

Blaenau Gwent Energy Prospectus

Annual Review 2019-2020

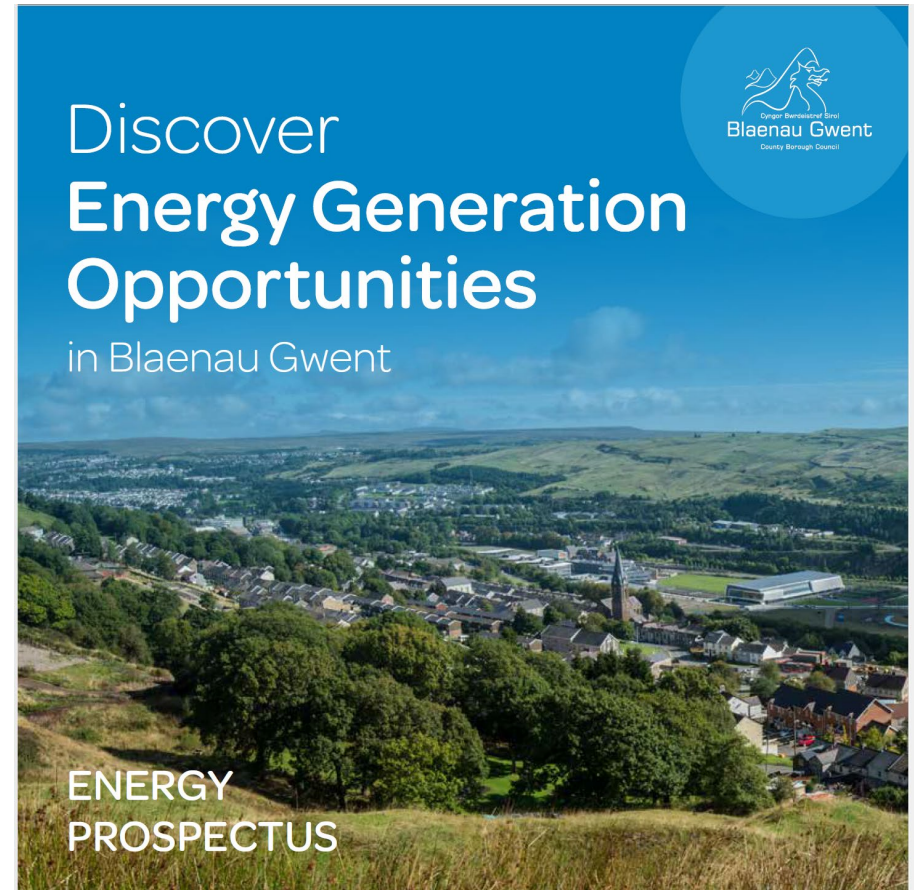


1. Introduction

The Blaenau Gwent Energy Prospectus was approved by Regeneration Scrutiny Committee and Executive Committee in December 2019.

This review provides a progress update on projects for the last 12 months. Within the document we have included a summary of the projects identified within the prospectus and their BRAG status followed then by more detailed summaries for each of the projects throughout the document.

The work and projects carried out to date will deliver upon the Energy Prospectus ambitions whilst also supporting the work required as a result of the Council's decision to declare a climate emergency. The Council have developed a Decarbonisation Plan to become net zero by 2030 and the Energy Prospectus will be complimentary to and support the Council in fulfilling this ambition.



1. Introduction

Blaenau Gwent County Borough Council
Decarbonisation Plan



2020 to 2030



Transition Pathway

Challenges in reaching Carbon Neutrality

The Council approved the Decarbonisation Plan in September 2020 and declared a Climate Emergency.

The Decarbonisation plan looks at our current Carbon Impact as an organisation and sets out the key challenge areas that would support us in becoming Carbon Neutral by 2030.

The Projects within the Energy prospectus will help us on the journey to Carbon Neutrality through identifying opportunities for renewable energy generation and ways that we can use energy more efficiently in the future.

