Bath & West Community Energy Community Business Plan 2022-2025

August 2022

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DOCUMENT HISTORY

July 2021	Member meeting consultation on business plan strategy
September 2021	Presented business plan strategy at AGM
June 2022	Integrated operational plan and updated business strategy in light of energy crisis
July 2022	Member meeting consultation on business plan strategy
August 2022	Updated finances with 2021-2022 accounts and review of assumptions

1 Executive Summary

Climate change is happening now and impacting communities in the UK and across the world at a rapidly accelerating rate, with the greatest impacts hitting the most vulnerable.

Electricity systems around the world are changing in response, with a rapid shift from centralised power generation to decentralised renewable energy sources, dominated by offshore and onshore wind and solar PV.

In the UK, 42% of electricity came from renewables in 2020, more than fossil fuels for the first time ever and up from only 7% in 2010. This is only a start and will need to rapidly increase. National Grid forecasts that by 2030 renewables will account for 80% of electricity generation, with the grid being zero carbon by 2035. National Grid believe that by 2025 they will be able to cope with periods of zero carbon generation on the grid.

Electricity demand will increase as it will play a major role in replacing gas for space heating and oil for transport. But if we are to fully decarbonise the system, we will need to take an active role as consumers in reducing overall energy demand and shifting when we use energy to better match supply from predictable but variable renewable energy sources. The level of change required will be significant and will require active public involvement and support to implement.

By placing democratic control, shared benefit and active participation at the centre of project delivery, community energy can increase trust in energy markets and build a sense of collective purpose that can help drive the significant social and infrastructural change needed to mitigate climate change and improve energy security.

The recent explosion in energy bills, driven in large part by the rapidly increasing cost of gas, which is also driving up the cost of electricity, threatens over a third of the households in the UK with fuel poverty when the price cap rises to over £3,500 in October 2022[1]. This could increase to over half of households in fuel poverty by early 2023[2] when the price cap increase again. This places a massive burden on those least able to carry it. But it also emphasises the dysfunctional nature of the electricity market, with electricity prices led by the cost of gas, rather than being brought down by the cheaper cost of renewable energy.

Many of these issues will require intervention from both government and Ofgem, the energy regulator, to address. But by redistributing surplus and reaching deeper into local communities, community energy can also play a part in easing hardship and supporting households in greatest need.

Operating since 2010, Bath & West Community Energy is a Community Business[3] that has built community owned renewable energy projects that produce the equivalent annual electricity demand from 4,500 homes. These projects have also enabled us to donate over £300,000 in grants to help local groups tackle carbon reduction and fuel poverty in their communities.

Our strong track record provides an excellent foundation for BWCE to scale its impact. This business plan sets out the four key areas for further expansion between now and 2025:

1. Maximising Community Renewables
2. Enabling Local Energy Supply
3. Expanding the Community Energy Role in the Energy Transition
4. Increasing Recognition of BWCE and the Community Energy Model

In a rapidly changing market, BWCE's strategic impact will be influenced by external factors beyond our control as well as internal performance. As a result, this business plan is constructed around three scenarios that illustrate a range of impacts based on the degree to which we meet a set of strategic milestones outlined in section 5.3.

Our business plan goals, objectives and the resulting impacts are summarised in Tables 1 & 2 and Figure 1 below. More detail is provided in sections 4, 5 and 6.

[1] https://www.nea.org.uk/energy-crisis/
[2] https://www.bbc.co.uk/news/business-62643934
[3] *BWCE is a Community Benefit Society, a form of mutual registered with the Financial Conduct Authority, that is required by its constitution to prioritise community benefit, with an asset lock, democratic governance (one person one vote, regardless of shareholding) and a not-for-profit structure.*

Table 1: BWCE Business Plan Goals, Objectives and Role in Delivery

Mission	BWCE is **putting people at the heart of the zero-carbon transition** by placing **ownership and control of energy in local hands**, through clean energy projects that **actively involve and benefit local communities**

Goals	Purpose	Objectives	BWCE Role in Delivery
Maximise Community Renewables	Driving the growth of community ownership of renewable energy can maximise local benefit, increase support for renewable energy and motivate greater action on climate change	1. Develop rooftop and ground mount solar PV and wind turbines 2. Develop community-scale renewable heat pilot 3. Operate existing renewables projects efficiently, maximising output and minimising costs	• Site identification • Project development • Raising finance • Procuring contractors • Owning and operating assets • Maximising community benefit
Enable Local Energy Supply	Selling electricity direct to consumers strengthens the link between supply and demand and maximises the financial viability of community renewables projects	4. Establish long term Power Purchase Agreements with large consumers 5. Deliver peer to peer trading pilot and test viability of community model 6. Test community model for other local supply options, e.g. exempt supply[4], local supply tariffs	• Contracting sale of BWCE electricity generation with licensed supplier, wholesaler and/or direct to consumer • Developing innovation pilots with partners
Maximise the Community Energy Role within the Energy Transition	Testing the community model for enabling consumers to shift electricity demand, reduce fuel bills, increase potential for local renewables, and enhance the flexibility of generation	7. Deliver flexibility pilot and test viability of community model 8. Test community models for energy efficiency and electrifying transport and heat 9. Test approaches to increasing the flexibility of community generation (e.g. flexible grid connection, co-located hydrogen electrolysis or battery storage)	• Aggregating consumers and building smart technology supply chains to support flexibility service provision • Developing, financing, owning and operating community EV charge points and/or heat pumps • Developing and delivering innovation pilots with partners, including energy efficiency
Increase Recognition of BWCE & the Community Energy Model	Increasing the awareness of BWCE and the community energy model creates a foundation on which BWCE can more rapidly deliver its goals and aspirations.	10. Broaden and deepen reach with new and existing audiences 11. Create more powerful stories and tell them more effectively 12. Strengthen strategic partnerships with key local stakeholders	• Engaging with new audiences • Building networks, supporters, membership, online platform presence • Refining communications messages and messenger • Reporting impacts and creating powerful stories around outcomes

Table 2: BWCE Business Plan Outcome Targets

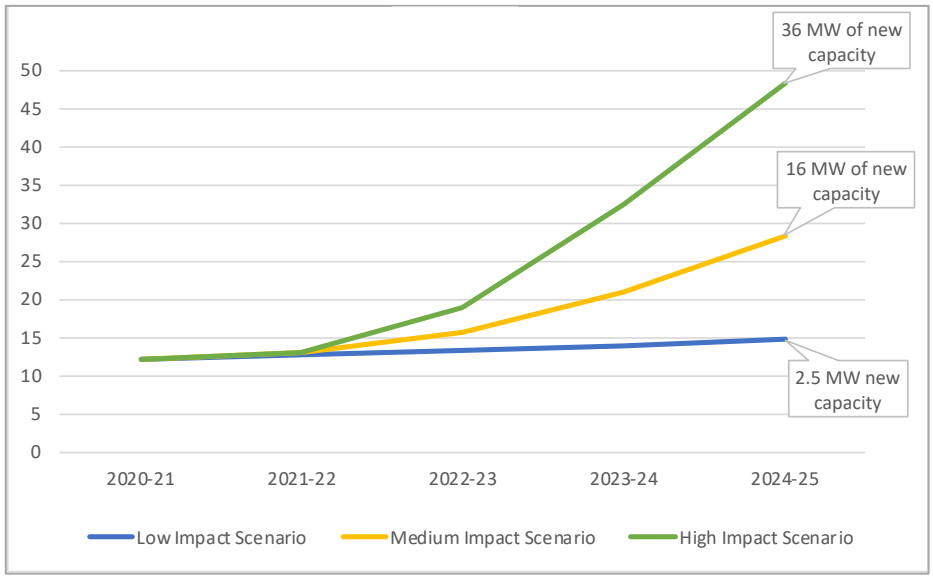
Outcome target	Current position in 2022	Growth to 2025 depending on scenario
Community generation - Number of households' demand matched	4,500	5,200 - 19,600
Community generation – Percentage of all local households' demand matched	4%	5.5% - 17%
Carbon Reduction - Tonnes CO2/yr reduced	3,300	3,800 - 14,400
Biodiversity Improvement on Ground Mount Solar Sites – % net gain	50%	55%
Community Benefit - £/year fuel bill reduction from solar roofs	£55,000 - £80,000	£140,000 - £250,000
Community Benefit - £/year funds donated, average over first 10 years	£40,000	£48,000 - £160,000

[4] *The supply or distribution of electricity outside the current regulatory framework, e.g. supply of less than 5MW of electrical power to consumers* https://www.gov.uk/guidance/electricity-licence-exemptions

Community Benefit - £/year revenue retained in West of England area	£615,000	£730,000 - £2,310,000
Engagement Impact – % of network that takes action to reduce carbon footprint	53%	55% - 70%
Innovation – community business models developed where viable for energy efficiency, EV changepoints, storage, flexibility and heat	No	Partial

The graph below summarises the headline development outputs from goal 1 and suggests potential growth of between 20% and nearly 300% in the community owned renewables projects developed by BWCE between now and 2025.

Figure 1: Potential Renewable Energy Capacity Growth to 2025 (MW)



BWCE's ability to deliver against these target scenarios will be determined by the extent to which the strategic milestones described in section 5.3 are achieved.

Delivering the lower range can be achieved with our current level of staffing. However, delivering above this will require significant organisational growth: we would need to raise between £2.2 million and £25.5 million by 2025 in order to achieve these targets, with up to £17 million from community investment and the balance from bank debt. Under our current share offer we have raised over £1.2 million of new funds. Whilst financing the higher installation targets set out in this plan would require much higher levels of community investment, BWCE raised this level of community finance during the first 5 years of existence. Whilst investment at that time benefited from tax reliefs that are no longer available, investment now can bring other benefits, which are set out in section 8.5.

Each scenario outlined in this document offers financial plans that are cash positive throughout the project lifespan; cover all costs as they fall due; service and repay all capital investment; and generate millions of pounds to be recycled back into local communities as grants via the BWCE Community Fund. When the value of investment back into the business and all cash surplus is considered, BWCE's portfolio of projects is projected to generate between £6.1 million and £27.8 million of community benefit over the 30-year life of our project portfolio. Section 8 provides a summary of financial statements, a commentary on the P&L, balance sheet and cash position, together with a summary of the financing strategy for each scenario.

The next few years will be a critical time for BWCE and the energy sector more generally. The foundations we build between now and 2025 will underpin our ability to achieve the significant cuts in carbon emissions demanded by the climate science to 2030 and beyond.

We may be seeing our ability to limit global temperature rise to the 1.5°C set by the Paris Agreement slip through our fingers. Nonetheless, we have a collective responsibility to do all we can to help avoid the worst impacts of climate change that would leave an inhospitable world for our children and grandchildren to inherit.

2 Bath & West Community Energy

2.1 Background

Bath & West Community Energy (BWCE) was established in June 2010 to develop clean local energy projects, community owned for the common good, following discussions between members of local community groups, (Transition Bath and Transition Corsham) and a series of wider community meetings. BWCE is a Community Benefit Society, a form of mutual registered with the Financial Conduct Authority. This means we are set up primarily for the benefit of the community at large, rather than just for our members. Membership requires a minimum shareholding of £100. Funds raised are used to build community owned renewable energy projects.

We pay interest on members' share capital based on the performance of our renewable energy projects up to a maximum target rate. But because we are set up to benefit the wider community, we do not distribute profits to members in the form of dividends. Interest is regarded as a cost on the business and in years with high project performance, member interest does not go above the maximum target rate.

We have democratic decision-making built into our structure, allocating one member one vote regardless of their level of shareholding. All members can stand for election to our board, which always has at least 50% of directors elected from our membership.

We have an asset lock that prevents our assets being sold for commercial or private gain and protects the founding principles and ethos of the business.

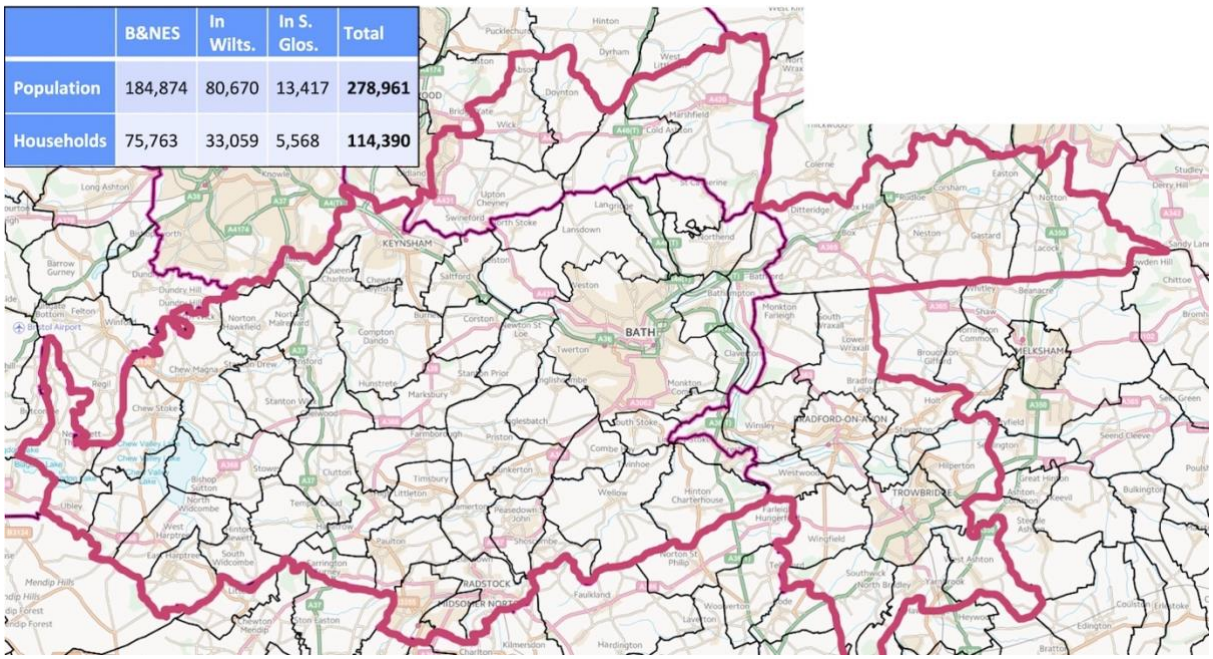
2.2 Local Area

2.2.1 Defined

Our area of benefit covers the Bath and surrounding area. This has been defined as Bath and North East Somerset (B&NES) and the neighbouring community area boards of Corsham, Bradford on Avon and Trowbridge in Wiltshire, and parishes of Marshfield, Bitton, Cold Ashton and Wick and Abson in South Gloucestershire, as outlined in Figure 2.

