



Llywodraeth Cymru
Welsh Government

Gwasanaeth Ynni Energy Service

Cefnogi ymdrech Cymru i greu economi carbon isel lwyddiannus
Supporting Wales' drive towards a successful low carbon economy

Annual Report 2019-20





Table of Contents

Page Title	Page No.
Introduction	3
Impact of the Energy Service	5
Clean energy investments in Wales	6
New and completed energy projects	7
Who we worked with	7
Energy Service projects since 2018	8
Project case studies	9
Community-owned solar:	9
largest rollout of rooftop renewable energy in Welsh history	
Swansea Bay leading the way to a greener health service	10
University of South Wales: a low carbon campus	10
Super-efficient street lights in Conwy	11
Community-owned wind turbine in Ceredigion	12
Strategic work	13
Low carbon vehicles and charging infrastructure in the public sector	13
Local ownership policy guidance	14
Regional energy planning	14



Gwasanaeth Ynni Energy Service

Cefnogi yndrech Cymru i greu economi carbon isel lwyddiannus
Supporting Wales' drive towards a successful low carbon economy

Cwmgors Rugby Club,
Ammanford.

30kW of solar panels.



Trimsaran Leisure Centre,
Carmarthenshire.

38.5kW of solar panels.



Clunderwen Village Hall,
Pembrokeshire.

19.5kW of solar panels





Gwasanaeth Ynni Energy Service

Cefnogi yndrech Cymru i greu economi carbon isel lwyddiannus
Supporting Wales' drive towards a successful low carbon economy

Introduction

This report presents the achievements of the Welsh Government Energy Service, from April 2019 to March 2020.

Welsh Government has ambitious targets for reducing greenhouse gas emissions and generating locally-owned, renewable energy.

The Energy Service supports the public sector and community groups to work towards these targets. It is a four-year programme funded by the Welsh Government, running from 2018 to 2022.

In 2019-20, our work focused on:

- Energy efficiency projects in the public sector
- Renewable energy projects in the public and community sectors
- Low carbon vehicles in the public sector
- Policy guidance on locally-owned renewable energy
- Regional energy planning for North Wales, Mid Wales, the Cardiff Capital Region and Swansea Bay City Region

To find out more about how the [Welsh Government Energy Service](#) can help your community or public sector organisation, please visit:



gov.wales/energy-service-public-sector-and-community-groups



@_energyservice



enquiries@energyservice.wales



Impact of the Energy Service

In 2019-20, we helped to secure:

£56,940,000

in lifetime energy bill savings and income for the **public sector**

£14,770,000

in lifetime income for **community energy groups** in Wales

the projects we have supported will save

146 thousand tonnes
of **CO₂** over their lifetime



that's the equivalent of taking 1,520 cars off the road permanently

A total investment of...

£28,392,000

into **energy efficiency and renewable energy** supporting...



10 local authorities



10 community groups and community councils



6 public bodies and institutions

£11,867,000

in interest free loans provided by the **Wales Funding Programme** for...



LED street lighting



Building energy efficiency



Renewable energy for buildings

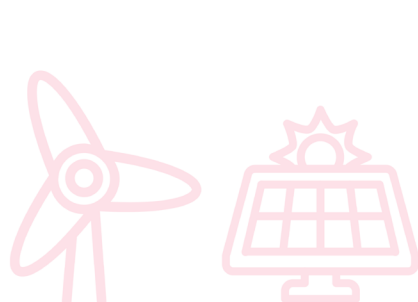
We have secured finance for:

26 Energy efficiency projects
15 Renewable energy projects

to help Wales reduce its energy demand and generate clean, locally owned power

Clean energy investments in Wales

In 2019-20 we helped to secure finance for **17.4MW** of wind, hydro and solar projects across the country



**That's enough electricity
each year to...**

Charge an electric car
412,000 times



Power **5,155** Welsh homes



Run
348,000
laptops



...or supply **two**
Principality
Stadiums for a
year



Gwasanaeth Ynni
Energy Service



New and completed energy projects

As well as helping to secure finance for 41 energy efficiency and renewable energy projects in 2019-20, we helped to complete existing projects and started developing new projects all over Wales:

Completed projects

Number of energy efficiency projects completed - 13

Number of renewable energy projects installed – 21

Total size of installed renewable energy projects – 3.8 MW

New projects

New energy efficiency projects – 47

New renewable energy projects – 35

Who we worked with

We supported a wide range of Welsh organisations in 2019-20:



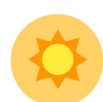
*Welsh Government, Natural Resources Wales, National Museums of Wales and National Parks

Energy Service projects since 2018

Since the Energy Service was launched in July 2018, we have supported:

190
Projects

22
Local authorities



Solar power

62 projects



Energy efficiency

45 projects



Hydro power

5 projects



Wind power

11 projects



Heat networks and renewable heat

12 projects



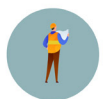
Battery storage

1 project



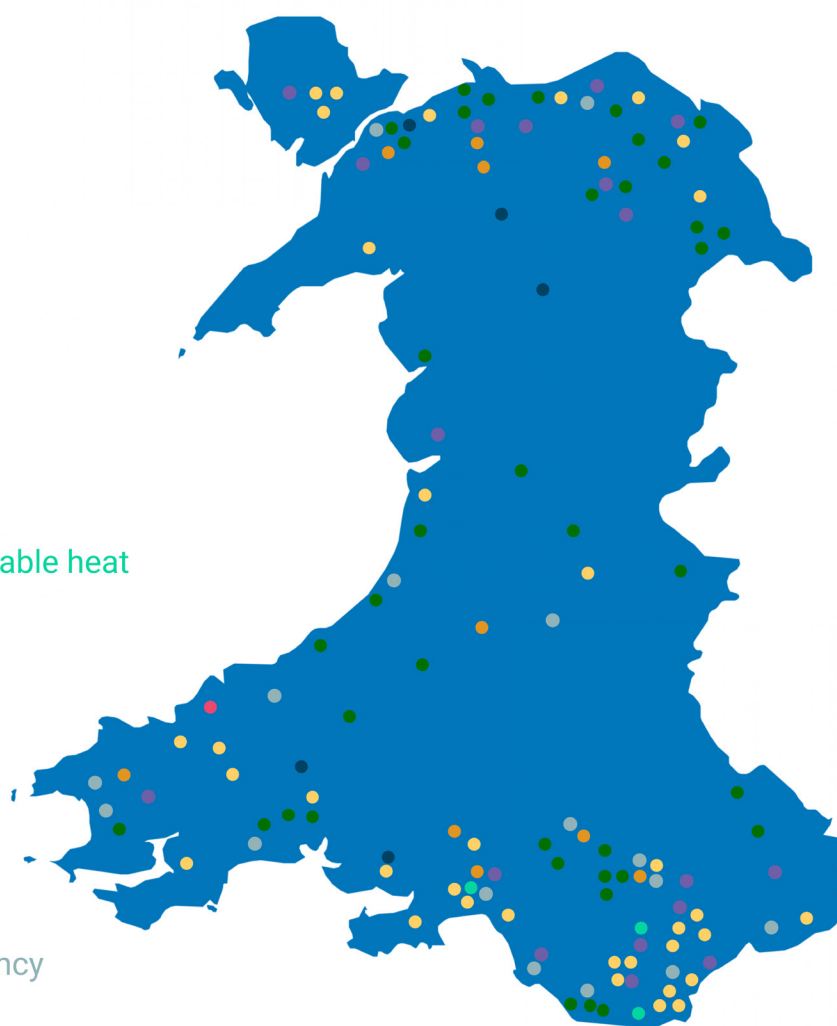
Efficient street lighting

24 projects



Refit: major energy efficiency

30 projects



Business models



Solar schools



Local energy
markets



Community
share offers



Self funding



Joint ventures



Community
partnerships

Project case studies

This section presents five case studies of projects which were supported by the Energy Service in 2019-20.

Community-owned solar: largest roll-out of rooftop renewable energy in Welsh history

The Welsh Government Energy Service worked in partnership with Egni Cooperative and Awel Aman Tawe to undertake the largest single roll-out of rooftop solar power in Welsh history.