Collaboration across the organisation and with stakeholders will be key in delivering upon the work challenges identified within the Decarbonisation Plan and achieving our net zero target.

2. Projects Overview

The table below provides a quick reference to the status of current projects. Further detail for each of the projects is included throughout this document.

Project Name	Total Cost / Capex	Funding Source	BRAG Status	Comments
RE:FIT	£4.1 million	Salix Loan		Corporate and leisure trust buildings completed. Street lighting works commenced.
The Works District Heating Expansion	£1.2 million	Private & Public sector		Hybrid business units have been connected to the network
District Energy Network Development	£9 million	Private & Public sector		Opportunities identified but dependent upon future development across the sites
Wind Generation	£4.6 million	Private & Public sector		Progress has been made to identify site constraints and potential for grid connection
Hydro Generation	£500k	Private & Public sector		Funding secured for feasibility studies, tenders issued to commission feasibility
Horizon 2020 – PENTAGON	£324k	EC Horizon 2020		Project reached a conclusion December 2019.
Horizon 2020 – DRIVE	£300k	EC Horizon 2020		Project is in final year and will end November 2020.
Energy Brokering	TBC	TBC		Potential routes to delivery considered, further work on delivery models to be carried out
Material Broker (Solar PV and Lighting)	TBC	TBC		Pilot phase for Council to purchase and install LED lighting being developed.
Electric Vehicle Charging	£650k	OLEV, Local Authorities		Charge points installed and commissioned across Gwent. Works delayed due to COVID-19.
Council Fleet Review	TBC	TBC		Consultants commissioned to develop a route towards low emission fleet.

3. Energy Efficiency – Re:Fit Programme

The Re:Fit Programme is an overall programme of projects to consider the installation of Energy Conservation Measures (ECMs) across BG buildings with a view towards achieving long term energy savings and carbon reduction.

The ECMs are being delivered across a portfolio of buildings, including:

- Corporate Buildings,
- Schools,
- Leisure Buildings; and
- Street Lighting.

The types of ECMs being installed include energy efficient lighting, solar photovoltaic (PV) panels, variable speed drives, boilers and combined heat and power units.

The contract used for this programme is performance based and is required to deliver guaranteed Energy (kWh) and Carbon Savings. Performance is monitored through an accredited process called Measurement and Verification. If savings are not achieved the Contractor is required to compensate the Council for savings that should have been achieved.

To fund the cost of the works, the Council has utilised Salix Interest Free Loan Funding to do this the overall programme must achieve savings that would enable payback of the investment within 8 years.

It is expected that the projects will enable us to save circa. 880 tonnes of carbon per annum.

3. Energy Efficiency – Corporate Buildings

Corporate Buildings

A range of Energy Conservation Measures (ECMs) have been installed throughout our Corporate Buildings.

The range of ECMS being installed across the buildings included:

- LED Energy Efficient Lighting;
- Solar Photovoltaic (PV) Panels;
- Boilers; and
- Building Management Systems.

Our Corporate Landlord Team worked with the Contractor to identify the most appropriate ECMs for each building, potential energy savings and carbon impact.

Some of the buildings within this part of the portfolio were completed before 31 March 2019 and so they benefit from the Feed In Tariff subsidy.

To ensure that the savings achieved are in line with those guaranteed through the Contract, Measurement and Verification Plans will be put in place and reviewed for up to 8 years after the installation.



Solar PV Installation at Silent Valley Waste Transfer Station

3. Energy Efficiency - Schools

Schools

A range of Energy Conservation Measures (ECMs) have been installed across three Schools within Blaenau Gwent. The ECMS being installed across the buildings included:

- LED Energy Efficient Lighting; and
- Solar Photovoltaic (PV) Panels.

Working together with the Schools we were able to identify the most appropriate ECMs for each school building. Due to the age of some of our schools we also had to carry out asbestos surveys and ensure works did not enter areas where asbestos was present.

The results are improved lighting levels, better quality of lighting and long term source of renewable energy.

Measurement and Verification will also be carried out for these buildings to ensure that savings are achieved in line with guaranteed performance.



