a notional comparison. As electricity markets develop, we will seek to make this increasingly tangible through electricity storage and local trading.

The local supply offer will be strongly community focussed. Not just with the links to local projects but also with a commitment to keep over 50% of gross profits from electricity sales in the local area, strong partnerships with local partners like the local council, active engagement with local community networks and a commitment to drive innovation in local energy markets.

It will be essential therefore that the energy supplier we partner with has strong aspirations and commitment to innovation and community benefit and the same long-term goals as BWCE.

Priority Actions

- Finalise negotiations with energy supplier
- Engage with members around marketing and communications
- Develop communications and marketing strategy that includes a clear focus on viral and social marketing of a local supply offer
- Work with Mongoose Energy and energy supply partner to develop engaging marketing materials and community approaches that maximise take up
- Aim to launch local tariff in new year 2018 at earliest, depending on timing of above
- Monitor, review and improve outreach
- Integrate outcomes of innovation pilots (see below) into local supply offer when possible

7.2 Expand renewable electricity capacity to match local electricity supply customer base

Table 2 outlines the scale of the task to match renewable electricity capacity with the annual demand from 20% of the households in the BWCE area by 2026.

BWCE to date has developed 12.35MW of solar PV and a small hydro scheme since 2010. Even if we build further hydro projects they will not make a material difference to the overall generating capacity in the area. The principle technologies that can make an impact locally are solar PV and wind.

The split between solar and wind in table 2 is indicative only. B&NES Council has supported wind turbines as part of their core strategy, but adverse changes in national planning guidance will make it difficult to deliver new projects during the coming years. But inevitably if this area is to generate a large part of its demand locally it will have to include wind turbines at some point. A wider local debate about the importance of wind energy in our collective response to climate change and

energy security is perhaps needed. A clear focus on community ownership and community benefit may help to build greater local support for wind energy.

Table 2: Renewable electricity targets

	Mar-21	Mar-26
Number of electricity customers on local tariff	5,000	23,000
Electricity demand (MWh/yr)	15,500	71,300
Existing BWCE renewables generation (MWh/yr)	12,350	12,350
New renewables generation needed (MWh/yr)	2,150	58,950
New Solar PV (MW)	5	47
Wind (MW)	0.5	7.5
% of electricity consumers matched by local gen.	118%	104%

Notes:

- *Assumes 3,100 kWh is a typical annual electricity demand for households[8]*
- *Solar PV generates 1000 kWh/kW (average of BWCE's projects) and wind generates 2000 kWh/kW (theoretical)*
- *There are a 1,000 kilowatts (kW) in a megawatt (MW)*
- *1 kWh of electricity is used by a 1kW electrical appliance running for 1 hour*
- *5MW of solar PV could be delivered with one 4MW ground mounted solar array and ten 100kW roof schemes on large commercial, public or community buildings. For comparison, BWCE's Wilmington array is 2.34MW*
- *47MW of solar PV could be installed if 12% of the homes across the whole BWCE area put solar PV on their roofs OR nine 5MW solar arrays were developed, using less than 0.5% of the undeveloped land in the BWCE area, plus twenty 100kW roof schemes on large commercial, public or community buildings*
- *7.5 MW of wind could be installed with twenty-four 500kW turbines (40m hub height) or two 3MW turbines (120m hub height) and three 500kW turbines*
- *A resource assessment carried out by B&NES Council in 2010 suggested that there was the potential for developing 77MW of solar and 45MW of wind in the B&NES area alone by 2026[9]*

As Feed in Tariffs for solar PV shrink, new projects become harder to deliver. New ground mounted schemes, for example, are no longer workable at all. We will need to take a two-prong approach to new solar PV project development.

1. Find medium to large buildings with site owners prepared to accept solar panels on their roofs in return for cheaper electricity. By offering electricity at discounted rates, but higher than the minimum export tariff now available, both BWCE and site owner can benefit.
2. Find already operating ground mounted schemes whose owners are interested in selling their project. Buying existing projects will increase community benefits through community ownership, even if it will not increase new renewable capacity.

In the medium term however, new solar PV project development could get easier as solar panel prices fall. Within the next few years solar panels could be cheap enough to install without subsidy.