Figure 2: BWCE's Local Area of Benefit

	B&NES	In Wilts.	In S. Glos.	Total
Population	184,874	80,670	13,417	**278,961**
Households	75,763	33,059	5,568	**114,390**



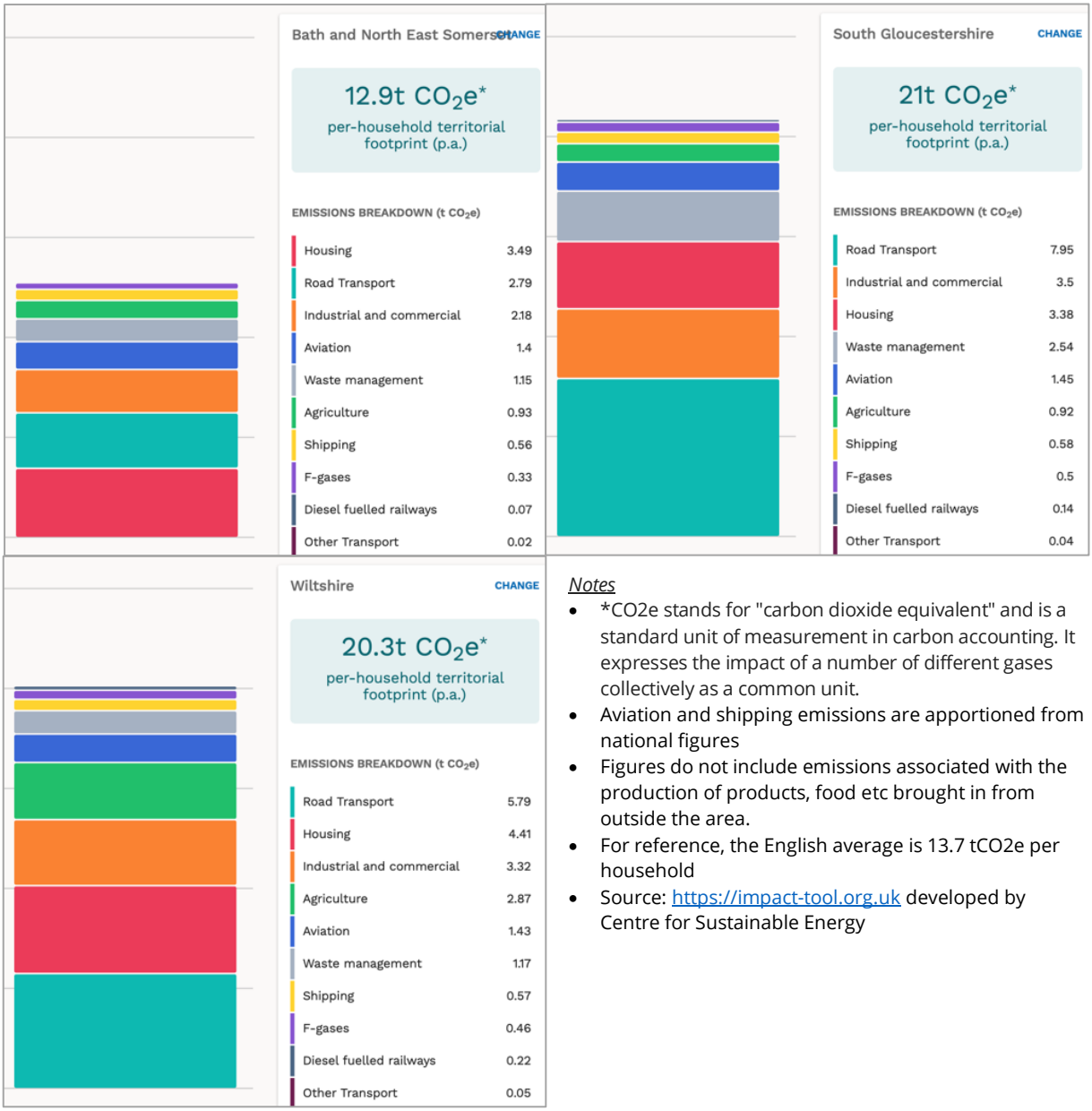
2.2.2 Carbon emissions

Carbon emissions across the three local authorities intersecting BWCE's area are summarised in Figure 3 below. The B&NES average is below the English per household average of 13.7 tCO2e/year, whilst both Wiltshire and South Gloucestershire are above.

Detail is available down to parish level, though the figures vary widely, depending on the level of industry and commerce and agricultural emissions, and the level of road transport allocated to the parish.

There is notable variation in housing emissions, with local authority average figures ranging from 3.5 to 4.5 tCO2e/year up to well over 10 tCO2e/year in some parishes.

Figure 3: Carbon Dioxide Emissions per Household across BWCE's Local Area



Notes

- *CO2e stands for "carbon dioxide equivalent" and is a standard unit of measurement in carbon accounting. It expresses the impact of a number of different gases collectively as a common unit.
- Aviation and shipping emissions are apportioned from national figures
- Figures do not include emissions associated with the production of products, food etc brought in from outside the area.
- For reference, the English average is 13.7 tCO2e per household
- Source: https://impact-tool.org.uk developed by Centre for Sustainable Energy

2.2.3 Fuel Poverty

Generally, BWCE's area is relatively affluent with below average levels of fuel poverty when compared to the English national average which shows 13.2% of households in fuel poverty in 2020. However, there are pockets of deprivation and fuel poverty in Bath, as summarised below and the situation has got very much worse with the rapid escalation in energy prices outlined in the executive summary. With the energy cap

now rising every three months and estimates suggesting it could go as high as over £7,000 next year[5], fuel poverty will become an issue for the majority, not the minority of households.

Table 3: Percentage of Households in Fuel Poverty Across BWCE's Local Area based on 2020 data

Local Authority	% of households in Fuel Poverty	Number of LSOAs at least 25% above national average	Number of LSOAs 25% above average and in BWCE's area
Bath & North East Somerset	11%	6 (5%)	6 (5%)
Wiltshire	10%	7 (3%)	0 (0%)
South Gloucestershire	8%	0 (0%)	0 (0%)

Notes

- LSOA - Lower Super Output Area, part of a geographical hierarchy used to report small area statistics in England and Wales and each covers on average around 650 households
- English average; 13.2% of households in Fuel Poverty in 2020
- Source: https://www.gov.uk/government/statistics/sub-regional-fuel-poverty-data-2022

Figure 4: Fuel Poverty Map Across BWCE's Local Area

Notes

- Source: https://www.nongasmap.org.uk
- The black areas to the left of the B&NES area are the Chew Valley and Blagdon lakes
- Local authority boundaries are shown by the dotted yellow lines

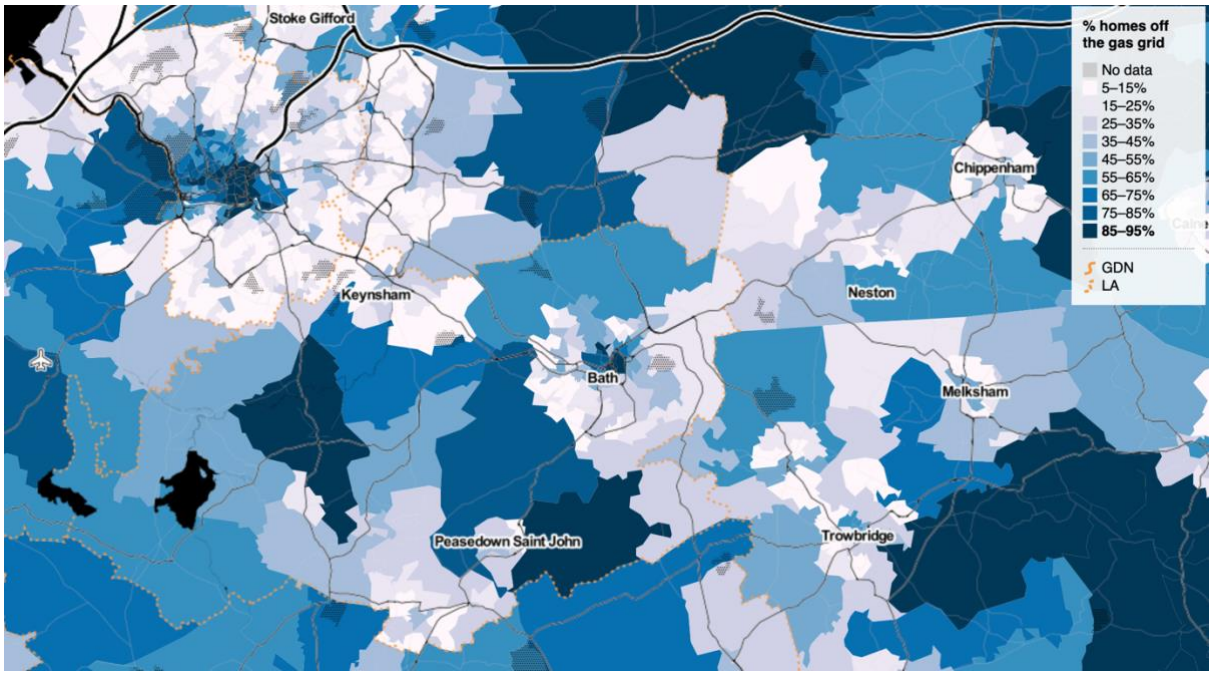
2.2.4 Gas grid connection

The availability of gas to consumers is a major consideration given the need to rapidly shift away from fossil fuel use. Historically, the relatively low cost of gas has meant that those with access to gas have had less incentive to shift to heat pumps or electric cooking. Whilst gas prices have escalated, so has have electricity prices.

Although around 15% of households in B&NES, 30% in Wiltshire and 12% in South Gloucestershire[6] are off the gas grid, as Figure 5 shows, there are many parts of BWCE's area that do not have gas, particularly outside of the urban areas.

[5] https://www.itv.com/news/2022-08-27/energy-bills-forecast-to-hit-7700-next-year-in-worst-price-cap-warning-yet
[6] https://www.gov.uk/government/statistics/sub-national-estimates-of-households-not-connected-to-the-gas-network

Figure 5: Map of Off Gas Grid Areas Across BWCE's Local Area



Notes

- Source: https://www.nongasmap.org.uk
- The black areas to the left of the B&NES area are the Chew Valley and Blagdon lakes (more easily distinguished on the previous map)
- Local authority boundaries are shown by the dotted yellow lines

2.3 Achievements to Date

2.3.1 Projects

Since 2010, BWCE has installed 13.2 MW of renewable energy, enough to match the annual electricity demand from 4,500 homes[7] and reduce emissions equivalent to the carbon footprint of 900 B&NES residents[8]. Our projects include solar PV systems on the roofs of eleven schools and four community buildings, five ground mounted solar arrays and a modern water wheel.

Most of these installations were carried between 2011 and 2016, when there was a secure income stream from the government subsidy mechanism, the Feed in Tariff. Since then, the Feed in Tariff was cut and then cancelled. Only recently have capital costs have fallen sufficiently to offset this. As a result, we have been able to install a further 850kW of roof top solar during the last year on 7 schools and community buildings with a significant pipeline of new projects coming through behind these.

2.3.2 Funding

We have raised nearly £20 million through community finance and loans from Triodos bank to build our renewable energy projects. We have secured £850,000 in grant funding from Power to Change, Friends Provident Foundation, B&NES Council, Innovate UK, UK Government and the European Union, to help develop new renewables and deliver energy demand management projects.

We have also distributed nearly £300,000 generated by our renewables projects to support local community carbon reduction and fuel poverty projects via our independent Community Fund. We have worked alongside other community energy projects, supporting them to raise £8 million through community fundraises and install a further 13MW of renewable energy generation.

[7] Assumes 2,900 kWh per year consumed by a typical home without electric storage heaters. From Ofgem https://www.ofgem.gov.uk/publications/decision-typical-domestic-consumption-values-2020

[8] Assumes 0.21107 kg CO2e/kWh of electricity generated, including transmission and distribution losses https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2022

Also assumes 3.1 tonnes CO2 emissions/capita for residents in Bath & North East Somerset. For comparison Wiltshire is 4.2 tonnes CO2 emissions/capita and South Glos 3.7 tonnes/capita. Published in 2022 by BEIS https://www.gov.uk/government/statistics/uk-local-authority-and-regional-greenhouse-gas-emissions-national-statistics-2005-to-2020

2.3.3 Partnerships

We have supported community energy organisations including Wiltshire Wildlife Community Energy, Low Carbon Gordano, Frome Renewable Energy Coop, Chelwood Community Energy and Kennet Community Energy, and we are currently working in partnership with Keynsham Community Energy to develop new projects.

We have strong partnerships with local authorities in our area, particularly Bath & North East Somerset Council, as well as many local parish councils, community groups and community networks, landowners and businesses which are together helping to drive change.

2.3.4 Innovation

In addition to the installation of renewable energy we have run projects around energy efficiency and energy demand management, including Empower, funded by Innovate UK, and Flex Community, funded by Power to Change and the European Union.

Flex Community is testing consumer participation in shifting electricity demand away from peak times and is assessing the community energy role in increasing take up and building confidence in new markets. Through Flex Community, BWCE is working closely with Stemy Energy who operate a smart cloud based software platform that helps increase the efficiency of consumer electricity demand, trade flexibility with grid operators and reduce electricity bills for consumers. The project runs through to October 2023.

We also ran Solar Streets, a pilot scheme funded by Power to Change and Friends Provident Foundation and part of Western Power Distribution's programme of substation monitoring, Open LV. The project installed solar PV and batteries in two streets in Bath, worked with householders on demand management and monitored electricity usage at two local sub-stations.

2.4 Last Business Plan Review

Our previous business plan ended in 2021 and spanned the period during which the Feed in Tariff closed, which made it difficult to develop new large scale renewables projects and necessitated a focus on roof top solar schemes, where nearly all the electricity generated could be sold to the building user.

As a result, that business plan set a modest goal in terms of new renewables and focussed on expanding our community energy approach through energy supply, developing pilot projects around demand management, battery storage, energy efficiency and renewable heat, improving our approach to community outreach and strengthening BWCE's capacity to deliver.

Some of the achievements during the last business plan period include:

- Securing grant funding for pilot projects Solar Streets and Flex Community
- Carrying out a grant funded feasibility study into setting up a community owned electric vehicle charging network in the Bradford on Avon area.
- Expanding BWCE's community outreach programme in spite of lockdown restrictions, with recruitment of Nick Bird as Communications and Community Outreach Co-ordinator and the setting up of a Supporters Network.
- Launching a local share offer to build local membership, which recently topped £1 million
- Creating new development capacity through a strategic partnership with RenewEV to deliver new project development
- Working on a project development pipeline of 15MW of new roof top and ground mount solar PV, which would more than double our existing capacity.
- Reducing our cost of capital by 1% by re-financing our project debt with Triodos and reducing project costs through new operation and maintenance contracts and a reduction in asset management and project insurance fees.

Areas that were not so successful included:

- Launch of a local energy supply offer in partnership with Bath & North East Somerset Council and Our Power, the only community owned energy supplier in the market. Unfortunately, like many

other private and public sector owned energy suppliers, Our Power went into administration. We are now looking at alternative approaches to building local energy supply opportunities.

- Commissioning new renewables. Whilst we have an excellent pipeline of projects under active development, delays due to the Covid 19 pandemic have meant that we were severely delayed in moving forward with the projects under development.
- Pilot renewable heat, large scale storage and energy efficiency projects were not developed – Larger scale storage, co-located with our ground mounted solar schemes, was reviewed but found to be unviable at the required scale. With the successful development work around Solar Streets and Flex Community we did not have the capacity or resource to develop pilot projects in other areas.

Learning that we have adopted for this business plan includes:

- The fall in solar PV installation cost has increased the potential for grid connected renewables, as well as roof top solar PV.
- However, costs are not yet low enough to deliver grid connected renewables below 5-10MW without longer term price security, potentially available through long term Power Purchase Agreements (PPAs).
- Usually, PPAs are secured for only 12-24 months with wholesale purchasers. However, discussions with various public sector consumers suggest that there is interest in securing long term PPAs with smaller scale generating plant and at price points that may offer sufficient value to make projects viable. Offering in turn to the consumer, real additionality in terms of new renewables and resulting carbon reduction.
- There is significant demand for renewables from land owners in our area interested in installing renewable energy, although meeting all these opportunities will increase the need for additional staff capacity.
- Growth in flexibility programmes has increased demand for technical and supply chain expertise, which competes with asset development needs for technical staff time.
- There are many moving elements involved in asset development which increases the potential for project delays when one aspect encounters problems. This has been particularly evident during the pandemic and the resulting lockdowns, as site and landowners reduce focus on things that are not central to their day to day activities.
- Grid availability is severely constrained in our local area, whilst WPD have plans for upgrades over the next 18 months it is unclear whether these will significantly impact our area in the short term.
- We see increasing local demand for community heat networks emerging during discussions with local communities.
- There are many opportunities for BWCE to grow and make an impact but focus and targeting growth and prioritising areas of operation will be critical to our longer term success.
- The regulatory and energy market context is in such a state of flux that it can be challenging to identify where value will lie 2-3 years in the future.