3. Energy Efficiency – Leisure Trust Buildings

Leisure Trust Buildings

Through the collaborative working of the Council and the Leisure Trust we have also been able to install a range of Energy Conservation Measures (ECMs) across Leisure Trust Buildings. The range of ECMS installed across the buildings included:

- LED Energy Efficient Lighting;
- Solar Photovoltaic (PV) Panels;
- Combined Heat and Power (CHP); and
- Variable Speed Drives (VSDs).

Work between the Council and the Leisure Trust helped identify the most appropriate ECMs for each building across Sports Centres, Libraries and Learning Action Centres. The results for most of the buildings are improved lighting levels and better quality of lighting and for those who had Solar PV fitted, a long term source of renewable energy.

Measurement and Verification will ensure that the trust will achieve the guaranteed energy savings through the measures installed.



Solar PV Installation at Ebbw Vale Sports Centre

3. Energy Efficiency – Street Lighting

Street Lighting

A total of 6,442 of the Council's street lighting stock was non-LED and therefore not the most energy efficient. The Council also operated multiple management systems some of which were obsolete and no longer supported.

We looked at the Councils street lighting inventory and identified that there were 6,099 lights suitable for replacement with LED.

By replacing these lanterns with more energy efficient LED lighting together with management system nodes would assist in reducing our dependence upon obsolete systems to run our Street Lighting stock.

To ensure that the savings achieved are in line with those guaranteed through the Contract, Measurement and Verification will be put in place and reviewed for up to 8 years after the installation.



Street Lighting Installation Before and After

4. District Energy Networks

BGCBC established its first Energy Network as part of 'The Works' project, it provides energy (heat and electricity) to:

- General Offices and Gwent Archives (Heat);
- Leisure Centre (Heat);
- 11 – 16 School (Heat);
- Learning Zone (Heat and Electricity);
- Multi Storey Car Park (Electricity);
- Funicular (Electricity);

Our newest development of Hybrid Business Units at the Works have also been connected to the network. This means the businesses in the units will not have their own boilers and will receive heat from our centrally located Energy Centre.

The network at The Works still has further room for expansion and the technology installed within the Energy Centre has sufficient capacity to meet potential demands.

We also remain committed to exploring the opportunities for the development of additional district heat network opportunities in the Northern Ebbw Vale area. Development of the network in this area is dependent upon developments that may take place on sites in the area and their potential energy demands.



Energy Centre at 'The Works'



'The Works'

5. Renewable Energy Generation – Wind Power

Within the Energy Prospectus we identified two opportunities for Wind Generation within Blaenau Gwent.

Over the past year we have continued to consider these opportunities and have been working on a number of areas to determine whether the projects would be feasible and offer suitable levels of financial return to be taken forward.

Discussions have been taking place with the Distribution Network Operator (DNO) to identify whether there is capacity within the current network to accommodate the proposed projects and establish the costs that would be required to install the required grid connections.

We have also looked at local users of energy which could improve the overall financial picture of the project. Using energy onsite or locally would reduce energy directly exported to the grid. This may have financial benefits and the localised generation and use of energy would play a key role in our ongoing journey to carbon neutrality.

These are being further developed with a view towards confirming high level feasibility before further work such as environmental studies etc. are commissioned.



6. Renewable Energy Generation – Hydro power

A Tender brief has been issued (closing 11th November) seeking technical consultants to carry out modelling and feasibility of sites across Blaenau Gwent.

To support this £20,000 of funding secured to investigate opportunities within the Llanhilleth and Cwm Wards through the Rural Development Fund LEADER programme.

The Consultants will be asked to use the sites already identified within the prospectus and shortlist up to two sites to take forward to feasibility stage.

In addition they will carry out further investigations in the Cwm and Llanhilleth areas alongside the river Ebbw to see if there are additional opportunities that could be feasible and carry out feasibility studies on up to two sites.

At the end of this work we will be able to determine whether hydro generation is feasible along with the costs and potential community benefits.