[8] https://www.gov.uk/government/statistical-data-sets/regional-and-local-authority-electricity-consumption-statistics-2005-to-2011

[9] http://www.bathnes.gov.uk/sites/default/files/sitedocuments/Planning-and-Building-Control/Planning-Policy/Evidence-Base/Sustainability/renewable_energy_and_planning_research_-_november_2010.pdf

Priority Actions

- Develop a communications and community outreach strategy that includes a focus on wind energy within the local area.
- Develop a clear offer for solar roofs and promote to larger public and private site owners
- Find existing commercially owned ground mounted PV schemes and evaluate commercial viability and owner interest in purchase
- Monitor solar installer market and potential for reducing solar PV capex
- Evaluate potential for increasing project viability through opportunities for co-location of battery storage and better procurement of services such as operations & maintenance (O&M)

7.3 Maximise opportunities for electricity market innovation

The changes to the electricity system and associated markets outlined in section 6 above are likely to start gathering pace during this business plan period.

We have already been involved in a pilot programme looking at demand side management, researching the issues associated with enabling households to shift their demand away from times when everyone's electricity demand is highest. Demand shifting will become increasingly important as the level of locally generated electricity increases.

We are also involved in a feasibility study with Bath Spa University looking at the potential for storage on site and peer to peer trading between the university and the nearby BWCE owned Wilmington solar array.

As the electricity system adapts and regulations shift to enable more localised energy markets, it is likely that storage and peer to peer trading will become more prevalent at a smaller and smaller scale, down to domestic level. Currently, only large-scale electricity consumers are eligible for demand flexibility services, being paid to allow their demand to be turned up and down remotely to balance capacity and frequency on the grid. These services will increasingly be open to smaller electricity consumers, aggregated at a local level, possibly by community energy enterprises like BWCE.

Over the next business plan period to March 2021, we will deliver one or two larger scale storage projects and one or two peer to peer trading projects. We will also assess the feasibility of a domestic scale programme looking at storage, peer to peer trading and demand management and deliver a community pilot if workable.

Priority Actions

- Find strategic innovation partners with a focus on peer to peer trading, blockchain, local energy markets and electricity storage
- Develop pilot programmes and secure funding
- Deliver pilots, review and disseminate outcomes
- Integrate opportunities to commercialise services within a broader energy supply offer

7.4 Test potential new business models for renewable heat & energy efficiency

We have carried out some analysis of potential renewable heat projects, including biomass and anaerobic digestion projects of varying scale. But, we have so far been unable to find heat projects where we have been able to deal with their greater inherent complexity and performance risk.

However, renewable heat is an essential part of reducing carbon emissions, and we will be looking to find projects in the future that meet a range of key criteria, including secure heat demands and a sustainable supply of fuel. We have discussed the role of low carbon heat, including gas fired CHP, with members and at the board. We are not proposing to develop gas fired CHP projects now.

Interest in heat networks is increasing, especially as part of new developments, and we will investigate opportunities for working with local authorities and developers on community owned heat network projects.

Over the business plan period to March 2021, we will deliver one or two trial community scale renewable heat projects to understand the issues and test how best we can add value into the future.

We will also investigate new financial mechanisms for supporting the roll out of domestic technologies, like heat pumps, which can play a significant role in helping to deal with fuel poverty and hard to heat properties in non-gas areas.

Similarly, we will investigate approaches to delivering energy efficiency including energy advice, direct referrals, management of contractors and revolving loan funds. These approaches have been offered to varying degrees by other community enterprises and not for profit organisations, but not all may be right for BWCE. More widely, all approaches to increasing take up of energy efficiency will be dependent on government policy creating a much healthier market for energy efficiency than is in place now.

Priority Actions

- Evaluate the application of renewable heat technologies within a community context with a strong focus on sustainability and social benefit
- Evaluate potential for partnership with local authorities and housing associations on heat networks and energy efficiency
- Develop partnerships with renewable heat installers/developers
- Monitor government policy and sector support for energy efficiency and renewable heat
- Develop pilot programmes and secure funding
- Deliver pilots, review and disseminate outcomes
- Assess potential for wider roll out of heat projects

7.5 Broaden and deepen BWCE's reach within local communities

Up until now BWCE's community outreach and engagement has been primarily focussed on supporting community fundraising.