3 Community Energy Vision

3.1 The Challenge

Climate change is happening now: the impact will be bad, but we do still have choices which will make a positive difference

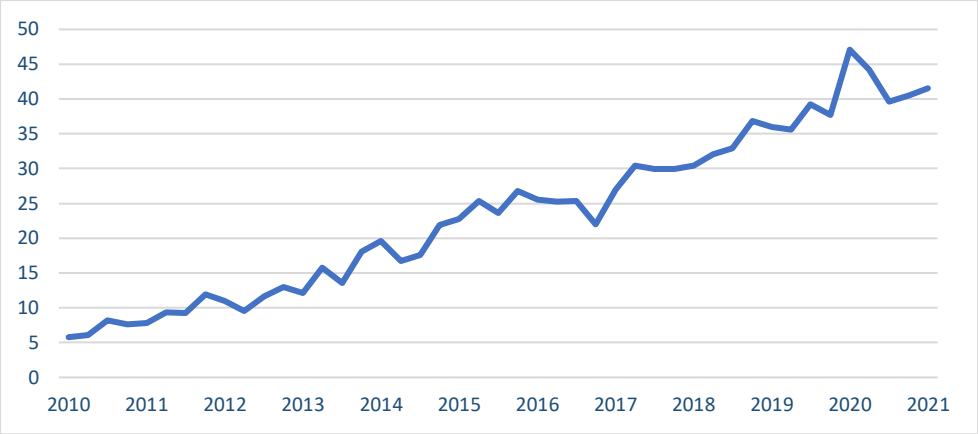
Human induced climate heating is having ever more impact on our planet. Our actions are causing weather patterns to shift, ice caps to melt more rapidly, sea levels to rise and even the earth's axis to shift. These changes affect us all but, disproportionately impact the most vulnerable people. These problems will increase rapidly over our children's lifetimes unless we make immediate changes during the next ten years to reduce carbon emissions from our use of fossil fuels, coal, oil, and gas.

We have made some progress but there is so much more that urgently needs to be done urgently …

The UK has taken some important steps towards the zero carbon transition. Legally binding targets have been established, although there questions remain about whether they align with the latest scientific requirements for carbon reduction.

UK carbon emissions have fallen by 50% since 1990[9], initially driven by a switch from coal to gas for electricity generation in the 1990s and 2000s, followed by a rapid growth in renewable electricity from 7% of total electricity generation in 2010 to over 40% in 2021[10], see figure 6 below.

Figure 6: Quarterly Growth in Contribution to UK Electricity Generation from Renewables (%)



Decarbonising our energy system will significantly increase demand for electricity …

We know that to decarbonise our energy system we must stop using gas and oil in our buildings and vehicles. This will result in a significant increase in electricity demand for heating and transport (and over time, hydrogen will also play a role).

… and as a result the need for renewable energy will rise even further

The rapid, short to medium term increase in electricity demand will be met with further need for renewable energy, principally from onshore and offshore wind and solar PV. These technologies will be able to provide the electricity we need at competitive prices in comparison to current costs of gas and oil.

National Grid's 2021 Future Energy Scenarios[11] emphasise the scale of the challenge over the next 10 years. They highlight the need for an increase in contribution from renewable energy sources to 80%, by 2030, and complete decarbonisation the electricity system by 2035. This last goal has now been adopted by government.[12]

[9] *See here for details https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1051408/2020-final-greenhouse-gas-emissions-statistical-release.pdf*
[10] *See here for details https://www.gov.uk/government/collections/renewables-statistics*
[11] *See here for details https://www.nationalgrideso.com/future-energy/future-energy-scenarios/fes-2021*
[12] *See here for details https://www.gov.uk/government/news/plans-unveiled-to-decarbonise-uk-power-system-by-2035*

National Grid's forecasts include an increase in onshore wind and solar from 25GW in 2020, to between 49 and 66GW by 2030, and an increase in offshore wind from 10GW in 2020, to between 31 and 47GW by 2030. Government has committed to 40GW of offshore wind by 2030.[13]

From a consumer perspective, the National Grid suggest the installation of heat pumps for heating could grow from less than 30,000 installed per year in 2020, to 600,000 installed per year by as soon as 2025, accompanied by equally rapid growth in electric vehicle numbers and high levels of energy efficiency retrofit. Whilst electricity demand will increase, overall energy demand and peak demand levels will need to also fall rapidly. Depending on technology development, other marine renewables such as tidal and wave energy may also play a role in the medium term.

Many see a role for nuclear power, but it seems unlikely that new nuclear power stations will be built before 2030 when the IPCC believes we need to have made significant cuts in carbon emissions if we are to stand any chance of meeting goals outlined in the Paris agreement. There also remain unanswered questions about safety, nuclear waste and decommissioning and the financial cost of the high price guarantees made by government necessary to underwrite investment in nuclear.

The recent explosion in energy bills emphasises the dysfunctional nature of the energy market and threatens doubling those in fuel poverty

Average energy bills have risen sharply during 2021 and 2022 as wholesale electricity prices have tripled over the same period[14]. Price increases have been driven by gas supply constraints, magnified by the war in Ukraine, forcing up the price of gas. Electricity prices follow the price of gas as the fuel that is most often used to generate the last bit of electricity to meet demand on the system. This creates an inflated electricity market that is not accurately integrating the cheaper price of renewable energy. Ofgem, the energy regulator is currently reviewing the structure of the electricity market to address this and several other issues.

The escalating rise in the price of energy that domestic consumers in particular pay has a devastating impact on the most vulnerable. NEA estimates that the increase in the energy cap to over £3,500 per year will double the numbers in fuel poverty to nearly 9 million households.[15] The choice between eating and heating becomes very real for people, as exemplified by the numbers of people contacting the Citizens Advice Bureau for support, with triple the number contacting them for both food bank and energy related referrals.[16]

High levels of variable renewable energy will require a more flexible system able to balance supply and demand

Whilst renewable energy is at the centre of the effort to decarbonise the electricity system, key renewable energy sources reliant on the sun and wind can't be controlled to follow energy demand in the same way as fossil fuelled power stations can. This presents challenges for the grid network, particularly during times of high demand, such as the early evening. During peak times, electricity is also at its most expensive and carbon intensive as gas and oil-fired generators are turned on to meet demand.

We will need growth and innovation for storage technologies as well changes in how we consume energy

Increased use of storage technologies will play a significant role in stabilising demand, although technologies like Lithium-ion batteries bring their own sustainability impact which needs to be considered. Battery storage alone will not be enough: we as consumers will need to think more about our consumption, minimising usage at peak times. Smart technologies and simple behaviour changes will be vital in enabling consumers to shift demand away from peak times and reduce stress on constrained grid networks struggling to cope with increased electricity use.

Significant change will require confidence and trust in an energy sector that is struggling

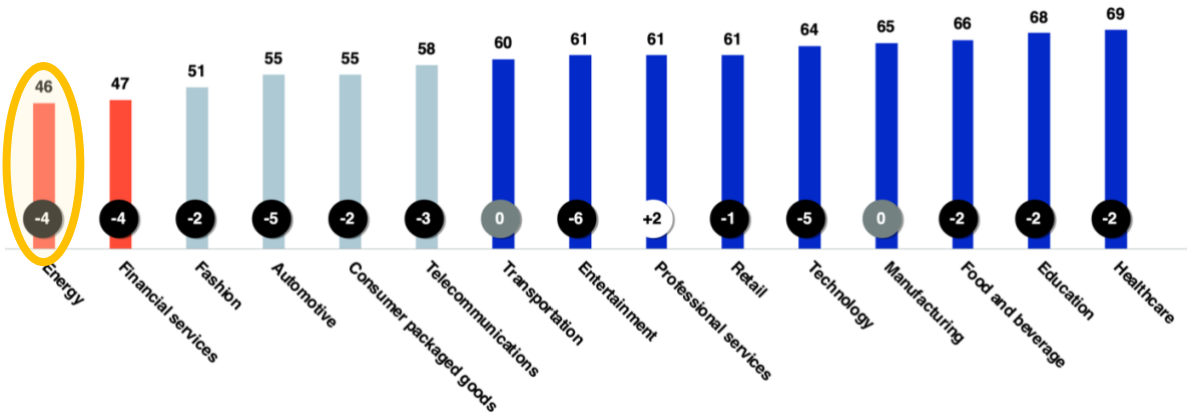
Changes in how we use energy will be massive, causing particular challenges at a time when the energy system is already facing rapid regulatory change. Consumer awareness of energy remains low and discourse can be vague, intangible and difficult to grasp. In addition, the energy sector faces instability as a

[13] *See here for details https://www.gov.uk/government/news/new-plans-to-make-uk-world-leader-in-green-energy*
[14] *See here for details https://www.ofgem.gov.uk/wholesale-market-indicators*
[15] *See here for details https://www.nea.org.uk/energy-crisis/*
[16] *See here for details https://www.citizensadvice.org.uk/about-us/about-us1/media/press-releases/winter-crisis-in-summer-citizens-advice-reveals-latest-insights-as-cost-of-living-pressures-pile-on/*

result of its rapid transition and reorientation towards renewable sources, with many aspects of the regulatory framework in a state of flux.

This is not helped by historically low levels of consumer confidence and trust in many of the big players in the energy supply industry who are seeking to drive change forward.[17] This is starkly illustrated by the recent survey of consumer trust carried out by Edelman, summarised in Figure 7, that suggests that the energy sector is the least trusted sector 'to do the right thing'.

Figure 7: Change in year of Consumer Trust in Sectors of the Economy 'To Do What Is Right' is Falling



Edelman 2020

Even as our use of electricity increases, our overall demand for energy will need to fall if we hope to meet our needs from renewable energy in an equitable and sustainable way. An assumption that we can carry on as normal and just see a switch from fossil fuels to renewable energy will not be enough. We need to fundamentally change the way we think about and use energy.

Without a concerted effort to raise awareness of the need to act and to rebuild trust in new energy markets and consumer engagement, it seems unlikely that we will see the rapid adoption of the new behaviours that our current situation demands.

3.2 Community Action as Part of the Solution

By placing democratic control, shared benefit and active participation at the centre of project delivery, BWCE believes that community energy can help underpin the significant infrastructural and cultural change needed to reduce the impact of climate change and increase our energy security.

Successful community energy projects have the potential to create a sense of collective purpose where:

- I see 'people like me' in my community involved
- I keep hearing about opportunities for involvement through many different local 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
- I can see tangible benefits for me.

This sense of collective purpose can help to normalise the adoption of demand reduction behaviours, encourage the take up of energy efficiency measures and build support for local renewables. Community energy can help to underpin the rapid role-out of a decentralised energy supply system by giving local people a stake.

This business plan covers the operating period to 2025 but is set in the context of a wider imperative to make significant cuts in carbon emissions by 2030.

Our vision is for an energy system where:

[17] *See here for full report – figure taken from page 58 of full report https://www.edelman.co.uk/research/2020-trust-barometer-uk-results The more recent 2021 report doesn't have comparable results on this issue.*

- Local people can buy low-cost, clean energy direct from local energy projects
- Energy projects are owned and shaped by their communities – giving local people a voice in decision-making, and a stake in local projects
- We maximise the proportion of our electricity that comes from renewable sources with a more flexible network that better matches energy supply and demand at a local level
- Collective action helps drive social change around energy behaviours and drives down energy demand

Community energy rests at the centre of this vision by harnessing local capital, generating returns that recycle into the local economy, increasing the profile of local energy supply and so shining a spotlight on how and when we use energy on a day-to-day basis.

Community energy puts people at the heart of the energy system. It brings them together to take democratic climate action by understanding, generating, owning, using, and saving energy. Community energy provides clear accountability and participatory governance within the energy system, which is empowering, transparent and equitable. It accelerates the transition to a zero-carbon energy system while increasing community resilience. And it includes communities which may otherwise be excluded from the energy system.

But it's more than this. Building a zero-carbon energy system is a social issue that requires a just transition. Community energy organisations are already at the forefront of energy system innovation; they have initiated behaviour change, accelerated the decentralisation of the energy system, reduced carbon emissions and upskilled communities across the UK. Community energy does all of this by building the consent, trust and active participation needed to ensure a rapid and just energy transition.

Community Energy England 2020

4 BWCE Delivery to 2025

4.1 Community Energy and the UK Energy Market

Community energy is greatly impacted by the policy and regulations that govern the wider energy market.

We believe that there are strong arguments for creating specific community energy policies in relation to:

- investment (e.g. eligibility for SITR tax relief);
- income security (e.g. access to a simplified Contracts for Difference auction process for projects less than 5MW at national and local level);
- development finance (replacement of Rural Community Energy Fund to also cover urban areas)
- innovation funds (requirements on grid operators and energy suppliers to engage communities within innovation projects);
- new community business models (e.g. creating value to enable community action to motivate and expand household and small business take up of energy efficiency retrofit, demand shifting/demand reduction and electrification).

However, if community energy is to be successful at scale it will also require a mainstream energy market that values distributed renewable energy, brings forward onshore wind, enables affordable grid connection, supports storage at all scales, enables whole house zero carbon retrofit, incentivises demand flexibility, and supports the electrification of transport. Even after the publication of the governments Net Zero Strategy[18], questions remain on all of these issues.

4.2 Positioning Community Energy

In order for community energy to develop a central role within the energy transition it will face significant pressure from a commercial sector which is looking to retain its grip on the market and is not shy in adopting a community narrative at its own convenience.

Community energy does not have the resources of the commercial sector or the profile or scale of the public sector. It is unlikely to play a significant role in driving technological innovation or be in a position to take substantial risk with funds raised from local communities.

So, if community energy is to play its part in delivering net zero then it must:

1. deliver outcomes that others are less able to offer;
2. strengthen its unique position at the interface between market operation and campaigning social innovation;
3. build effective partnerships across both commercial and public sectors to deliver outcomes where community energy alone will struggle to deliver;
4. maximise value and resilience by building business models that are interlinked and mutually reinforcing

4.3 BWCE's Offer

BWCE delivers renewable energy and carbon reduction solutions, like many commercial and public sector organisations. By adopting a strong community model, we also offer:

1. Local control and accountability
2. Local presence and an opportunity to participate
3. Financial transparency and a not for profit approach that maximises community benefit

BWCE aims to: Build knowledge, confidence and trust, and raise the profile of energy and climate change issues in people's day to day lives.

In order to: Secure public consent for, commitment to, and active participation in accelerating the transition to net zero within our energy system.

Community energy has a unique capacity to connect at a local level and can deliver significant added value by interlinking outcomes across the whole spectrum from generation to supply and demand, as outlined below.

[18] https://www.gov.uk/government/publications/net-zero-strategy

Generation Delivering: community owned assets
Purpose: offering local people an opportunity to be part of the solution, not just the problem, and harnessing surpluses to further accelerate the local energy transition in a socially just way
Out of scope: for example, leaving others to deliver outside of our geographical area

Supply Delivering: through corporate PPAs and peer to peer trading
Purpose: offering consumers greater connection between generation and demand
Out of scope: for example, leaving others to be licensed suppliers

Demand Delivering: through consumer aggregation delivering flexibility and energy efficiency
Purpose: offering a route to consumer take up and participation
Out of scope: for example, leaving others to build flexibility platforms, carry out trading or manage teams of fitters.

This integrated approach could help speed the transition to net zero by maximising the strengths community energy has to offer. In addition, as energy markets become more interdependent this approach can also mitigate operational risk and increase financial viability.

4.4 Mission

BWCE is putting people at the heart of the transition to net zero by placing ownership and control of energy in the hands of consumers via clean energy projects that actively involve and benefit local communities.