To date, this ambitious project has installed over 7,000 solar panels across 82 buildings in Wales. The buildings are owned by local authorities, schools, the Archdiocese of Cardiff and other community organisations and Welsh businesses. The solar panels will save 18,000 tonnes of carbon dioxide over the project lifetime - equivalent to the annual greenhouse gas emissions from around 6,600 homes.

This is a win-win project for Welsh communities and businesses. Members of the public can buy shares in the scheme and can expect a 4% return on their investment. So far, £1.9 million has been raised through the community share offer. The organisations hosting the solar panels on their roofs benefit too – the solar electricity is 20% cheaper than from their previous suppliers.

We provided technical and commercial advice for the project. We also helped to secure £45,000 of funding to cover initial project costs and a £2.1 million loan from the Welsh Government Local Energy Fund to kick start the scheme. These locally owned solar panels are expected to bring in over £8 million of income to Wales over their lifetime. The next phase of installations is underway, with installation work starting on the largest rooftop solar panel system in Wales (500kW) at the Geraint Thomas National Velodrome, owned by Newport City Council.

Alongside the positive environmental and economic impact, this project has extra benefits. Gerard Namara, headteacher of Brynmawr School in Blaenau Gwent, which has 240 solar panels on its roof, said: "Brynmawr takes its environmental responsibilities very seriously. We are delighted that the school has been able to reduce its carbon footprint and work in partnership with a Welsh cooperative to install solar panels. We're also very keen to see how we might use the generation data on the solar web portal in our lessons and assess how different weather affects the amount of energy the panels produce.

The school will also receive £500 of free shares in the Coop, earning the school an income stream that we can use in our work on entrepreneurship education with the pupils. It's a great opportunity to understand how the coop business model works."

Swansea Bay leading the way to a greener health service

With support from the Welsh Government Energy Service and Refit Cymru, Swansea Bay University Health Board (UHB) is now leading the way on cutting carbon emissions in the health sector in Wales. In 2020, the health board began major works to improve the energy efficiency of its buildings. This year installations started in the first phase of a £7.7 million decarbonisation project.

Swansea Bay UHB also has ambitious plans for using more renewable energy with the aim of supplying green electricity to one of the biggest hospitals in Wales. This decarbonisation project will cut energy bills for Singleton and Morriston hospitals, as well as for community clinics and residential care centres such as Phillips Parade and Llwyneryr. This first phase of energy efficiency and renewable energy work will save Swansea Bay UHB around £26.8 million and 67,000 tonnes of carbon dioxide over the lifetime of the project. By acting to reduce carbon emissions, the health board will be able to spend less on its energy bills and more on providing health care services to the public.

We found ways for Swansea Bay UHB to reduce its energy bills by switching to more energy efficient lighting, ventilation and heating systems, as well as installing better control systems to manage and minimise energy use across their buildings. These energy cost savings will be guaranteed, thanks to the Refit Cymru 'energy performance contract' business model. This model places a legal obligation on the supplier who installs the energy efficient equipment, to ensure that any estimated energy savings are fully delivered. We helped Swansea Bay UHB put a business case together for the project and to secure a loan with 0% interest from the Welsh Government's Wales Funding Programme.

University of South Wales: a low carbon campus

The University of South Wales is committed to reducing its environmental impact and carbon footprint. The energy and estates team at the university are leading this ambition. They actively engaged with the Welsh Government Energy Service to accelerate and increase the scale of their decarbonisation work in 2019-20.

As a result of this collaboration, the university is investing £1.26 million in installing 2,400 solar panels (600kW) and upgrading 9,500 light fittings across its buildings and sports parks in Cardiff, Newport and Treforest. This is expected to reduce the total electricity footprint of the university by 15% and save approximately £3.7 million in energy costs and cut carbon dioxide emissions by 10,000 tonnes over the lifetime of the equipment. Installation is planned for summer of 2021.

The decreased energy costs will allow the university to invest money into other vital services for students. As an added benefit, well-designed LED lighting systems are proven to improve student concentration levels and decrease health problems associated with inadequate lighting systems, such as eye strain and migraines.

Super-efficient street lights in Conwy

Conwy County Borough Council (CBC) needed to replace ageing and inefficient streetlights. The council welcomed support from the Welsh Government Energy Service to speed up its LED replacement programme. Upgrading to energy efficient LED street lamps will benefit the council by providing a 50% reduction in carbon and running costs, as well as increasing the operational life of the lamps.