Our community fund has also offered a valuable mechanism for generating local outreach, with grants provided to local sustainability projects for the past three years. As the funding available increases, BWCE's board, together with the fund trustees, will review its impact and priorities for the future.

Over the next three years, We will aim to increase the active involvement of the wider community. This is important in achieving our goals to 2026. It includes reaching out to new people through the establishment of the supply business, getting ready for new opportunities, such as peer to peer local networks, and stimulating local discussion on onshore wind, without which it will be hard to reach our generation targets.

We will also seek to deepen our involvement with existing membership, increasing opportunities for volunteering and engagement around the ongoing debate on climate change, fuel poverty and energy security.

Recent research[10] stresses people's reluctance to talk about climate change, and the need to break the "climate silence". BWCE is well-placed to do this, with positive local stories. As outlined above, surveys of BWCE's membership suggest that since becoming a BWCE member, people talk more to friends, family and work colleagues about community energy and climate change and we will explore how we can support this more effectively in the future.

There will be an early focus on reviewing and updating our communication channels, including newsletter and website as well as developing a communications and community outreach strategy that will integrate communication activities across BWCE's areas of activity.

Our increased local focus will inform our approaches to fundraising and expanding our membership going forward. BWCE's members are central to its governance and accountability as an organisation.

As a result, BWCE has reviewed its funding mechanisms with a view to

- prioritising local membership by concentrating marketing in the local area
- reducing significantly the level of investment needed to become a member, to widen participation
- prioritising bonds to raise funds from people interested in supporting BWCE's activities from further afield.

In this way, we will be able to strengthen local governance and accountability in support of its greater local focus.

Over the business plan period to March 2021, we will seek to; increase our membership by 50%, with at least 75% coming from the local area, double our newsletter circulation and set up a supported volunteer programme.

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Priority Actions

- Develop a communications and community outreach strategy
- Find new approaches to widening participation, integrated with other strands of this business plan
- Build internal capacity to support community outreach and wider communications activity
- Increase opportunities for volunteering alongside BWCE's wider work programme and set up a supported volunteer network
- Deliver, monitor, review and enhance impact

[10] The need to break the "climate silence" was outlined by Climate Outreach in a 2014 report, with related climate communication resources on their website.

7.6 Strengthen BWCE's capacity to deliver

We keep overheads low to maximise the surplus redistributed back into local communities via our community fund. Our overheads are well below 5% of net income, after running costs.

However, to expand our community outreach, we will invest in at least one full-time member of staff focussing on outreach and communications by the end of the business plan period, funded by referrals from the local energy supply tariff. Grant funding will give short term resources until referral numbers grow to a level that will offer a sustainable income.

More widely we are undertaking a review with Mongoose Energy of our project costs to maximise existing project value. This review includes;

- reducing the cost of capital through re-financing existing debt where new opportunities are more favourable
- reducing project costs through better approaches to securing services like project insurance or operations and maintenance
- reviewing project monitoring procedures to test whether it is possible to improve project fault response and reduce lost income as a result

Mongoose Energy can play a significant role in helping to reduce costs through collective action across multiple community enterprises, by increasing purchasing power when buying services and reducing the cost of capital by increasing scale of debt facilities across multiple projects.

Underpinning activity in this and all other areas will be a more thorough approach to monitoring and reporting on our social and environmental impact.

Over the business plan period to March 2021, we will increase our overhead to build internal community outreach capacity, reduce its weighted cost of capital by at least 1%, prioritise other project running cost reductions and set up fuller social and environmental reporting.