Clean Local Energy, Community Owned for the Common Good

4.5 BWCE Goals and Objectives to 2025

Table 4: BWCE Goals and Objectives to 2025

Goals	Purpose	Objectives	BWCE Role
Maximise Community Renewables	Driving the growth of community ownership of renewable energy can maximise local benefit, increase support for renewable energy and motivate greater action on climate change	1. Develop roof top and ground mount solar PV and wind turbines 2. Develop community scale renewable heat pilot 3. Operate existing renewables projects efficiently, maximising output and minimising costs	• Site identification • Project development • Raising finance, Procuring contractors • Owning and operating assets • Maximising community benefit
Enable Local Energy Supply	Selling electricity direct to consumers strengthens the link between supply and demand and maximises the financial viability of community renewables projects	4. Establish long term Power Purchase Agreements with large consumers 5. Deliver peer to peer trading pilot and test viability of community model 6. Test viability of community model for other local supply options, e.g. exempt supply[19], local supply tariffs	• Contracting the sale of BWCE electricity generation with licensed supplier, wholesaler and/or direct with consumer • Developing and delivering innovation pilots with partners
Expanding the Community Energy Role in the Energy Transition	Testing the community model for enabling consumers to shift electricity demand, reduce fuel bills, increase potential for local renewables, and enhance the flexibility of generation	7. Deliver flexibility pilot and test viability of community model 8. Test community models for energy efficiency and electrifying transport and heat 9. Test approaches to increasing the flexibility of community generation (e.g. flexible grid connection, co-	• Aggregating consumers and building smart technology supply chains to support flexibility service provision • Developing, financing, owning and operating community EV charge points and/or heat pumps

[19] *The supply or distribution of electricity outside the current regulatory framework, e.g. supply of less than 5MW of electrical power to consumers https://www.gov.uk/guidance/electricity-licence-exemptions*

		located hydrogen electrolysis or battery storage)	• Developing and delivering innovation pilots with partners, including energy efficiency
Increase Recognition of BWCE & the Community Energy Model	Increasing the awareness of BWCE and the community energy model creates a foundation on which BWCE can more rapidly deliver its goals and aspirations.	10. Broaden and deepen reach with new and existing audiences 11. Create more powerful stories and tell them more effectively 12. Strengthen strategic partnerships with key local stakeholders	• Engaging with new audiences • Building networks, supporters, membership, online platform presence • Refining communications messages and messenger • Reporting impacts and creating powerful stories around outcomes

4.6 Key Outcomes

The following five outcomes represent a summary of what BWCE is trying to achieve over the period to 2025:

1. **Increased Community Generation:** Increasing the proportion of local electricity consumption met by generation from BWCE's community owned renewable energy projects.
2. **Increased Carbon Reduction:** Reducing carbon emissions through BWCE's community owned renewable energy projects.
3. **Increased Community Benefit:** Increasing the community benefit created by BWCE's renewable energy projects.
4. **More Engaged Energy Communities:** Increasing the number of local people that are actively engaged and taking action in support of BWCE and its goals.
5. **A Broader Role for Community Energy within the Energy Transition:** Strengthening and expanding the way BWCE delivers community assets and services in order to support a faster energy transition.

These outcomes are summarised in the set of targets outlined in section 6 below.

4.7 Community Benefit

As a Community Benefit Society, it is important to be clear about the nature of community benefit that we are seeking to generate. We consider those community benefits to include

- Carbon reduction delivered by BWCE's projects
- Fuel bill reduction for consumers resulting via the supply of renewable electricity and/or energy demand management projects
- Cash surpluses generated by BWCE as a not-for-profit community business and held in reserve
- Cash surpluses generated by BWCE as a not-for-profit community business and re-distributed as grants back into the local community to enable local groups act on carbon reduction and fuel poverty
- Investment in community services through the growth of BWCE as a community business
- Local social and economic value generated through employment of staff, and indirect employment of volunteers in jobs as a result of engagement with BWCE
- Local social and economic value generated by the retention of project income within the local area that would not have been retained locally under a traditional commercial business model

5 Operational Plan

5.1 Strengths, Weaknesses, Opportunities, Threats

Table 5 summarises an organisation-wide view of BWCE's potential for delivering the goals and objectives outlined above. This analysis informs BWCE's operational plan which is outlined below.

Table 5: SWOT Analysis

Strengths	Weaknesses
• BWCE has built credibility and trust amongst its members, who are active advocates for the business. • BWCE has proven the not for profit and democratic governance model, and has a good track record in raising finance and delivering projects and community benefit. • Strong local connections, networks and partnerships in public, community and commercial sectors, particularly in B&NES. • Size of business, diversity of assets and 'patient' investor members gives revenue stability, permanent staff and business resilience. • Strong staff team & board • Experience and knowledge gained through community EV feasibility study and flexibility pilot projects	• BWCE and the community energy model does not yet have high enough public recognition. • Until recently, overly focussed on solar PV and a single business model around community asset ownership • Commercial viability of storage technologies • Immaturity and complexity of flexibility markets • Some new opportunities bring more complex knowledge and system requirements. • Public sector partnerships in Wiltshire and South Glos need to be strengthened to the level in B&NES. • Over-reliance on key staff. • Relatively small portfolio increases the cost of commercial debt compared to private sector • Lack of government support for community energy and energy efficiency
Opportunities	**Threats**
• Learning from other community energy groups and from the commercial sector to expand BWCE's community offer to include flexibility, storage, renewable heat and demand reduction services. • Increased focus on climate change and energy issues in particular following energy crisis • Community model increasing potential for positive community support • Increasing revenue for existing and new assets through local supply. • Increased BWCE income from high wholesale electricity prices offers potential for investment in opportunities to reduce retail electricity bills • Grant funding available to pump prime BWCE's activities in new work areas • Deeper partnerships with commercial and public sector in development of new renewables projects and community services. • B&NES Local Plan policies if adopted bring potential for onshore wind energy projects • New collaborations with social businesses not in the renewable energy space. • Expanding outreach through new and existing networks to increase awareness and action in support of BWCE's goals.	• Competition for renewable energy sites with private and public sector interests • Private sector developing community branded, business as usual offers • Competing with traditional commercial business models that are familiar, represent the norm and so are much easier to adopt • Other generators and PPA providers, able to offer lower cost PPAs to consumers • Potential for poor execution by partners or contractors undermining trust/confidence in BWCE. • Opportunity cost of failed innovation impacting on the delivery of new renewable energy project development. • Government regulatory and/or policy changes negatively impact on project viability. • Grant funding for innovation projects undermines focus on growing financially viable trading. • Constrained grid capacity limiting opportunities • Community push back to large scale solar and wind turbines • Inability to secure enough sites for new renewables capacity that can be taken through to commissioning. • Competing with many other issues in people's lives

5.2 Delivery Plan

Table 6 provides a more detailed analysis of the key deliverables targeted by 2025, together with mechanisms for delivery, current status and mid-term priorities. Key objectives are outlined again for ease of reference.

Table 6: Delivery Plan

Goals	Objectives	Delivery Mechanisms	Current Status & Mid Term Priorities to 2023	Deliverables by 2025
Maximise Community Renewables	1. Develop roof top & ground mount solar PV and wind turbines 2. Develop community scale renewable heat pilot 3. Operate existing renewables projects efficiently, maximising output and community benefit	• Development services contracted via RenewEV but delivered as part of BWCE's team • Proactive and reactive site search • Partnership development with large estate owners in public and private sector • Site development with (a) internal resources, supported by grant where possible, (b) in partnership with commercial developers and (c) asset purchase • (b) and (c) particularly relevant for larger ground mount schemes • Raising finance, contractor procurement, commissioning • Delivery of innovation projects and new work streams through partnership with commercial and public sector partners • Asset management services provided by Bright Renewables	*Status:* • 15MW of solar ground mount & rooftop projects under active development • Sites for wind turbines under consideration • Discussions underway with potential storage providers and commercial developers on large solar sites • RCEF funding secured for 3 solar ground mount feasibility studies • Strong links with all listed partners • Significant development of asset management service through Bright Renewables *Priorities to 2023:* • Supporting consultation during B&NES Local Plan adoption process • Scoping and agreeing revised B&NES Council partnership • Improving relationships with Wiltshire and South Glos Councils • Supporting development of stronger sub regional energy and climate policy • Building community support for larger solar and wind projects • Commissioning 3.5MW of new solar including 1 new ground mount scheme • Identifying and scoping opportunity for trial heat project • Identifying and scoping site(s) for wind turbines • Expanding asset management service for rooftop PV • Operating existing sites to target, given solar irradiance	• Between 2 – 3 MW of rooftop solar • Between 0.5 - 2.5 MW of private wire connected solar and wind • Between 0 – 15 MW of grid connected ground mount solar • Between 0 - 5.5 MW of grid connected wind turbines • At least one pilot of a community scale renewable heat project • Smoothly operating renewables assets with minimum downtime and operational losses
Enable Local Energy Supply	4. Establish long term Power Purchase Agreements with large consumers	• Grant funding, for example Rural Community Energy Fund, enabling investment into PPA development with key partners	*Status*: • Advanced discussions with public sector partners and large consumers around long term PPAs	• Long term PPA's signed with large consumers for new grid connected renewables and aggregated export from new rooftop solar[20]

[20] *Creating more value for exported generation from rooftop solar can increase the scale of solar systems installed beyond that required just to meet on site demand*

Goals	Objectives	Delivery Mechanisms	Current Status & Mid Term Priorities to 2023	Deliverables by 2025
	5. Deliver peer to peer trading pilot & test viability of community model 6. Test viability of community model for other local supply options, e.g. exempt supply, local supply tariffs	• Research and review of wider experience on exempt supply, peer to peer trading, long term and corporate PPAs, within the public and commercial sectors • Partnership development with energy suppliers, potential public and FE/HE sector off takers • Targeting procurement processes for corporate PPAs by Q2 2022 • Flex Community project enabling partnership with Stemy Energy and their platform functionality around peer-to-peer trading provides vehicle for initial peer to peer trading pilot	• Flex community pilot underway that includes peer-to-peer trading pilots *Priorities to 2023:* • Agreeing first long term PPA for grid connected renewables • Assessing potential for innovative/long term PPAs to aggregate rooftop PV export • Implementing peer to peer trading trials within Flex Community • Assessing exempt license and/or other market/regulatory innovation for local supply • Increasing understanding of how local supply impacts on consumer behaviour • Building stronger partnerships with licensed suppliers & Ofgem's Innovation Link • Building strategic partnership with SSEN as well as WPD	• Exploration and testing of exempt supply and/or local solar tariffs[21], in partnership with a licensed supplier, for sale to consumers • Pilot project providing peer-to-peer trading, enabling simulated[22] sale of electricity from community and domestic scale generation to participating consumers • Clarity around the commercial and regulatory potential for peer-to-peer trading within a community context • Increased understanding of the behavioural impact of local supply on demand shifting
Expand the Community Energy Role in the Energy Transition	7. Deliver flexibility pilot and test viability of community model 8. Test community models for energy efficiency and electrifying transport and heat 9. Test approaches to increasing the flexibility of community generation (e.g. flexible grid connection, co-located hydrogen electrolysis or battery storage)	• Flex Community project enabling partnership with Stemy Energy and their platform functionality to enable flexibility trading between consumer and grid operator in initial pilot • Simulating trading outside of grid operator's operational constraint management zones, with real trading inside active areas • Work with and through CSE's Smart and Fair project to maximise potential for ensuring flexibility services are not just restricted to those that can afford to pay for new technologies	*Status* • Flex Community pilot project underway with a focus on domestic and small business demand side response • Early results from first tests of system show positive results and areas for improvement around system operation • First installations of domestic EV chargepoints and heat pumps being planned • Feasibility study into a community owned EV charge point network just completed and showing positive results • Extensive discussions with partners around energy efficiency *Priorities to 2023* • Power to Change funded pilot complete, report submitted May 22 • Evaluating of potential extension of EU pilot with board recommendations (Feb '23) • EU funded pilot in last phase with all participating households (finish Oct '23)	• Pilot project providing domestic and commercial flexibility services • Installation of consumer owned heat pumps and EV chargepoints as part of flexibility pilot • Clarity around the commercial and regulatory potential for expanding flexibility services within a community context • Pilot project developing and operating community owned and solar powered[23] EV charge point network • Clarity around the commercial potential for expanding a community EV chargepoint network

[21] Local supply tariffs in this context refer to the sale of electricity to domestic consumers from BWCE projects via a sleeving arrangement similar to the corporate PPA, though they cannot create long term contracts with domestic consumers

[22] Simulation of peer-to-peer trading will be necessary assuming that the regulatory system will not yet allow a full trial and specific derogations from Ofgem are not secured

[23] Solar generation supplied to EV charge points by on site solar where viable and also via sleeved solar PPAs

Goals	Objectives	Delivery Mechanisms	Current Status & Mid Term Priorities to 2023	Deliverables by 2025
		• Developing supply chain links necessary to deliver domestic heat pumps and EV charge points • Delivery of co-located storage projects through partnership with commercial partners • Taking significant, sometimes leading, roles in national industry and public bodies when possible and relevant	• Securing capital grant funding to ensure wider participation in the flexibility pilot • Completing EV charging network feasibility and seek follow on funding • Presenting Investment Committee with proposal for community EV charging (Feb-July '22) • Scoping potential for energy efficiency pilot on energy advice and strategic partnerships on retrofit • Identifying and scoping opportunity for trial battery project • Identifying & scoping opportunity for flexible grid connection for new generation	• At least one pilot of co-located renewables and storage, e.g., hydrogen electrolysis or battery storage • Active service delivery around energy efficiency advice and/or retrofit
Increase Recognition of BWCE & the Community Energy Model	10. Broaden and deepen reach with new and existing audiences 11. Create more powerful stories and tell them more effectively 12. Strengthen strategic partnerships with key stakeholders	• Outreach, engagement and communications led by internal staff with support from the community fund and with specialist consultancy support where required • Working closely with and through existing community networks, disseminating information and creating opportunities for engagement • Building more effective social media presence • Strategic partnerships led by MD with support from staff team as required	*Status* • New marketing and communications capacity recruited and existing systems and processes under review • Experience of existing supporter network feeding into a relaunch of network with stronger call to action and support for engagement • Legal advice suggests securing exempt charity status is possible as a means of emphasising not for profit status at a community level *Priorities to 2023* • Building supporter base and increase active engagement • Strengthening links and engagement with local community networks • Providing marketing and comms support to drive take up in the flex community pilot • Providing marketing and comms support to drive take up of solar roofs offer • Increasing community outreach to build support for large scale solar & wind locally • Leading community engagement around ground mount solar and wind projects • Creating more graphical comms materials focusing on people and their stories • Strengthening partnerships further with local authorities and the wider public sector • Strengthening partnerships with social housing providers • Strengthening partnerships with large consumers and those with significant estates	• Expansion of BWCE's supporter network • Significant growth in newsletter and social media reach • Increased engagement and active involvement in BWCE activities from members, supporters and the wider community • Growth in donations to BWCE's community fund • Stronger network of strategic partners across the whole of BWCE's area

5.3 Key Strategic Milestones & Building Impact Scenarios

There are a range of critical issues that will determine the scale and impact of BWCE's work during this plan period, so impacts are considered across three potential scenarios. These scenarios are used to measure the potential outcomes for 2025 and the financial impacts of delivery.

The high, medium and low impact scenarios are differentiated by the degree to which six strategic milestones, drawn from the analysis outlined above, are met. These strategic milestones can potentially b addressed within the first 18 months of the plan and as a result can have a material impact on delivery within the period. They are described in more detail below.

5.3.1 Create a viable revenue model for new grid connected renewables

Challenge

- New unsubsidised grid connected renewables sell electricity to energy suppliers or wholesalers on short term PPAs that are determined by a volatile wholesale electricity market.
- Long term forecasts from industry standard sources currently indicate that wholesale market prices are likely to remain very low long into the future.
- Together these two issues make it difficult for smaller scale grid connected projects to be developed.
- If long term PPAs secured at a level that make new projects viable are not available, then waiting for capital costs to fall further could provide another route to de-risking the wholesale price market.

Scenario impact

- The High Impact Scenario assumes long term PPAs are secured.
- The Medium Impact Scenario assumes that there are no long term PPAs secured but that technology prices fall faster, delaying project development and limiting the potential capacity that can be built out in the period to 2025.
- The Low Impact Scenario assumes there are no long term PPAs secured or rapid fall in capital costs seen, allowing only the development of rooftop solar or private wire schemes, where generation can be sold at a discount to retail prices rather than at wholesale prices.