7. Research and Innovation - PENTAGON

PENTAGON was an Horizon 2020 funded Project with a consortium of 10 partners representing 5 EU Countries including the United Kingdom, Switzerland, Belgium, France and Italy. It was the first project we secured through the Horizon 2020 Programme.

The Council used its district heating network on The Works site as the demonstration site for the project. This required us to provide data and information about how our site operates that can be used to develop simulation models that will be used to explore the benefits technologies such as power to gas can bring.

Real world information and data about the way our network operates and performs in light of changes in weather and temperature enable the models to move beyond the theoretical and be more realistic in terms of potential results.

The Project lasted three years and started in December 2016. It came to an end in November 2019. We are currently completing project closure and final funding claims.



A screenshot of the SysCon EBBW VALE ENERGY CENTRE TREND interface. The interface shows a 3D rendering of the energy centre buildings and a menu on the right side. The menu includes options like "Menu Page", "LTHW Boiler Overview", "Boiler No.1", "Boiler No.2", "Boiler No.3", "Boiler No.4", "Plate Heat Exchangers", "CHP", "District Heating Pumps", "Misc", "Meters", "Biomass Boiler System", and "Heat Meters". The 3D rendering shows a large industrial complex with several buildings and a green area in the foreground. The interface also displays temperature and humidity data: "Plantroom Space Temp 25.5 °C", "Amenity Area Space Temp 18.5 °C", "25 °C", and "29 %RH".

7. Research and Innovation - DRivE

DRivE is an Horizon 2020 funded Project with a consortium of 8 partners representing 7 EU Countries. It is the second project we have secured through the Horizon 2020 Programme.

DRivE has sought to demonstrate the effectiveness of demand response by using 5 demonstration sites to validate simulation models that will measure the potential benefits of technology deployment. Blaenau Gwent's District Heating Network at 'The Works' is one of these pilot sites.

DRivE brings together cutting-edge science in artificial intelligence, forecasting and cyber security with emerging innovative SMEs making first market penetration in EU Demand Response markets.

Using forecast data, current performance data together with information about current energy costs and the potential impact of renewable energy technology and storage deployment they have considered the impact that this would have upon the demonstration site. The results are still being reviewed but this may lead to further projects that will enhance the way buildings on the site operate.

The Project has lasted three years and started in December 2017. It expected to come to an end in November 2020.



7. Research and Innovation – Smart Living

Catalysing Local Energy Blaenau Gwent CBC

Introduction

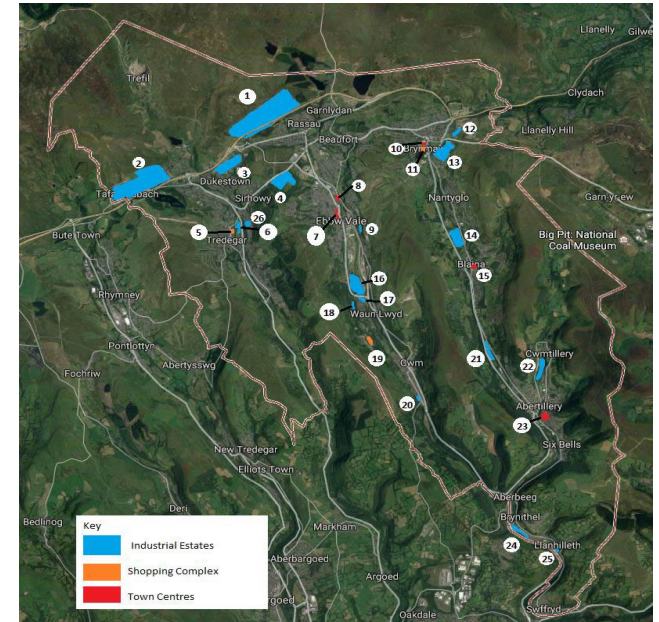
The Welsh Government Smart Living Initiative has been supporting the Council on its ambition to catalyse local energy through the building of separate but then integrated energy platforms across commercial/business – public – social/domestic assets.