Priority Actions

- Work with Mongoose Energy to carry out re-financing of senior debt at earliest opportunity
- Find and secure seed funding for community outreach
- Build internal capacity to deliver community outreach
- Grow referrals to local supply offer to fund outreach in the longer term
- Complete and implement review of project cost reductions
- Develop monitoring, evaluation and reporting processes to underpin fuller social and environmental impact reporting

8 Principles, Governance & Team

8.1 Principles

As a Community Benefit Society, BWCE has adopted some key principles for how we do business, including

- democratic operation through one member one vote, regardless of shareholding
- open governance and participation, with a majority of the board elected from its membership and active member consultation and involvement
- maximising community benefit, by capping interest rates to investors, re-investing surplus within the local community and no profit distribution
- financial transparency through reports to members, presenting director salaries on its website and an open book approach to partnership development

Governance and accountability are central to these principles and to our legitimacy as a trusted community enterprise.

BWCE's board role is to ensure these principles are adhered to, as well as guiding the ongoing success of the organisation's strategy development and ongoing operations.

8.2 BWCE team

The board is made up of a core of four executive and co-opted directors that bring significant experience in organisational development, leadership and management as well as a specific skill base around sustainability, the energy sector and the legal, technical, financial and commercial demands of project delivery.

The majority of the board is made up by non-executive directors elected from our membership. The current five elected directors broaden and deepen the experience and skill base that we can draw on, as well offering a vital link with our membership.

We also benefit from the skill and experience of a range of partners and associates to deliver key elements of our work plan.

We have an experienced team, the majority of whom have been working together for many years with a successful track record in the delivery of community renewables projects. Full biographies can be seen on BWCE's website at www.bwce.coop/about-us/our-team/.

We also receives core administrative services, including bookkeeping and accounting, from Mongoose Energy as part of a wider service agreement that includes project development and asset management. See section 6.1 below.

8.3 Key Partners

8.3.1 Mongoose Energy

BWCE's project development activities grew rapidly in the years preceding this business plan period, in response to significant and increasing demand from other community groups looking to draw on the experience BWCE had gained to date.

During 2014-15 the BWCE board took the decision, following discussions with members, to transfer our project development activities into a separate company. Mongoose Energy is majority owned by the community benefit societies it supports.

Setting up Mongoose Energy has:

- reduced the risk profile in BWCE as Mongoose Energy takes on the liabilities associated with project development. We keeps the ability to earn a dividend from Mongoose Energy in line with its level of trade with the new business
- expanded development work across the country, building the scale necessary to draw in the commercial finance needed to grow the community energy sector
- enabled us to focus on our delivery in Bath and surrounding area and the building out of the rest of our mission, including energy efficiency and local energy supply

Mongoose Energy has also built a body of expertise in asset management and offers services to BWCE and other community enterprises including securing best deals for power purchase agreements, liaison with Ofgem, oversight of O&M contractors, health and safety, project payments, accounts and company secretarial services.

BWCE has a service agreement with Mongoose Energy to deliver these core services.

8.3.2 Bath & North East Somerset Council

In 2011 Bath & North East Somerset (B&NES) Council signed a co-operation agreement with BWCE that helped set up our first projects across a range of schools and community buildings. B&NES Council has been influential in our success to date with support and guidance from staff as well as investment in some of our projects.

The Council continues to be influential in working together around several areas of energy innovation that hopefully will result in further joint action on the ground over the coming years.

8.3.3 Service providers

BWCE benefits from the support, guidance and expertise offered by a wide range of service providers, such as Triodos, Close Brothers, Naturesave, TH White, IDDEA, Anesco, OPDE, Ethical Power, Stephens Scown, among others.

Partnerships across both public and private sectors have been and will continue to be central to our success.

9 Sources of Funding

9.1 BWCE Income streams

Currently, our income comes primarily from the sale of electricity and the Feed in Tariff generated by our renewable electricity projects. Income from consultancy, feasibility studies and pilot projects and funding from clients and grants, generates a small amount of income.

Over the next business plan period, electricity generation will still be by far the largest source of income. Our energy supplier partner will pay for every customer that signs up for the local supply tariff, though the sums involved will be relatively small during this business plan period.

The range of pilot programmes discussed within this document will only be run if they can be fully funded from additional grant or other income. The board may consider whether to start building up a reserve to fund further activities from surplus generated, after payment of interest to members and bondholders and the community fund.