5.3.2 Uncertainty around Adoption of B&NES Council Local Plan policy on wind turbines

Challenge

- For wind turbine sites to be considered for planning approval, the site must fall within an area identified as being suitable within a Local or Neighbourhood Plan.
- Whilst the B&NES Local Plan is scheduled for implementation in Summer/Autumn 2022, this may be delayed.
- Even if the policy is included within the final Local Plan, it will not guarantee that wind turbines receive planning approval as that will depend on the merits of each site.
- Without this policy, it's unlikely that there will be any larger scale wind turbines developed in B&NES.
- Other neighbouring local authority Local Plan reviews do not as yet include policies on wind energy.

Scenario impact

- Both High and Medium Impact Scenarios assume this policy is adopted, enabling the development of some wind energy projects within the plan period, subject to community support.
- The Low Impact Scenario assumes that the policy is not adopted, ensuing that no wind energy projects are progressed locally during the plan period.

5.3.3 Secure community support for large solar and wind turbines

Challenge

- Larger ground mount solar arrays and wind turbines can local opposition, which can undermine the objective of building community renewables and reduce planning success rates.
- Developing new large solar and wind projects will require community support to correlate with BWCE's objectives.
- In order to have a substantive impact on wind project development by 2025, significant progress will need to be made in generating local support by the second half of 2023-24.

Scenario impact

- Both the High and Medium Impact Scenarios assume community support for large solar and wind as community projects, enabling the delivery of increased solar and wind energy targets.
- The Low Impact Scenario assumes that only limited support is generated.

5.3.4 *Increased grid capacity and/or a reduction in grid connection costs*

Challenge

- Grid capacity is limited in the local area meaning that connecting new renewables projects is often difficult and expensive, particularly for larger projects requiring connection to the higher voltage network.
- Without investment in the grid infrastructure there could be a significant brake on growth. This is particularly challenging given the competition for grid capacity from private developers.
- The local grid operator, WPD, is committing to reduce grid connection costs by funding more strategic investment as part of their own business plan commitments. However, final outcomes in terms of grid investment will be dependent on Ofgem's approval of grid operator's business plans,
- Grid operators are investing in grid reinforcement now ,but it is uncertain to what extent this will affect our local area and have a material impact on the potential for larger scale developments yet to receive grid offers.

Scenario impact

- The High Impact Scenario assumes significant grid investment with additional capacity secured for at least one solar array in excess of 10MW.
- Both the Medium and Low Impact Scenarios assume that insufficient grid capacity is available for projects in excess of 10MW

5.3.5 *Secure on-site asset development with large consumers and estates*

Challenge

- To maximise on-site generation opportunities and secure income linked to retail prices (rather than lower wholesale prices) we will need to establish partnerships with large consumers and those with large or multiple roofs in their estate.
- On-site generation could be delivered through roof top solar or larger solar or wind turbines connected directly to the consumer, rather than via the grid.
- If we can establish partnerships with these larger consumers during the first 18 months of this plan period, there would still be the potential to have a material impact by 2025.

Scenario impact

- The High, Medium and Low Impact Scenarios assume different levels of successful engagement with this target group.

5.3.6 *Create viable community investment models for storage & flexibility*

Challenge

- The capex costs for battery storage are still high, flexibility markets are still immature and at a local level have low value.
- Revenue streams are complex and short in contract term.
- There remain sustainability concerns around the most developed battery technologies, for example with regards sourcing cobalt and lithium.
- An alternative to battery storage could be hydrogen electrolysis, but the technology is new and trials are starting only at a large scale.
- Innovation around both storage and flexibility will be critical outcomes during this business plan period, laying the foundations for significant growth to 2030.

Scenario impact

- The High Impact Scenario assumes that we will be able to establish a viable community delivery model for battery storage and flexibility before 2025, enabling the development of some storage capacity and 300 participating households providing flexibility services, doubling the participant target in the Flex Community project.
- The Medium Impact Scenario assumes there is no storage capacity developed and 150 participating households as per the Flex Community project target.
- The Low Impact Scenario assumes no storage capacity and only 75 participating households, or half the Flex Community project target.

5.4 Impact Scenario Summary

High Impact — Delivering significant expansion in new ground mount solar and wind energy and on-site renewables, requiring long term PPAs, positive Local Plan policies, strong community support for larger solar and wind, easing of grid capacity constraints, and strong partnerships with large consumers. Successfully trialling new delivery models in heat, storage and flexibility services. Substantial organisational growth.

Medium Impact — More limited growth in new ground mount solar and wind energy (as well as on-site renewables) through rapid falls in capital costs (rather than long term PPAs) delaying development but supported by positive Local Plan policies and strong community support for larger solar and wind. Limited success in trialling new delivery models in heat, storage and flexibility services. Limited organisational growth.

Low Impact — Delivering new renewables only through the current model of on-site renewables with current staff capacity and no expansion of community energy model into new technologies or services.

6 Monitoring, Reporting & Learning

6.1 Purpose

The intention is to structure the wealth of existing operational data, plus some additional data sets, to enable BWCE to monitor progress towards the specified outcome targets (section 6.2 below). A set of output indicators (sections 6.3 and 6.4 below) will be set up to support this monitoring of progress as well as to aid reflection and learning about operational delivery.

Table 7: 2025 Outcome Targets by Scenario

OUTCOME TARGETS	2022 Current	2025 Low	2025 Medium	2025 High
1. Community generation - Number of households' demand matched - equivalent annual electricity demand matched by BWCE generation over the year - assumed 2,900 kWh/yr 'typical' household demand (Ofgem)	4,500	5,200	11,000	19,600
2. Community generation – Percentage of all local households' demand matched - equivalent annual electricity demand matched by BWCE generation, yield (kWh/kW), wind 2,500, rooftop solar 850, grid solar 1,000	4%	5.5%	10%	17%
3. Carbon Reduction - Tonnes CO2/yr reduced - Annual Carbon Dioxide emission reduction from BWCE generation - assumed 0.285 kgCO2(e)/kWh (DEFRA)	3,300	3,800	8,100	14,400
4. Biodiversity Improvement – (% net gain) - Annual average increase in biodiversity across both existing ground mount solar sites (where data available) and new sites based on independent surveys using DEFRA's net gain metric	50%	N/A	55%	55%
5. Community Benefit - £/yr fuel bill reduction - Fuel bill savings from electricity supplied direct to consumer from onsite systems.	£55,000 - £80,000[24]	£140,000 - £165,000[25]	£190,000 - £215,000	£225,000 - £250,000
6. Community Benefit - £/yr funds donated – Average annual payment during the first 10 years (average over project lifetime in brackets) to BWCE's community fund for community action on carbon reduction and fuel poverty	£40,000	£48,000 (£50,000)	£95,000 (£130,000)	£160,000 (£325,000)
7. Community Benefit - £/yr revenue retained in West of England area – approx. 35% of opex, 60% of share and bond interest, 80% of overheads and 100% of debt interest. See section 8.4.2 for more details.	£615,000[26]	£730,000[27]	£1,225,000[28]	£2,307,000[29]
8. Engagement breadth - Number of interactions/yr - Assumes that interactions include newsletter engagement, social media engagement, event and community meeting attendees	5,800	10,000	16,000	22,000
9. Engagement depth – Average interactions/network member - Assumes that network includes newsletter circulation and social media follower numbers	1.4	1.5	2.0	2.5
10. Engagement Impact - % of network that takes action to reduce carbon footprint – Based on responses to network surveys	53%	60%	70%	80%
11. Innovation – community business models implemented where viable for energy efficiency, EV chargepoints, storage, flexibility and heat	No	No	Partial	Yes

[24] *Historical rooftop schemes generally provide free electricity to the building owner underpinned by the FIT subsidy to BWCE, meaning that buildings are saving between 20 - 30p/kWh across around 330,000 kWh of electricity*
[25] *New rooftop schemes provide a discount on commercial electricity supply with a never pay more than cap, so buildings might see an actual reduction of at least 5p/kWh across between 1.7 – 3.4 GWh of electricity, depending on the scenario. Though in reality it will be much more.*
[26] *Assumes value retained in West of England is around 30% of revenue from BWCE's renewable energy projects*
[27] *Assumes value retained in West of England increases to 42%, see section 8.4.2 for more details*
[28] *Assumes value retained in West of England increases to 42%, see section 8.4.2 for more details*
[29] *Assumes value retained in West of England increases to 49%, see section 8.4.2 for more details*

6.2 Scenario Outputs

Table 8: Main Outputs by Scenario

PRINCIPAL OUTPUTS	2021	2025 Low	2025 Medium	2025 High
Roof top solar installed (MW)	0.47	2.47	2.97	3.47
Small-medium grid connected ground mount solar (MW)	11.62	11.62	21.62	26.62
Small-medium private wire ground mount solar (MW)	0.25	0.75	1.75	2.25
Large grid connected ground mount solar (MW)	-	-	-	10.00
Grid connected wind turbines (MW)	-	-	1.50	5.50
Private wire wind turbines (MW)	-	-	0.5	0.5
Total Renewable Energy Capacity (MW)	12.34	14.84	28.34	48.34
New Renewable Energy Capacity (MW)	-	2.5	16.0	36.0
Storage Capacity (MW)	-	-	-	4.0
Number of participating households in Flex Community trial	20	75	150	300

Outputs for new work areas, including EV chargepoints, heat, storage and energy efficiency will be added as pilot projects are delivered and viability assessed.

6.3 Output Indicators and Monitoring Schedule

Table 9: Output Indicators and Monitoring Schedule

Outputs	Indicators	Monitoring mechanism - reporting (owner)	Frequency
New Generating Capacity	Total Installed capacity (MW)	Monthly Performance Reports (Bright Renewables)	Monthly
	Total generation (MWh)	Monthly Performance Reports (Bright Renewables)	Monthly
	Project performance above or (below) target (%)	Monthly Performance Reports (Bright Renewables)	Monthly
	Biodiversity improvement at ground mount solar sites (% net gain)	Quarterly asset management reports and development tracker (BR & RenewEV)	Quarterly
	New installed capacity (MW)	Monthly Performance Reports (Bright Renewables)	Monthly
	New generation (MWh)	Monthly Performance Reports (Bright Renewables)	Monthly
Local Use of BWCE Renewables	Total local community owned renewables (% of B&NES capacity)	Performance data & national project reporting presented via Board report (MD)	Quarterly
	BWCE local community owned renewables (% of B&NES capacity)	Performance data & national project reporting presented via Board report (MD)	Quarterly
	BWCE generation traded in BWCE's area (MWh)	Performance data presented via Board report (MD)	Quarterly
	BWCE generation traded in BWCE's area (% of total BWCE generation)	Performance data presented via Board report (MD)	Quarterly
	BWCE members and bondholders in West of England/BWCE area	Operational data presented via Board report (MD)	Quarterly

New Asset Development	Pipeline (MW under active development)	Operational data presented via Development tracker (RenewEV)	Monthly
	Lease agreed (MW)	Operational data presented via Development tracker (RenewEV)	Monthly
	Grid offer (MW)	Operational data presented via Development tracker (RenewEV)	Monthly
	Planning approved (MW)	Operational data presented via Development tracker (RenewEV)	Monthly
	Average IRR for new projects	Operational data presented via Development tracker (RenewEV)	Quarterly
	Development budget analysis (£)	Operational data presented via Board report (MD)	Quarterly
Outreach and Engagement	Newsletter list (number)	Mail Chimp presented via Board report (Communities)	Quarterly
	Newsletter open and click rates	Mail Chimp presented via Board report (Communities)	Quarterly
	Supporter network (numbers)	Operational data presented via Board report (Communities)	Quarterly
	Social media network (numbers)	Social media platforms presented via Board report (Communities)	Quarterly
	Social media engagement (numbers)	Social media platforms presented via Board report (Communities)	Quarterly
	Local members and bondholders (%)	Share register presented via Board report (Communities)	Quarterly
	Meeting attendees (numbers)	Operational data presented via Board report (Communities)	Quarterly
	Volunteer hours (hrs)	Operational data presented via Board report (Communities)	Quarterly
	Website traffic	Google analytics presented via Board report (Communities)	Quarterly
Finances	Weighted Average Cost of Capital (%)	Management accounts presented via Board report (MD)	Quarterly
	Return on capital employed (EBIT/capital employed %)	Management accounts presented via Board report (MD)	Quarterly
	Gross project margin (asset revenue-cost of sales/asset revenue %)	Management accounts presented via Board report (MD)	Quarterly
	Net operating margin (EBIT/total revenue %)	Management accounts presented via Board report (MD)	Quarterly
	Liquidity – Quick ratio (cash/net liabilities)	Management accounts presented via Board report (MD)	Quarterly
	Interest cover ratio (EBITDA/all interest)	Management accounts presented via Board report (MD)	Quarterly
	Debt service cover ratio (EBITDA/bond and debt service costs)	Management accounts presented via Board report (MD)	Quarterly
	Leverage (Total debt/EBITDA)	Management accounts presented via Board report (MD)	Quarterly
	Leverage (Senior debt/EBITDA)	Management accounts presented via Board report (MD)	Quarterly

	Leverage (Senior debt/Total assets)	Management accounts presented via Board report (MD)	Quarterly

7 Organisational Development

7.1 Board of Directors

BWCE has an exceptional board of directors, who bring a wide range of experience, expertise and perspective. Our board holds particular skills in the technical, financial, legal, community, governance and commercial aspects of running our community business.

The board is made up of directors elected from our shareholder membership and directors co-opted to the board to bring additional expertise and experience in specific areas. As Managing Director, Peter Capener sits on the board and leads the staff team.

Elected directors stand for three years and so each year a third of the elected board stand down but may re-stand for election. In future board election cycles we will look to strengthen local community links and specifically to bring greater diversity to the organisation.

Figure 8: BWCE Board Members (October 2021)

Barney Rhys Jones - Elected Director
Asset Management Director, Octopus Renewables

Chris Crookall Fallon - Elected Director (Chair)
Head of Climate Action at a neighbouring Local Authority

Fliss Jones - Elected Director
Partner at energy consultancy Everoze, specialising in energy demand side response and storage

Jolyon Orchard - Elected Director
Director of local solar developer Luminous Energy

Louise Daniels - Elected Director
Head of Communications and Markleting at Thrive Renewables

Matt Harnack - Elected Director
23 years in the energy sector specialising in solar project operations & storage

Peter Capener - Managing Director
35 years in the energy sector, former CEO at national energy NGO, energy consultant and community energy practitioner

Rupert Atkinson - Co-opted Director
30 years in financial services at Standard & Poor's and Morgan Stanley

Sonya Bedford - Co-opted Director (Deputy Chair)
Partner and Head of Renewables at lawyers Stephen's Scown

7.2 Sub Committees

The board is supported by Finance and Development Sub Committees.

The Finance Sub Committee meets quarterly to review in detail management accounts and wider resourcing issues prior to eah quarterly board meetings.

The Development Sub Committee meets more regularly, providing oversight on the new renewables project development progress and making investment decision recommendations to the full board.