The aim of Smart Living is to catalyse ambitions and help progress them to the point where they are able to progress independently of the initiative. To-date over 85% of initial schemes have achieved this and for £1m Smart Living facilitation support, schemes have attracted over £47m of investment of which nearly £20m was from the private sector.

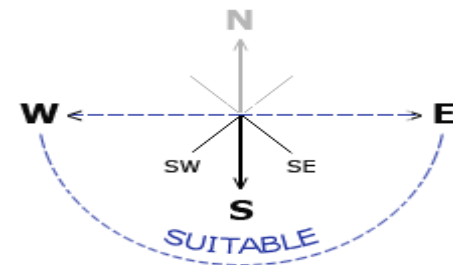
Background

In gathering evidence on the opportunities and potential for Blaenau Gwent, Smart Living has supported two phases of development:

- **Phase One 2016** – A report by BRE Wales looked at the scope and potential opportunities available to help develop energy platforms and what these could achieve. Although recognising the difficulties in establishing renewable energy in the Valley, the report acknowledged there were opportunities for development and provided a range of recommendations to pursue. These recommendations were agreed and this led to support for Phase Two activities.



Industrial Estates Across BG



7. Research and Innovation – Smart Living

- **Phase Two 2017/2018** – AECOM and Miller Research UK were commissioned to pursue development of the business/commercial energy platform taking forward the dual recommendations of the need to engage with the business community as well as an improved understanding of the technical aspects of local commercial buildings.

To assist with this, AECOM developed a commercial park tool which extracted characteristics from all the business parks in Blaenau Gwent and allowed for development of an overall picture of potential opportunities and benefits for the County borough. They also looked at potential roles and responsibilities which the Council could consider in support of developing local business parks covering both public and private buildings.

Miller Research UK engaged with the local business community and provided an analysis of business drivers and willingness to engage with business park improvements. However, further detailed work was required to test out emerging assumptions and options and so in Phase 2B 2018/2019, five business parks were chosen to focus on compiling more detailed understanding and engagement with businesses on the five parks. The further research work confirmed the potential to create net zero business parks leading to proposed Phase Three actions

- **Phase Three 2020/2021** – this phase will provide support to access technical detail to draw in support for developing a test pilot business park alongside Tech Valleys on a pathway to net zero involving both public and private buildings for deployment. It will kick start the potential link across to a social/domestic energy dimension in line with the original ambition.

8. Collaborative Project – EV Charging Infrastructure

The Gwent Regional Local Authorities EV project is a collaboration between:

- Blaenau Gwent County Borough Council;
- Caerphilly County Borough Council;
- Monmouthshire County Council;
- Newport City Council; and
- Torfaen County Borough Council.

Under this project we have installed 65 charge points across 34 sites. Blaenau Gwent acted as the Lead Partner for the procurement and has overseen Project Management of the Installation of the charge points.

One of the main drivers behind our decision to work collaboratively and submit a joint funding application to OLEV was a desire to deliver a consistent EV charging network across the Gwent region. The project is reaching a conclusion and the charge points will be fully operational by the end of November 2020.



9. Collaborative Project – Low Emission Fleet

As outlined in the Prospectus the Gwent Local Authorities commissioned a carbon reduction – fleet review and this included collecting data about mileage driven, fuel used by the directly operated fleets (owned, leased and rented) along with the business mileage driven by the staff owned grey fleet.

Each of the Authorities received a report for their area alongside a Gwent wide report.

The Council have since commissioned a follow up to this report and engaging consultants to develop a plan for the transition of our current fleet to low carbon emission vehicles and the energy infrastructure that will be required to support large scale charging or fuel storage.

We are also looking at options where an initial pilot of electric vehicles can be considered for some of our smaller fleet vehicles.

We will continue to work alongside the Gwent Authorities to ensure that our work aligns with that of neighbouring authorities and where possible a collaborative approach to delivery is taken.



City of London 26t electric RCV supplied by NRG Fleet Services