9.2 Capital funding

Needed for further renewable electricity and renewable heat and storage projects and re-financing existing bonds
Secured through further community fundraises and/or debt depending on risk and financial viability
Total capital needed will be in the order of £5.1 million for the solar and wind projects envisaged in this business plan

9.3 Project development funding

Needed to take capital projects through planning to financial close and commissioning, not including capital costs.
Secured through partnership with Mongoose Energy and through grants where necessary, for example, The Rural Community Energy Fund, Local Authority grants.
Total project development funding needed will be in the range £200,000-500,000 for the solar and wind projects outlined in this business plan. This will depend on the point in the process at which BWCE buys into a project and the level of project development funding needed as a result. Mongoose Energy will invest the clear majority of these funds as BWCE's project development partner.

9.4 Revenue funding

Needed to finance the operations of BWCE
Secured through income from BWCE's renewable energy projects
Total overhead costs needed to manage BWCE's project portfolio will be in the order of £180,000 over the four years of this business plan period.

Needed to expand BWCE's engagement and outreach activities
Secured through referral income from the local supply tariff. In the early stages of the roll out of the local tariff, grant funding may be needed to pump prime activities to generate the numbers of customers necessary to create a financially sustainable programme in the longer term. Grants will be sought from sources such as the Lottery and Charitable Trusts
Total overhead costs needed to manage the enhanced outreach programme will be in the order of £80,000 during this business plan period, though this sum may be supplemented by grants to deepen further the community outreach programme in the early years.

Needed to develop and deliver pilot programmes around innovation within electricity markets
Secured from grants, for example, Innovate UK or the Low Carbon Network Fund/Innovation Competitions
Total pilot project costs will vary and will need to be fully costed but for full pilots of innovative peer to peer trading projects might be in the order of £200,000. Delivery of these projects will, of course, be dependent on securing the necessary added funding.

The financial projections in section 10 offer more background and detail on these costs.

10 Financial projections

10.1 Existing portfolio projections

Table 3 below shows the Board's financial projections from our current project portfolio (no new projects included) as a baseline.

Table 3: Baseline - Indicative Financial Projections from BWCE's existing projects

Period ending	Mar-21	Mar-27	Mar-32	Mar-37	Mar-42	Totals
Bath & West Community Energy	£,000	£,000	£,000	£,000	£,000	£,000
FIT & Export Income	6,534	11,463	10,987	10,686	6,232	45,902
Cost of Sales	-1,700	-2,827	-2,633	-2,591	-2,392	-12,143
Overheads	-182	-294	-266	-286	-308	-1,336
Cash Generated	**4,652**	**8,343**	**8,088**	**7,808**	**3,532**	**32,423**
Loan Interest & Capital	-2,136	-3,595	-3,061	-882	0	**-9,674**
Bond Interest & Capital	-828	-1,651	-1,813	-2,637	-943	**-7,872**
Members Interest & Capital	-1,398	-2,639	-2,574	-3,325	-1,157	**-11,093**
Community fund	-300	-565	-675	-1,000	-1,475	**-4,015**
Cash at bank at begin of period	**292**	**282**	**176**	**140**	**104**	
Cash at bank at end of period	**282**	**176**	**140**	**104**	**61**	

FIT income is calculated at the registered tariff uplifted at an assumed 2.5% RPI for the life of the projects, which is less than the long-term average for RPI. Export income is assumed at the government guaranteed level until 2020 (now at 5.03p/kWh) and thereafter rising such that by 2040 export tariffs have increased by 0.7% p.a in real terms based on industry forecasts. This assumes that export is done via power purchase agreements after 2020, at levels above the government's minimum export tariff.

All projects are insured for risks and loss of income and are monitored and maintained under contract with O&M contractors.

The financial projections outlined above are indicative, are intended as a guide only and are based on modelling carried out in June 2017. The modelling assumptions are dependent on a range of factors both inside and outside of our control. Changes to the underlying assumptions may have a material impact on the figures offered here.

The cost of sales includes project operating costs calculated at contractual levels that are in large part agreed for the life of the projects. The cash generated line shows the amount generated to cover the financing costs which are:

a) interest on bank loans and other loans;
b) loan capital payments;
c) members' interest assumed at 7% for equity, subject to project performance

d) bond interest, at rates dependent on bond issue
e) repayment of members' capital and bonds in full.