7.3 Current Organisational Structure

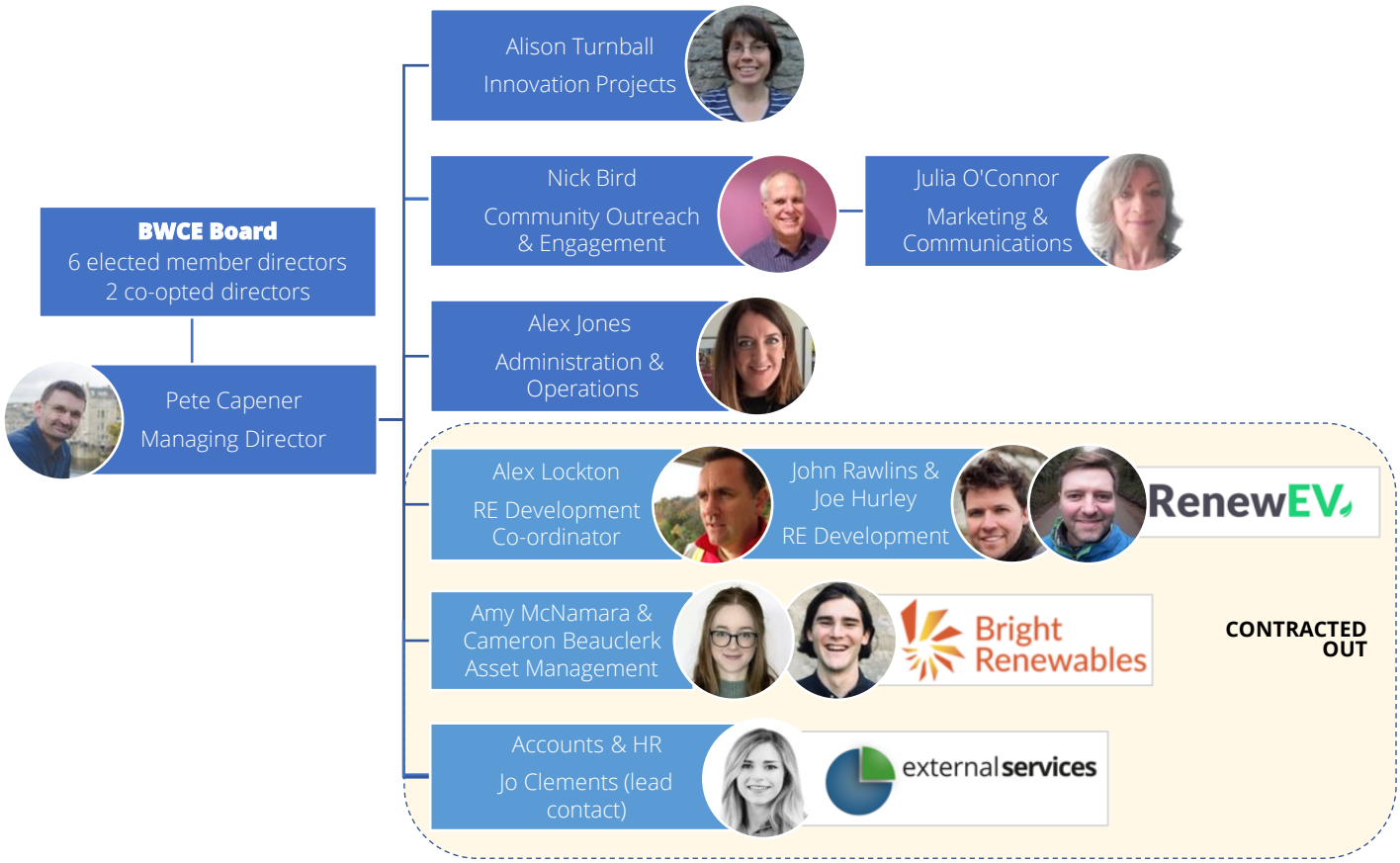
Our staff team has grown over the last couple of years, reflecting the growing organisational strength and desire to deliver at greater scale.

A number of key functions are contracted out. Our experience as a small organisation has been that this provides an excellent way of securing a wider range of high quality and experienced staff for specialist activities that have their own professional development and oversight requirements. In relation to asset management and accounting in particular, contracting out means that when individual staff move on, the parent organisation has the responsibility of providing new staffing with similar skills and capability so that BWCE minimises expenditure and time required for recruitment

By contracting out for our project development team, we are able to limit the organisation's at-risk investment through the payment of success fees, whilst still involving personnel as intrinsic members of the BWCE team.

Figure 9 below outlines the current organisational structure and highlights the key partners delivering contracted out services. Additionally, BWCE contracts with Neville Registrars and Ethex to maintain and service our share and bond registers.

Figure 9: Staff Team (October2021)



7.4 Future Organisational Growth

BWCE's organisational growth to 2025 will reflect structural needs in delivering the outcomes specified in this business plan. Significant growth would be required to facilitate delivery of the Medium or High Impact

Scenario outcomes and will be dependent on meeting all or the majority of the strategic milestones. This growth will be needed to:

1. **Increase renewable energy development capacity:** For 2022-23 we have increased our renewable energy development capacity by 50%. Depending on development success, this might double before the end of 2024-25. Staffing costs are covered by renewables projects that are successfully built out and enabling development fees to be drawn from the fundraise and capitalised within the project asset. Development fees are set at a level that generates sufficient income to cover staffing costs on projects that are not successful whilst being low enough to not create a financial drag on the project returns.
2. **Support the roll out of new community energy services**: The goal of current innovation projects is to create new financially sustainable services over time with a particular focus on flexibility and energy efficiency retrofit. The latter with a focus on 'able to pay' households. Grant funding will be sought to develop and establish new services before they are able to cover their own costs. Grant funding may be sought alongside organisational surpluses to extend energy efficiency services to target fuel poverty, the provision of affordable warmth and reduction of escalating energy bills.
3. **Strengthen operational resilience and business development capacity:** As the organisation grows both in terms of scale and scope it becomes increasingly important to create a stronger focus around operational systems and controls whilst also investing in the capacity, skills and experience necessary to grow the business into new work areas. Funding to strengthen the organisation in this way will come from overheads generated from a larger number of operating renewable energy projects.

By 2025, subject to funding and project development success, we may have grown from the 8 staff (5 FTE) we have now, not including asset management and accounts support, to 16-18 staff (10-12 FTE), operating through a senior management team, led by the MD reporting to a Board of a similar size as today.

The greatest growth in staff capacity is likely to be in renewable energy asset development, but there will also be growth in community service delivery, operations, community outreach and communications. Senior staff will be strengthened with the addition of a senior business development post to support the development of community services.

However, if we do not see any of the strategic milestones met, then it's likely that we will be able to deliver outcomes in line with the Low Impact Scenario with a similar capacity to what we have currently.

8 Financial Plan

8.1 Financial Implications of the three scenarios

The financial projections outlined below centre primarily around the impact of developing new renewable energy projects at differing scales,

The range of innovation projects that are testing potential new business and community investment models are unlikely to deliver evaluation results at the start of the period. The following financial projections therefore take into account funding and resourcing impacts of delivering the pilots, but not the potential scaling and roll out of any successful new models.

However, performance of these pilots will have a major impact on the finances and the nature of BWCE as well as determining the type of work that it delivers during the subsequent business plan period to 2030.

The major strategic issues that have the greatest impact on the variation between financial projections across the three scenarios include:

	Strategic milestones need to be met to deliver		
	High Impact	Medium Impact	Low Impact
The presence of long term PPAs at a rate that create viable grid connected (not roof mounted) community renewables projects, Strategic Milestone 1	Yes	No	No
A faster fall in capex costs to minimise risk of operating in the wholesale market without long term PPAs, Strategic Milestone 1	No	Yes	No
Potential route to planning success for wind turbines, Strategic Milestone 2	Yes	Yes	No
Community support for larger projects, Strategic Milestone 3	Yes	Yes	No
Increased grid capacity locally, Strategic Milestone 4	Yes	No	No

8.2 Financial Statements - Core Assumptions

The following assumptions apply to all three scenario projections:

- All projections are rounded to the nearest £1,000.
- The Retail Price Index (RPI) is assumed to run at 2.5% until 2030 and then fall to 2%. This takes into account the government's intention to bring RPI in line with the Consumer Price Index (CPI), including owner occupier housing costs (CPIH), within this timescale.[30] 2% represents the government target for CPI.
- Office of Budget Responsibility forecasts of inflation (up to 10.2% in 2022, dropping to 5.1% and 2.6%[31]) are not adopted for new projects on the grounds that this will increase revenue projections significantly without clarity on how the cost of debt will increase over the coming years. See section 8.6 below for more detail on the impact of this assumption.
- Increased inflation forecasts are adopted for existing projects where the cost of debt has been established and is fixed for the term of the loans.
- Net share capital repayments start in 2025 in all scenarios: i.e. from 2025, more capital is repaid than is raised.
- Current share capital is fully repaid by March 2046 and all new share capital raised in the period to 2025 is repaid over the 30 year life of the new projects.
- In all scenarios, the organisation carries higher overhead costs than can be met by the trading revenue generated by the renewable energy assets during the business plan period.
- This additional overhead allows the organisation to develop new renewable energy projects (costs covered by development fees and grants) and to carry out innovation projects that are designed to

[30] https://www.gov.uk/government/consultations/a-consultation-on-the-reform-to-retail-prices-index-rpi-methodology
[31] https://obr.uk/faq/where-can-i-find-your-latest-forecasts/

test new community energy business models linked to, for example, flexibility services or EV charging. These innovation projects are funded by grants and consultancy income.

- Grant funding is therefore regarded as pump priming investment in what is planned to be financially viable workstreams in their own right.
- These innovation projects are therefore at worst, cost neutral and so do not have a negative impact on the organisation's finances.
- From 2025 onwards, financial projections within the business plan are offered only to demonstrate that the assets developed before 2025 will cover their costs, repay their investment and generate significant community benefit.
- Therefore, projections beyond 2025 assume only minimal overhead costs, sufficient to keep assets maintained. They do not include overhead costs that would be funded by development fees and grant income from asset development and innovation projects beyond 2025.
- Unconfirmed project funding is based on known funding opportunities but not always on actual funding bids.
- Project viability is deemed to be an IRR of at least 7%, an ability to repay capital within term and to stay cash positive. Roof top solar projects are expected to deliver higher IRRs due to their slightly higher operational risk.

8.3 Financial Statements

8.3.1 Low Impact Scenario

Figure 10: Low Impact Scenario Financial Statements

	LOW IMPACT SCENARIO Year 1 Mar-22	Year 2 Mar-23	Year 3 Mar-24	Year 4 Mar-25	Years 5-14 Mar-35	Years 15-24 Mar-45	Years 25-33 Mar-54	TOTALS
PROFIT & LOSS								
Revenue	2,039,000	2,384,000	2,587,000	3,009,000	26,340,000	12,056,000	5,101,000	53,515,000
Opex	(531,000)	(607,000)	(480,000)	(482,000)	(5,652,000)	(5,762,000)	(2,699,000)	(16,213,000)
Overheads	(249,000)	(258,000)	(334,000)	(376,000)	(156,000)	(192,000)	(111,000)	(1,677,000)
EBITDA	1,258,000	1,520,000	1,774,000	2,152,000	20,531,000	6,101,000	2,290,000	35,626,000
Debt Interest	(361,000)	(326,000)	(302,000)	(277,000)	(1,187,000)	-	-	(2,453,000)
Share interest	(276,000)	(411,000)	(425,000)	(434,000)	(3,704,000)	(663,000)	(203,000)	(6,116,000)
Bond interest	(76,000)	(84,000)	(69,000)	(65,000)	(438,000)	(74,000)	-	(807,000)
Depreciation	(596,000)	(599,000)	(626,000)	(654,000)	(6,805,000)	(5,205,000)	(1,488,000)	(15,972,000)
Community fund	(40,000)	(40,000)	(43,000)	(45,000)	(520,000)	(165,000)	(413,000)	(1,266,000)
Tax	-	-	-	-	(1,112,000)	(574,000)	(112,000)	(1,798,000)
P&L	(91,000)	59,000	308,000	677,000	6,766,000	(580,000)	75,000	7,214,000

CASHFLOW							
P&L exc. Depreciation	505,000	658,000	934,000	1,330,000	13,571,000	4,625,000	1,563,000
Capital investment	-	(889,000)	(645,000)	(631,000)	-	-	-
Net debt issue (repaid)	(476,000)	(511,000)	(669,000)	(713,000)	(7,952,000)	(544,000)	-
Net share issue (repaid)	-	179,000	683,000	419,000	(4,474,000)	(2,296,000)	(693,000)
Changes in working capital	(104,000)	(168,000)	(144,000)	(160,000)	17,000	460,000	114,000
Net DSR payments	(1,000)	-	(107,000)	(18,000)	293,000	220,000	-
MSR payments	(36,000)	(105,000)	(73,000)	(75,000)	(768,000)	(184,000)	1,316,000
Net cash movement	(113,000)	(836,000)	(21,000)	152,000	686,000	2,281,000	2,300,000
Closing Cash	1,189,000	353,000	333,000	485,000	1,171,000	3,452,000	5,752,000

BALANCE SHEET							
Fixed Assets	16,516,000	16,704,000	16,615,000	16,075,000	4,717,000	1,336,000	-
Current Assets	2,820,000	2,113,000	2,358,000	2,733,000	3,412,000	5,119,000	5,677,000
Current Liaibilities	785,000	812,000	762,000	730,000	75,000	48,000	14,000
Long term debt	9,913,000	9,210,000	8,496,000	7,758,000	444,000	-	-
Net Current Assets	2,035,000	1,301,000	1,596,000	2,003,000	4,288,000	6,521,000	1,047,000
Net Assets	8,638,000	8,795,000	9,715,000	10,319,000	7,611,000	6,408,000	5,662,000
Represented by:							
Shares	6,396,000	6,361,000	7,044,000	7,464,000	2,990,000	693,000	-
P&L account	(1,642,000)	(1,583,000)	(1,275,000)	(598,000)	6,168,000	5,588,000	5,662,000
Reveluation Reserve	3,884,000	4,068,000	3,923,000	3,362,000	(1,653,000)	20,000	-
Total Member Funds	8,638,000	8,846,000	9,692,000	10,228,000	7,505,000	6,301,000	5,662,000

8.3.2 Medium Impact Scenario

Figure 11: Medium Impact Scenario Financial Statements

	MEDIUM IMPACT SCENARIO							
	Year 1 **Mar-22**	Year 2 **Mar-23**	Year 3 **Mar-24**	Year 4 **Mar-25**	Years 5-14 **Mar-35**	Years 15-24 **Mar-45**	Years 25-33 **Mar-54**	**TOTALS**
PROFIT & LOSS								
Revenue	2,039,000	2,512,000	3,069,000	4,216,000	37,249,000	25,035,000	18,705,000	92,825,000
Opex	(531,000)	(637,000)	(626,000)	(780,000)	(10,687,000)	(11,927,000)	(9,394,000)	(34,581,000)
Overheads	(249,000)	(323,000)	(459,000)	(576,000)	(156,000)	(192,000)	(111,000)	(2,067,000)
EBITDA	1,258,000	1,553,000	1,984,000	2,861,000	26,406,000	12,916,000	9,200,000	56,178,000
	0	0	0	0	0	0		
Debt Interest	(361,000)	(326,000)	(320,000)	(328,000)	(2,170,000)	(191,000)	-	(3,696,000)
Share interest	(276,000)	(411,000)	(481,000)	(570,000)	(6,605,000)	(2,849,000)	(669,000)	(11,862,000)
Bond interest	(76,000)	(84,000)	(69,000)	(65,000)	(438,000)	(74,000)	-	(807,000)
Depreciation	(596,000)	(599,000)	(669,000)	(772,000)	(9,644,000)	(8,118,000)	(3,579,000)	(23,977,000)
Community fund	(40,000)	(40,000)	(58,000)	(84,000)	(1,200,000)	(840,000)	(2,000,000)	(4,261,000)
Tax	-	-	-	-	(489,000)	(964,000)	(764,000)	(2,217,000)
P&L	(91,000)	93,000	386,000	1,042,000	5,861,000	(120,000)	2,079,000	9,358,000

CASHFLOW							
P&L exc. Depreciation	505,000	692,000	1,055,000	1,814,000	15,505,000	7,998,000	5,658,000
Capital investment	-	(2,288,000)	(2,875,000)	(5,244,000)	-	-	-
Net debt issue (repaid)	(476,000)	(141,000)	(27,000)	825,000	(9,377,000)	(1,669,000)	-
Net share issue (repaid)	-	1,297,000	2,300,000	3,553,000	(4,937,000)	(5,180,000)	(3,213,000)
Changes in working capital	(104,000)	(191,000)	(216,000)	(321,000)	36,000	400,000	89,000
Net DSR payments	(1,000)	-	(124,000)	(48,000)	220,000	340,000	-
MSR payments	(36,000)	(105,000)	(79,000)	(92,000)	(1,105,000)	(521,000)	1,013,000
Net cash movement	(113,000)	(737,000)	33,000	486,000	341,000	1,368,000	3,547,000
Closing Cash	1,189,000	452,000	484,000	970,000	1,311,000	2,680,000	6,227,000