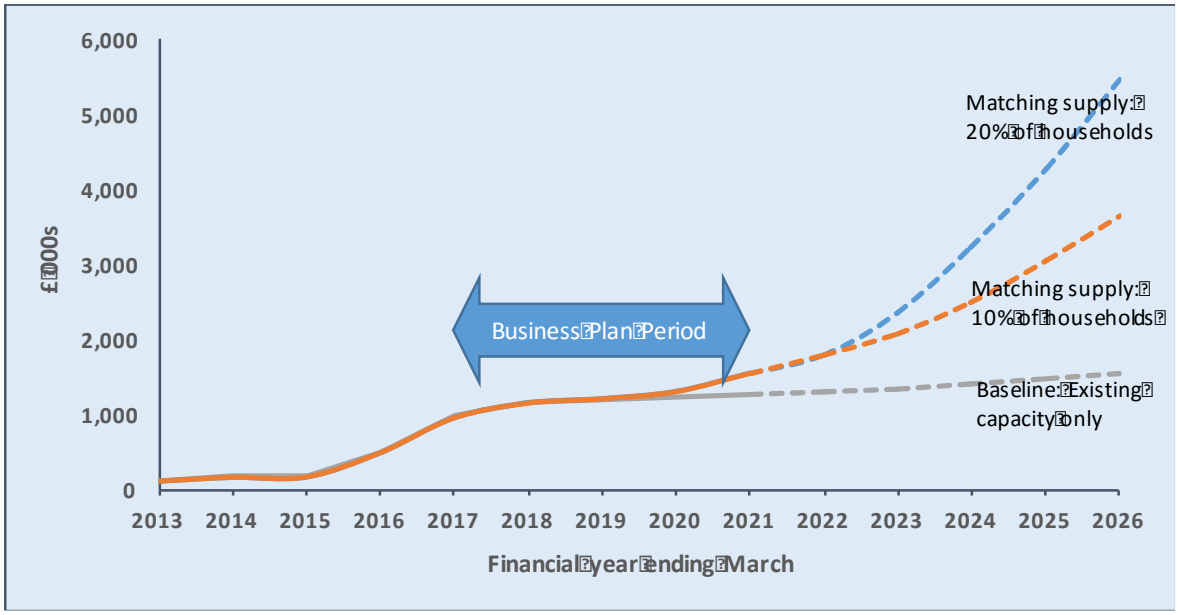
The community benefit generated by our projects over 25 years is over £5.3 million. These are the funds distributed to the community fund plus the overheads for the community enterprise and represent 16% of net revenues after cost of sales. This is the same level of funds paid to members in interest over the same period.

The level of community benefit rises to an average of £17,000 per MW over 25 years. These are funds reinvested back into local communities, the clear majority of which would otherwise disappear out of the area within a typical commercial model.

10.2 Historical and potential future growth in net income

Figure 2 below summarises the impact of the delivery of the business plan targets outlined in this document on net income. Figure 2 shows the income after the cost of sales but before the cost of capital, overheads, and any payments into the community fund.

Figure 2: Historical and potential future growth in net income



This analysis does not include the pilot project income and costs referred to in this business plan. Pilot projects will only be undertaken with funding from external sources rather than member investment.

The figure offers the historical growth in net income from electricity trading as a comparison. It doesn't include the historical income from project development activities that are now carried out in the main by Mongoose Energy, to offer a fair comparison with current and future income.

Future income beyond this business plan period illustrates the potential growth that could be delivered depending on market conditions and the resulting scale of our ambition at that time. The high scenario assumes we develop enough renewables capacity to match the equivalent annual electricity demand from 20% of households in our local area by 2026. The lower scenario assumes matching only 10% of households by 2026. The baseline income is that delivered just by our existing portfolio with no new projects added.

Income in 2022 for both main scenarios is the same, because the projections assume that income is derived from the previous year's growth in renewables capacity. In this case 5 MW of solar PV and 0.5MW of wind by end March 2021. This is, of course, a simplification of what will actually happen. Differential growth rates in 2022 across the two scenarios will affect the income in 2023.