BALANCE SHEET							
Fixed Assets	16,516,000	18,597,000	22,149,000	28,447,000	16,493,000	9,533,000	-
Current Assets	2,820,000	2,242,000	2,582,000	3,459,000	4,321,000	5,477,000	7,779,000
Current Liaibilities	785,000	835,000	828,000	885,000	305,000	103,000	80,000
Long term debt	9,913,000	9,564,000	9,464,000	10,194,000	1,384,000	-	-
Net Current Assets	2,035,000	1,407,000	1,754,000	2,574,000	4,505,000	6,826,000	3,610,000
Net Assets	8,638,000	10,440,000	14,439,000	20,827,000	19,126,000	14,906,000	7,699,000
Represented by:							
Shares	6,396,000	7,478,000	9,778,000	13,330,000	8,393,000	3,213,000	-
P&L account	(1,642,000)	(1,549,000)	(1,164,000)	(121,000)	5,739,000	5,619,000	7,699,000
Reveluation Reserve	3,884,000	4,563,000	5,876,000	7,669,000	5,045,000	6,125,000	-
Total Member Funds	8,638,000	10,492,000	14,490,000	20,878,000	19,178,000	14,958,000	7,699,000

8.3.3 High Impact Scenario

Figure 12: High Impact Scenario Financial Statements

	HIGH IMPACT SCENARIO Year 1 Mar-22	Year 2 Mar-23	Year 3 Mar-24	Year 4 Mar-25	Years 5-14 Mar-35	Years 15-24 Mar-45	Years 25-33 Mar-54	TOTALS
PROFIT & LOSS								
Revenue	2,039,000	2,597,000	3,591,000	5,336,000	60,289,000	52,272,000	47,443,000	173,566,000
Opex	(531,000)	(682,000)	(828,000)	(1,341,000)	(18,969,000)	(22,069,000)	(20,408,000)	(64,829,000)
Overheads	(249,000)	(341,000)	(459,000)	(585,000)	(156,000)	(192,000)	(111,000)	(2,094,000)
EBITDA	1,258,000	1,573,000	2,304,000	3,411,000	41,163,000	30,010,000	26,924,000	106,643,000
Debt Interest	(361,000)	(326,000)	(369,000)	(511,000)	(4,957,000)	(1,499,000)	-	(8,023,000)
Share interest	(276,000)	(411,000)	(572,000)	(897,000)	(11,891,000)	(6,226,000)	(1,311,000)	(21,584,000)
Bond interest	(76,000)	(84,000)	(69,000)	(65,000)	(438,000)	(74,000)	-	(807,000)
Depreciation	(596,000)	(599,000)	(761,000)	(1,120,000)	(15,313,000)	(13,787,000)	(9,433,000)	(41,608,000)
Community fund	(40,000)	(40,000)	(74,000)	(141,000)	(2,200,000)	(3,460,000)	(4,680,000)	(10,635,000)
Tax	-	-	-	-	-	(1,635,675)	(3,261,000)	(4,897,000)
P&L	(91,000)	113,000	459,000	675,000	6,365,000	3,328,000	8,239,000	19,089,000

CASHFLOW							
P&L exc. Depreciation	505,000	712,000	1,220,000	1,796,000	21,678,000	17,115,000	17,672,000
Capital investment	-	(4,949,000)	(10,060,000)	(13,029,000)	-	-	-
Net debt issue (repaid)	(476,000)	825,000	2,685,000	3,621,000	(11,572,000)	(5,948,000)	-
Net share issue (repaid)	-	3,106,000	7,020,000	8,738,000	(7,995,000)	(9,867,000)	(7,183,000)
Changes in working capital	(104,000)	(206,000)	(313,000)	(433,000)	(288,000)	324,000	(29,000)
Net DSR payments	(1,000)	-	(160,000)	(154,000)	113,000	410,000	180,000
MSR payments	(36,000)	(105,000)	(87,000)	(121,000)	(1,605,000)	(1,021,000)	563,000
Net cash movement	(113,000)	(617,000)	305,000	417,000	330,000	1,012,000	11,201,000
Closing Cash	1,189,000	572,000	877,000	1,294,000	1,624,000	2,636,000	13,838,000

BALANCE SHEET							
Fixed Assets	16,516,000	20,222,000	29,596,000	41,977,000	29,340,000	18,512,000	-
Current Assets	2,820,000	2,383,000	3,147,000	4,232,000	6,042,000	7,364,000	17,727,000
Current Liaibilities	785,000	865,000	946,000	1,106,000	663,000	194,000	189,000
Long term debt	9,913,000	10,505,000	13,041,000	16,494,000	5,379,000	-	-
Net Current Assets	2,035,000	1,518,000	2,201,000	3,126,000	5,379,000	8,806,000	16,020,000
Net Assets	8,638,000	11,234,000	18,756,000	28,609,000	29,340,000	25,682,000	17,538,000
Represented by:							
Shares	6,396,000	9,288,000	16,308,000	25,046,000	17,051,000	7,183,000	-
P&L account	(1,642,000)	(1,529,000)	(1,070,000)	(394,000)	5,971,000	9,299,000	17,538,000
Reveluation Reserve	3,884,000	3,527,000	3,570,000	4,009,000	6,369,000	9,251,000	-
Total Member Funds	8,638,000	11,286,000	18,808,000	28,661,000	29,391,000	25,733,000	17,538,000

8.4 Commentary

8.4.1 Profit and Loss, cashflow and Balance Sheet

- Extended projections are provided only to demonstrate the financial viability of the asset portfolio, currently being developed, not the underlying financial position of the organisation beyond 2025 as that will depend also on the development undertaken in the next business plan period.
- Revenue and Opex costs in years 1 and 2 include significant contributions associated with grant funded flexibility pilots.
- The P&L for both the Low and Medium Impact Scenarios goes negative during the middle years after the FIT contracts for the existing projects run out and depreciation on those assets is higher than just export income during the final years of those projects. This impact is fully outweighed by the higher levels of new income in the High Impact Scenario.
- In all scenarios however, the projects generate enough cash to cover all costs and repay all capital whilst still delivering the levels of community benefit outlined in section 8.4.2 below.
- Maintenance Service Reserve (MSR) payments shown in the cashflow summaries provide for a sinking fund for replacement of inverters and transformers as they come to the end of their lives

- Debt Service Reserve (DSR) payments and receipts, also shown in the cashflow summaries, represent the movement necessary to keep 6 months of debt interest and capital repayments in a reserve account, a requirement of a senior debt provider.
- Renewable energy project development fees are paid out of the share capital raised to build out the renewable energy projects.
- Development fees cover the costs of developing projects plus a development premium that covers projects that do not proceed for one reason or another through to construction.
- Development fees are then capitalised within the asset cost of the projects that are built out and are then represented with the fixed assets in the balance sheet.
- The cumulative P&L account shown in the balance sheet carries significant historical losses due to the disproportionate impact of depreciation which reduces the value of assets below their real market value.
- Annual asset revaluation balances the early years negative impact on the P&L account and ensures that BWCE's accounts reflect an accurate view of asset value.
- Revaluation is undertaken by an independent body every 5 years and any changes in assumptions made during the intervening annual revaluations are also independently verified.
- The cumulative P&L account goes positive across the three scenarios between 2025 or 2029.
- By the end of the new projects' life, the portfolio will have generated between £35.6 to over £100 million of Earnings before Interest, Tax, Depreciation and Amortisation (EBITDA) and £7.2 to £19 million in profit, after tax, depending on the scenario.

Figure 13: P&L Summary by Scenario

	Low Impact Scenario		Medium Impact Scenario		High Impact Scenario	
	Business Plan Period Totals	Portfolio Lifetime Totals	Business Plan Period Totals	Portfolio Lifetime Totals	Business Plan Period Totals	Portfolio Lifetime Totals
Project Income	10,019,000	53,515,000	11,836,000	92,825,000	13,563,000	173,566,000
Opex	(2,100,000)	(16,213,000)	(2,574,000)	(34,581,000)	(3,382,000)	(64,829,000)
Overheads	(1,217,000)	(1,677,000)	(1,607,000)	(2,067,000)	(1,634,000)	(2,094,000)
EBITDA	6,704,000	35,626,000	7,656,000	56,178,000	8,546,000	106,643,000
Debt & bond interest	(1,560,000)	(3,260,000)	(1,629,000)	(4,503,000)	(1,861,000)	(8,830,000)
Share interest	(1,546,000)	(6,116,000)	(1,738,000)	(11,862,000)	(2,156,000)	(21,584,000)
Depreciation	(2,475,000)	(15,972,000)	(2,636,000)	(23,977,000)	(3,076,000)	(41,608,000)
Communty fund	(168,000)	(1,266,000)	(222,000)	(4,261,000)	(295,000)	(10,635,000)
Tax	-	(1,798,000)	-	(2,217,000)	-	(4,897,000)
P&L	955,000	7,214,000	1,431,000	9,358,000	1,158,000	19,089,000

Figure 14: Cash Generation by Scenario

	Low Impact Scenario		Medium Impact Scenario		High Impact Scenario	
	Business Plan Period Totals	Portfolio Lifetime Totals	Business Plan Period Totals	Portfolio Lifetime Totals	Business Plan Period Totals	Portfolio Lifetime Totals
Starting cash	1,302,000	1,302,000	1,302,000	1,302,000	1,302,000	1,302,000
Cash movement	(818,000)	4,449,000	(331,000)	4,925,000	(8,000)	12,535,000
Closing cash	484,000	5,751,000	971,000	6,227,000	1,294,000	13,837,000
Minimum cash (yr)	3	3	2	2	2	2
Minimum cash (£)	333,000	333,000	452,000	452,000	572,000	572,000

- All three scenarios remain cash positive throughout their portfolio life.
- All three scenarios see negative cash movement during the business plan period as they invest the pre-existing capital fund in new projects. The High Impact Scenario generates higher revenues during the business plan period and so doesn't have to utilise as much of the pre-existing capital as the other scenarios.
- Proportionally, the Medium Impact Scenario generates the least amount of cash for the scale of development as it relies on the wholesale electricity market for electricity sales for grid connected renewables.
- The price for wholesale electricity is very high now, but longer term projections assume low wholesale prices to minimise risk.
- The High Impact Scenario assumes long term power purchase agreements to underpin electricity sales providing longer term price security.
- The 2.5% inflation forecast will be overshot by a large margin in the early years. This will however have a net positive impact on these projections. See section 8.6 for more detail on this.

8.4.2 Community Benefit

- Total community benefit includes the community fund payments, ranging between £1.3 million and £10.6 million over the life of the portfolio, as well as the cash surplus generated by the business.
- As a result, total community benefit ranges between £5.7 million and nearly £23.2 million over the portfolio life.
- The economic benefit per MW over the portfolio life is lower than that for the business plan period, as the cost of capital payments, a large proportion of which is recirculated within the local economy, reduce significantly in the later part of the portfolio life as capital is repaid.
- Similarly, the forecasting assumes very low overhead costs for the period after the business plan, as explained in section 8.2 above.

Figure 15: Community Benefit by Scenario

	Low Impact Scenario		Medium Impact Scenario		High Impact Scenario	
	Business Plan Period Totals	Portfolio Lifetime Totals	Business Plan Period Totals	Portfolio Lifetime Totals	Business Plan Period Totals	Portfolio Lifetime Totals
Community fund	168,250	1,266,000	221,252	4,261,000	295,000	10,635,000
Cash surplus in period	-	4,449,000	-	4,925,000	-	12,535,000
Total community benefit	168,250	5,715,000	221,252	9,186,000	295,000	23,170,000
WoE opex & overheads spend	1,708,000	7,016,000	2,186,000	13,757,000	2,491,000	24,365,000
WoE share, bond & debt interest	2,371,000	6,607,000	2,555,000	11,297,000	3,038,000	21,457,000
Estimated fuel bill savings	533,000	4,748,000	665,000	6,189,000	752,000	7,149,000
Total local economic benefit	4,780,000	24,087,000	5,627,000	40,429,000	6,576,000	76,143,000
Community benefit/yr	42,000	173,000	55,000	278,000	74,000	702,000
Community benefit/MW/yr	3,000	12,000	3,000	10,000	3,000	15,000
Economic benefit as % of revenue	48%	45%	48%	44%	56%	44%
Economic benefit ex fuel bill savings	42%	36%	42%	37%	49%	40%
Economic benefit/yr	1,195,000	730,000	1,407,000	1,225,000	1,644,000	2,307,000

- Commercial solar schemes typically offer around £200-£500 per MW per year of community fund. The projections here suggest that community solar schemes can offer between 20-70 times greater levels of community benefit.
- Whilst a commercial model could provide the same level of energy savings, the majority of offers in the market seem to peg electricity sales to the same price that the building owner currently pays, thereby offering little in the way of savings.
- Commercial schemes will generate little of the rest of the economic benefit outlined in Figure 15.

8.5 Capital Investment

8.5.1 Scenario Summary

- To deliver BWCE's aspirations in terms of new asset development between now and 2025 we will need to raise between £2.3 and £29.1 million for capital investment and asset development costs.

Figure 16: Capital. Investment by Scenario

	Low Impact Scenario	Medium Impact Scenario	High Impact Scenario
Renewabe energy asset cost	(2,010,000)	(9,736,000)	(27,032,000)
Capitalised development fees	(350,000)	(1,100,000)	(2,120,000)
Covered by:			
New debt	-	2,609,000	9,209,000
New share or bond investment	1,574,000	7,441,000	19,157,000
Existing share capital invested	786,000	786,000	786,000

- All Impact Scenarios fund rooftop solar schemes from shares.
- The Low Impact Scenario funds all investment from shares.
- The Medium and High Impact Scenarios fund rooftop solar schemes from shares and fund 40% of funds invested in ground mount solar and wind projects from senior debt.
- 40% senior debt is lower than current rates for BWCE's existing projects, where senior debt is nearly 50% compared to total assets or nearly 60% compared to fixed assets.
- The High Impact Scenario could carry slightly higher debt levels, but this could create cashflow problems later in the project life.

- The High Impact Scenario can also spread debt over a longer term due to greater revenue security brought by the long term PPAs.
- Current debt interest rates were around 3% when BWCE last took out new debt in 2020. This modelling assumes 5%. Every additional 1% in debt interest reduces the cash surplus by between 8% - 14% depending on the scenario.

8.5.2 Funding Strategy

- In addition to debt, community finance will be required, around £1.5 million in the Low Impact Scenario, £7.4 million in the Medium Impact Scenario and £19 million in the High Impact Scenario.
- BWCE had raised £1.2 million of new share capital by March 2022. Following investment in new projects and meeting a range of share withdrawal requests, BWCE now has £785,000 left of pre-existing share capital to invest further in new projects.
- The balance of funds required will be raised by:
    - Marketing shares and raising the profile of the investment opportunity in the local area;
    - Conducting market testing of investor interest in bonds and gauging the most appropriate fit between investor and BWCE needs in terms of bond term, structure and rates of interest;
    - Developing a bond offer and promoting it nationally via funding platforms such as Ethex or Abundance.
- Between October 2011 and October 2016 BWCE raised £10 million in shares and bonds for its own projects and raised nearly £7 million for community renewables projects in partnership with other community groups.
- However, during this time, share investment was eligible for tax relief through the Enterprise Investment Scheme, which is no longer available for these types of projects, and shares were available to investors from further afield than just the local area.
- Given funds already raised but not yet invested and considering experience to date, it is reasonable to assume that funding targets for the Low & Medium Impact Scenarios are achievable.
- The target funds to raise in the High Impact Scenario will be more challenging in the current climate and without tax relief. However, in our favour we have:
    - A strong community model with clear local benefits, directly addressing vitally important issues around climate change that are gaining ever clearer public profile – offering people the opportunity to be part of the solution as well as the problem;
    - A strong track record of delivery and responsible management of funds already invested;
    - Low (though rising) bank interest rates and limited comparable options with a similar risk-reward profile;
    - Tax efficiency with investment through Innovative ISA eligible bonds.
- The preference is to focus share raising in BWCE's local area so we can maximise local membership. If the level of funds required proves difficult to reach, the share offer can be opened to investors from further afield. Nonetheless, we will continue to ensure that a majority of all new members come from the local area.
- In addition to community finance and debt BWCE will also look at other sources of finance, for example Local Authority investment.