The reduction in income growth rates across this business plan period reflects the transitional nature of this business plan and the focus on innovation to build the foundation for future growth.

10.3 Utilisation of cash surplus to March 2021

Table 4 offers a more detailed summary of the cash surplus we might generate during the business plan period and how BWCE's board might look to utilise it.

Table 4: Utilisation of cash surplus to end March 2021

	2017-18	2018-19	2019-20	2020-21
Cash generation after cost of sales	£,000	£,000	£,000	£,000
Existing renewables capacity	1,148	1,199	1,229	1,257
Energy supply customer referrals	0	12	33	51
New renewable energy capacity	0	0	33	268
Total cash generation	**1,148**	**1,211**	**1,295**	**1,576**
Cost of capital repayments and interest	-1,023	-1,090	-1,145	-1,384
Cash surplus after capital interest and repayment	**125**	**121**	**150**	**192**
Contribution to overheads - existing	-44	-45	-46	-46
Contribution to overheads - community outreach	0	-16	-32	-33
Community fund	-70	-70	-73	-88
Cash balance at beginning of period	292	303	293	292
Cash balance at end of period	**303**	**293**	**292**	**317**

Unlike Table 3, this summary includes the impact of added capacity and community outreach activities delivered during the period, on top of our existing projects.

But as Figure 2, this analysis doesn't include the costs and income generated by pilot projects that are yet to be fully costed and funded.

The analysis in Table 4 above assumes that we:

- meet the business plan targets outlined within this document
- finance new generating projects with a mix of 70% debt and equity
- employ a full-time staff equivalent with a focus on community outreach in 2018
- all community funds generated during this period will come from the surplus generated by our portfolio of community owned renewable energy projects

For us to meet our aspirations, we will need to build our overhead base to fund internal capacity to support the expansion of its activities. Initially, this will be done through grant funding to pump prime service delivery, such as the energy supply marketing and outreach and the pilots outlined within this document.

However longer term, these activities will only be continued if trading income funds them. The focus on grant funding will, therefore, not just be on proving the impact of new activities, but also on developing the business models necessary to achieve a financially sustainable service delivery.

Annex 1: BWCE's Area of Interest

Our main area of operation is Bath and the surrounding area. In practice, this means the whole of Bath & North East Somerset (B&NES) and parts of Wiltshire and South Gloucestershire around the eastern and northern borders of B&NES as shown in Figures 3, 4 & 5, with a summary of statistics for the whole area in Table 5.

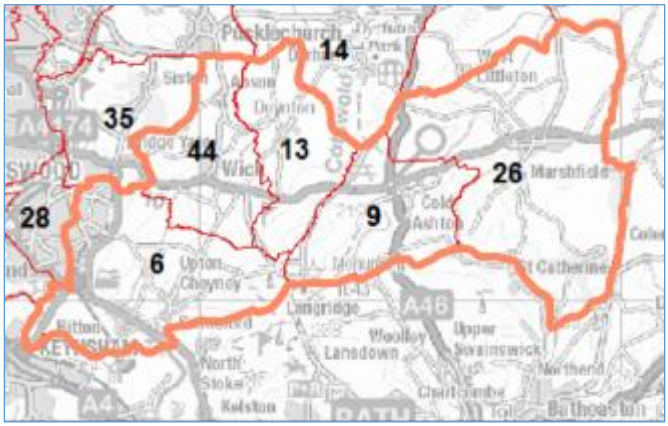
Table 5: Local area population and household statistics

	B&NES	Western Wiltshire	Eastern South Glos	Total
Population 2016	184,874	80,670	13,417	278,961
Households 2016	75,763	33,059	5,568	114,390

Notes:

- *The Western Wiltshire area covers the Bradford on Avon, Trowbridge and Corsham Community Areas*
- *The Eastern South Glos area covers Marshfield, Cold Ashton, Bitton, Wick &d Abson and Doynton Parish Councils*