8.6 Sensitivities

- The principal sensitivities that have a material impact on cash surplus, and so the underlying financial strength of these projections, are the impact of inflation and the knock on impact on the cost of debt.
- As indicated in section 8.2 above, inflation for new projects is assumed to be flat at 2.5% in the early years and the cost of debt is set at the rate that is now achievable at 5%.
- Debt terms are fixed when the loans are taken out for the term of the loan.
- Every 1% increase in the cost of debt will reduce the cash surplus by 8% (Medium Impact Scenario) and 14% (High Impact Scenario) as the two scenarios that utilised debt.
- Incorporating the current OBR forecasts for inflation over the next few years would increase the cash surplus by 55% and 100% for those two scenarios, illustrating the significant headroom available within the projections and a capacity to absorb higher rates of debt interest if necessary.
- The increase in cash surplus by adding in the higher inflation forecasts also incorporate the increase in costs associated with higher inflation as well.

9 Risk Management

Table 10 analyses the key risks that could jeopardise the delivery of BWCE's community business plan outcomes. The risks that remained in spite of mitigation are due primarily to factors beyond BWCE's control. These risks will be material in determining BWCE's ability to hit the higher targets outlined within this document.

A strategic review will be conducted during 2023 to assess progress on the milestones and to alter course if necessary to maximise impact. Some of the mitigation actions outlined in the table below will need to be employed in light of this review and the external landscape found at that time.

Table 10: Risk Analysis

Goal	Risk	Impact	Risk	Total	Mitigation	Total
Goal 1 – Maximise Community Renewables	Wind energy policy in the B&NES Local Plan update is not adopted	4	3	12	• Mobilise support for policy as part of consultation and public inquiry	10
	Community support for large scale solar and wind energy projects is not secured	4	4	16	• Emphasise strong community energy model as part of local, grass roots community engagement	12
	Grid connection for grid connected solar and wind is either too difficult or too expensive	5	4	20	• Focus on smaller ground mount sites during site search and in particular private wire opportunities to reduce impact • Develop partnerships with commercial developers to take already consented sites into community ownership • Increase flexibility of generation through use of storage	14
	Technology development around storage and/or heat (hydrogen electrolysis, smaller scale battery, heat pumps in heat networks) does not deliver viable options within plan period	3	4	12	• Establish clear sense of the type of technology options that would work best in a community energy context and with knowledge of the sorts of sites available • Establish good relationships with technology companies with potential for developing funded trials • Be discerning with opportunities to ensure a good match with regards technology and partnership	9
	Not enough viable sites for rooftop or ground mount solar secured within BWCE's area	4	4	16	• Develop clear and targeted offer • Utilise BWCE's local networks to identify potential sites • Promote opportunity through multiple, audience specific channels • Continue discussions at sub regional level about collaboration with other community energy groups around project development to increase scale and capacity for new development within BWCE's area • Consider developing larger shared ownership renewables projects outside of BWCE's area, in partnership with other community energy groups	10
	Insufficient finance raised to build out projects	5	3	15	• Already raised £1 million for capital investment. See financing strategy, section 8.5.	10
	BWCE's existing renewables projects fail to hit generation targets consistently as a result of operational management, reducing ability to generate surplus for fund, interest to	5	3	15	• Strong asset management already in place • Fortnightly reviews pick up issues • Ongoing communication to keep track of progress on multiple issues and ability to escalate and rapidly deal with more serious issues if and when they occur.	10

Goal	Risk	Impact	Risk	Total	Mitigation	Total
	members and good news stories to communicate				• Work with asset manager to keep abreast of changes in the market in terms of commercial terms and practice to get best and most effective deals around O&M contractors, PPAs, insurance etc.	
	Changes in government policy or market regulation undermines income from existing and future projects	5	3	15	• Diversify income streams and increase potential for accessing increasingly flexible markets • Engage with market reform to strengthen community energy models • Monitor market development in order to prepare and plan for changes	12
Goal 2 – Enable Local Energy Supply	Unable to secure PPAs at price point required to make new grid connected renewables projects viable	5	4	20	• Identify purchasers of electricity who see social value of community energy • Draw in skills and experience required to execute to high standard • Develop alternative approaches	15
	Commercial sector squeezes out potential for community energy offers around local supply	3	4	12	• Identify strong supply partners with genuine interest and commitment on community energy and resources to deliver effectively	9
	Innovation, around peer to peer trading, exempt supply for example, is not successful or regulatory changes required to replicate pilot projects are not forthcoming	4	4	16	• Clarify expectations and develop achievable goals at an early stage across all partners • Engage with market and regulatory reforms to to strengthen community energy models • Draw in skills and experience required to execute to high standard • Develop alternative and more mainstream options, e.g. a licensed supplier led offer	12
	Local supply and peer to peer trading offers don't demonstrate significant impact in terms of consumer interest or behaviour	5	3	15	• Ensure adequate resources are invested into the consumer engagement aspects of any pilot projects	9
Goal 3 – Maximise Community Role in the Energy Transition	Insufficient participants in flexibility pilots and/or unable to create a mechanism for engaging lower income households	4	5	20	• Create strong simple and engaging offer • Maximise all routes including fuller use of social media and community networks, encouraging word of mouth • Effective filtering of participants to ensure participants are well matched to demands of project and focus on customer service experience of 'pioneer' households to minimise dropouts and create positive stories • Create clear mechanisms for engaging and enabling households that are not able to pay to participate, including with grants	14
	Poor quality work by supply chain partners impacts on BWCE'S reputation and credibility	4	4	16	• Carry out due diligence on potential installer partners and ensure expectations around role and deliverables are clear • Develop clear and effective monitoring and reporting for both installer and customer in order to identify problems at an early stage so they can be rectified	10
	Flexibility pilot does not deliver required outputs or deliverables and grant funding is clawed back	5	3	15	• Effective project management • Establish clear expectations, in particular with lead EU partner	10

Goal	Risk	Impact	Risk	Total	Mitigation	Total
					• Clear focus on financial reporting and evidencing spend at all stages to prepare for successful EU auditing • Good communication with project partners, in particular with lead EU partner, to identify problems at an early stage so they can be rectified	
	Flexibility pilot does not deliver a viable community model to underpin replication	**5**	**4**	**20**	• Establish clear focus on issues that will determine viability of replication model • Clarify issues that are within BWCE's control and those that are not • Establish clear milestones for reporting and reviewing progress against the factors that BWCE can control • Support and strengthen sector lobbying with Ofgem, BEIS and grid operators to address market and regulatory blocks to replicating a community model	**15**
	Other innovation areas are unsuccessful and do not demonstrate viable community business models	**4**	**4**	**16**	• Clarify key questions to be addressed during pilot projects and establish appropriate learning and monitoring strategies to ensure necessary data is collected in order to answer them • Ensure appropriate expertise and capacity is brought into deliver projects, either internally or through external partnership • Monitor wider market development to maximise potential for success	**14**
Goal 4 - Increase Recognition of BWCE & the Community Energy Model	Limited outreach and communications undermine ability to engage with new audiences necessary to deliver business plan outcomes	**4**	**4**	**16**	• Refine and develop marketing strategy, identifying new opportunities for community partnerships • Monitor, review and adapt approaches over time in the light of experience	**12**
	Limited outreach and communications limits recognition of BWCE and the community energy model and ability to deliver business plan outcomes	**4**	**3**	**12**	• Ensure messages and approach to engagement is compatible with needs of target audiences • Build an engaging narrative that includes a strong emphasis on the stories and experiences of BWCE's current projects, partners, fund recipients • Monitor, review and adapt approaches over time in the light of experience	**10**
	BWCE loses sight of key local stakeholder interests undermining local partnerships and ability to deliver business plan outcomes	**4**	**3**	**12**	• Strong partnerships already in place • Retain good communication with regular reviews and be open to changes in approach from key stakeholders • Identify and develop new strategic partners with shared objectives offering opportunities for mutual benefit and stronger combined outcomes	**8**

Glossary

- **Community owned**
  Community ownership of energy projects is usually structured around democratic, member run and not for profit legal entities that are asset locked, often Community Benefit Societies, but may also be Community Interest Companies or Coops. These community enterprises raise community finance to build energy assets which are then held and operated for and on behalf of the community.
- **Asset lock**
  An asset lock protects the founding principles and ethos of the community business. If assets are sold or transferred, the transfer must satisfy one of the following requirements:
  - It is made for full market value so that the BWCE retains the value of the assets transferred;
  - It is made to an asset-locked body specified in the organisation's rules (such as another community benefit society)
  - It is made to another asset locked body with the consent of the Regulator; or
  - It is made for the benefit of the community
- **Area of benefit**
  BWCE's area of benefit is the geographical area in which we operate, and in which we primarily conduct our community benefit activities. Our area of benefit is described in our Rules as Bath and surrounding area, which we have defined as the whole of Bath and North East Somerset (B&NES) and the neighbouring community area boards of Corsham, Bradford on Avon and Trowbridge in Wiltshire, and parishes of Marshfield, Bitton, Cold Ashton and Wick and Abson in South Gloucestershire
- **Feed in Tariff (FIT)**
  The Feed in Tariff was a government programme designed to promote renewable and low-carbon electricity generation technologies - it was introduced on 1 April 2010 and was wound down after 2019. The FIT scheme supported anyone who installed renewable energy technology up to a capacity of 5MW. FIT payments are made quarterly (at least) for the electricity generated and exported.
- **Power Purchase Agreement (PPA)**
  A PPA is the contract between a producer of renewable electricity (such as BWCE) and a purchaser (such as a national energy supplier).
- **Community Heat Network**
  A heat network is a distribution system of insulated pipes that takes heat from a central source and delivers it to a number of domestic or non-domestic buildings or flats within one building. A community heat network usually refers to smaller scale heat networks supplying a small number of buildings or flats within one building and is run by and/or owned by the community.
- **National Grid**
  National Grid is the national system operator of the UK's electricity and gas supplies. It is a privately owned company that manages the `distribution of power to homes and businesses throughout the UK.
- **Contracts for Difference auction process**
  The Contracts for Difference (CfD) scheme is the government's main mechanism for supporting low-carbon electricity generation. Introduced in 2015 as part of the Electricity Market Reform (EMR) programme, the mechanism provides a guaranteed price of electricity to successful generators over 5MW. CfD are allocated via a competitive auction, with the aim of allocating support to those projects with the lowest cost.
- **Rural Community Energy Fund (RCEF)**
  A £10million government funding scheme to support rural communities across England wanting to set up renewable energy projects in their area. BWCE has various RCEF-funded projects including feasibility studies for ground mount solar schemes and a solar powered community EV charging network.
- **Local plan**
  Local plans are developed by the relevant Local Planning Authority, usually the local authority or one of the 10 National Parks across the UK. The Local Plan sets out a framework for the future development of an area and seeks to balance priorities and strategic plans on a 15-year horizon
- **Neighbourhood Plan**

Neighbourhood Plans will set out the vision and planning policies for the use and development of land within a parish or Neighbourhood Area and will be in line with overall Local Plan for the area.

- **Capital Expenditure (Capex)**
  Funds used to purchase, maintain or upgrade physical assets such as property and equipment.
- **Operational Expenditure (Opex)**
  Funds used for operational activity within the organisation, for example staffing or insurance.
- **Private wire connection for renewable energy projects**
  Private wire connections link electricity generating plant direct to a consumer's meter rather than to the grid. This could either be a solar PV system on a roof connected behind the meter of the consumer or a larger wind turbine or solar array connected by separate cable to a business park or large electricity consumer. In all cases the consumer will use all electricity first, any electricity not consumed on site will only then be exported to the grid.
- **kW**
  Kilowatt: unit of power equal to 1000 Watts
- **kWh**
  Kilowatt Hour, a unit of energy - one hour of electricity usage at the rate of 1Kw
- **MW**
  Megawatt: Unit of power equal to 1,000,000 Watts
- **MWh**
  Megawatt Hour, a unit of energy - one hour of electricity usage at the rate of 1Mw
- **GW**
  Gigawatt: Unit of power equal to 1 billion Watts
- **GWh**
  Gigawatt Hour, a unit of energy - one hour of electricity usage at the rate of 1Gw
- **Flexibility**
  Demand flexibility uses communication and control technology to shift electricity use across hours of the day while delivering end-use services (e.g., air conditioning, domestic hot water, electric vehicle charging) at the same or better quality but lower cost.
- **Ofgem**
  The energy regulator for Great Britain
- **Financial Conduct Authority (FCA)**
  The FCA is the conduct regulator for around 51,000 financial services firms and financial markets in the UK.
- **Peer to peer trading**
  Peer-to-peer energy (P2P) trading refers to the buying and selling of energy between multiple parties. Most trials have seen excess energy generated from solar panels, being transferred and sold to other users via a secure platform. Peer-to-peer energy trading allows consumers the choice to decide who they purchase electricity from, and who they sell it to. (CEE definition)
- **Flexible grid connection**
  flexible connections allow renewable energy generators such as BWCE to connect to the grid for a much lower up-front cost in return for agreeing to export less electricity when supply exceeds demand.
- **Hydrogen electrolysis**
  Electrolysis is a promising option for carbon-free hydrogen production from renewable and nuclear resources. Electrolysis is the process of using electricity to split water into hydrogen and oxygen. (energy.gov)
- **Fuel poverty**
  Fuel poverty occurs when people are unable to afford to heat their homes. Under the LILEE indicator, a household is considered to be fuel poor if they are living in a property with a fuel poverty energy efficiency rating of band D or below they are left with a residual income below the official poverty line when they spend the required amount to heat their home.
- **Ground mount solar**
  Solar panel arrays mounted at ground level, often set in rows and using metal frames to angle the panels for maximum irradiance. Most of the largest solar panel arrays are ground mounted.
- **Rooftop solar**
  Solar panels mounted on rooftops. This can be for residential purposes (smaller setups serving individual households, often supplying electricity directly into the home) or for commercial purposes, sometimes mounted on factories or other large industrial buildings.
- **Zero carbon transition**

The process of moving away from a reliance on fossil fuels and the reduction of carbon emissions to zero, or net zero if referring to a net zero transition.

- **Net Zero**
  Net zero refers to a state in which the carbon emissions (and other greenhouse gases) going into the atmosphere are reduced to such a level that remaining emissions can balanced by the equivalent removal of emissions out of the atmosphere.
- **Heat pumps**
  A heat pump is a system used to heat buildings (often domestic) by transferring thermal energy from a cool area to a warm area, effectively pumping heat around an area to control the temperature. They are powered by electricity and provide a more carbon efficient heating solution than gas boilers.
- **Lithium ion battery**
  A rechargeable battery that is suitable for storage of renewable energy.
- **Flex Community**
  Flex Community is the UK element of a trial by BWCE and Avalon Community Energy (ACE) on an EU Funded project called ReDREAM. It explores how 'flexible' households can be around the times they use electricity so we can work out how best to match household demand to renewable supply. The project is an innovative trial looking at ways to make the most efficient use of renewable energy to meet household electricity demand.
- **Licensed energy supplier**
  A company regulated by Ofgem and licenced to sell electricity and/or gas to consumers
- **Carbon intensity**
  The carbon intensity of electricity is a measure of how much CO2 emissions are produced per kilowatt hour of electricity consumed.
- **Energy efficiency**
  Energy efficiency means using less energy to perform the same task – that is, eliminating energy waste. Energy efficiency brings a variety of benefits: reducing greenhouse gas emissions, reducing demand for energy imports, and lowering our costs on a household and economy-wide level. (EESI)
- **Electric Vehicle (EV)**
  A car or road vehicle that runs on electricity rather than petrol.
- **Grid capacity**
  The maximum amount of energy that the UK energy network can supply and deliver at any given time.
- **Onsite generation**
  Energy produced and distributed
- **Maintenance service reserve**
  Cash held by BWCE to cover the cost of maintenance and repairs for our projects during their lifetime.