Figure 3: BWCE area of Interest, north of B&NES

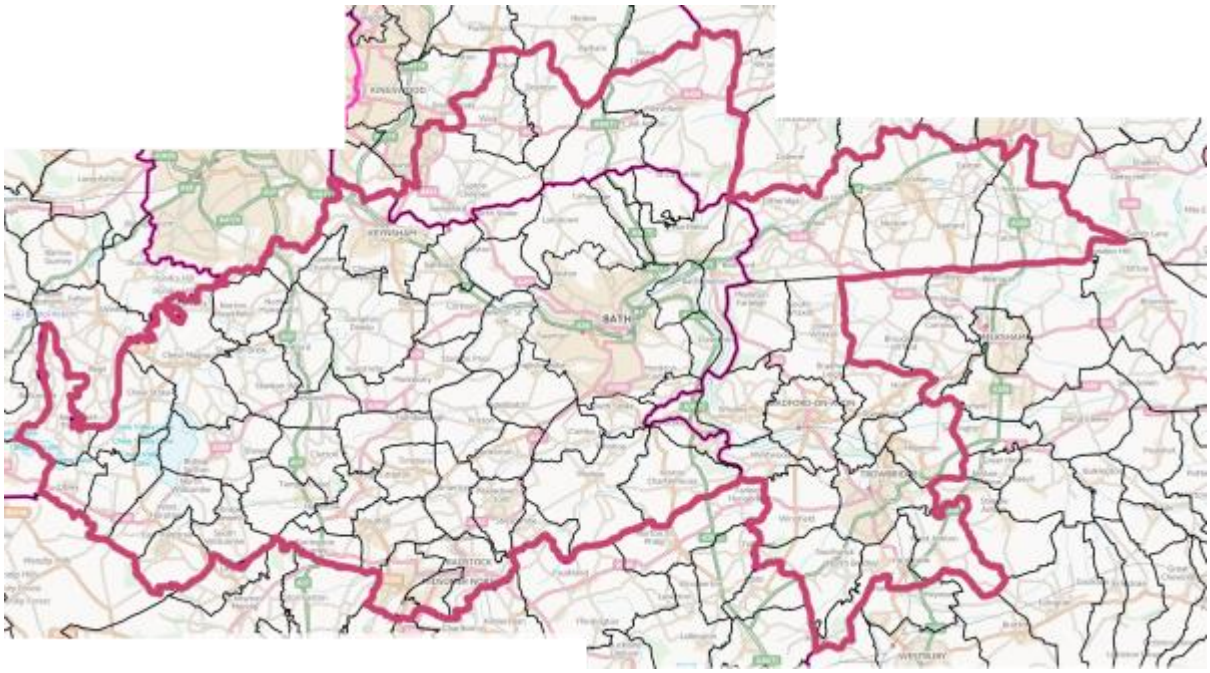


South Glos parishes along the northern border of B&NES.	
26:	**Marshfield**
9:	**Cold Ashton**
13:	**Doynton**
44:	**Wick & Abson**
6:	**Bitton**

Figure 4: BWCE area of interest, east of B&NES

Wiltshire Community Board Areas along the eastern Border of B&NES.
• **Corsham**
• **Bradford on Avon**
• **Trowbridge**

Figure 5: BWCE whole area of Interest



The extent of this area reflects BWCE's origin in community groups in Bath and Corsham. It also offers an area big enough to (a) create a balance between both rural and urban and (b) offer the potential to develop enough renewable energy to make a large contribution towards the energy demands of the whole area. It is also an area with well-established social and economic links and networks. But it has anomalies due to the decision to follow community area board boundaries, for example in the eastern part of the area.

This does not mean that we believe that we should be the only organisation delivering community energy projects in this area. Already we have supported the setting up of Chelwood Community Energy south west of Bath and have had long standing discussions with community groups in Marshfield about also setting up their own community enterprise. We have also had discussions with Keynsham Community Energy, set up after BWCE, around working in partnership in the future.

If community energy is to be successful over the next 10 years within a changing energy market, activities will inevitably develop at many different scales from street to whole area level and will be supported by many different types of community organisation.

We believe a thriving network of community energy organisations in the local area, supporting each other and working in partnership where possible, will be a major indicator of success.

The area as defined here may change over time as we consult further with local communities and respond to local interests.