We completed the technical calculations and financial assessment to develop a programme to upgrade over 5,000 street lights to LED, which is 75% of the total in Conwy. A business case was then developed to secure a £1.77 million, 0% interest loan from the Wales Funding Programme. The project is expected to save the council £4.5 million in energy bills and over 8,000 tonnes of carbon dioxide over the next 20 years. The carbon savings provided are equivalent to 5% of their overall energy-related emissions. The council will also benefit from lower maintenance costs due to the improved reliability and longer lifespans of the LED lamps.

Richard Cochran, Street Lighting Manager for Conwy CBC, said: "Conwy County Borough Council is focused on climate change as the defining issue of our time and the greatest threat to our well-being, globally and locally. The authority is working on a plan to be a net-zero carbon user by 2030.

Conwy CBC were extremely grateful for the support and assistance provided by the Welsh Government Energy Service in preparing the funding application to Welsh Government. The team supported Conwy CBC in undertaking a thorough gap analysis of the street lighting asset and provided robust and sensible cost-saving option models that best suited the authority's resource and delivery strategy. The Welsh Government Energy Service has provided continual support throughout the project initiation. Conwy CBC look forward to implementing the project over the next two years."



Community-owned wind turbine in Ceredigion

The Ffrwd Farm wind turbine was built in October 2019, as a result of a collaboration between the Welsh Government Energy Service, Grannell Community Energy, Renew Wales and Secondwind. The locally owned turbine will generate enough power to supply 450 homes and, over its lifetime, will save 12,000 tonnes of carbon dioxide.

We supported Grannell Community Energy, a cooperative based in Mid-Wales, with a grant from Welsh Government to cover project development costs. We also carried out detailed technical assessments and business case development which secured finance from Welsh Government for the project. The scheme went live in 2019-20 and is now generating green electricity in Ceredigion.



The project was one of the last in the UK to benefit from the Feed-in Tariffs scheme. The turbine will generate an income of £2.27 million over the next 20 years. All profits from the tariff and electricity sales will support community activity relating to climate change. We are continuing to assist Grannell Community Energy to raise additional funds through share offers, which will enable early loan repayments and increase the proportion of community ownership.

Grannell Community Energy director, Jane O'Brien, said: "I am proud to be part of such a hard-working group of volunteers. The support received from the Welsh Government Energy Service has been invaluable, and our development manager has always been on hand."

Strategic work

In addition to our core work on energy efficiency and renewable energy projects, we completed a number of other activities in 2019-20:

- Studies into low carbon vehicles and electric charging in the public sector.
- Policy guidance on local ownership of renewable energy.
- Regional energy planning for North Wales, Mid Wales, the Cardiff Capital Region and Swansea Bay City Region.

Low carbon vehicles and charging infrastructure in the public sector

We completed two pilot studies to assess the potential for switching public sector fleet to low emissions vehicles and installing electric vehicle charging infrastructure:

Battery-electric pool cars for Vale of Glamorgan

Our transport experts worked with Vale of Glamorgan Council to collect and analyse fleet data to understand the potential for switching their current pool cars to electric vehicles. Using this data, our team found an opportunity for the council to save £22,000 a year on fuel costs by switching 38 petrol and diesel cars to battery-electric vehicles. We also advised the council on the charging infrastructure that would be needed to operate this new fleet. To date, the council has committed to 10 battery electric vehicles to increase the size of their current fleet and expect to replace the existing 38 cars with electric vehicles by 2021. This has estimated savings of 148 lifetime tonnes of carbon dioxide across the whole fleet.

A regional approach to upgrading fleet

We worked with eight public bodies in Gwent to help accelerate their transition to an ultra-low emission vehicle (ULEV) fleet. This regional approach provided a new forum for sharing experiences and best practice in electrifying public sector cars and vans.

We created a plan for each participant that identified which fleets should be considered for electric vehicles. To date, plans have been made to bring in 262 battery-electric cars and vans across the region, with estimated savings of 808 lifetime tonnes of carbon dioxide. Caerphilly Council are also acting on our recommendation to reduce the size of their existing fleet and use the remaining vehicles more effectively, with potential savings of approximately £70,000 annually.

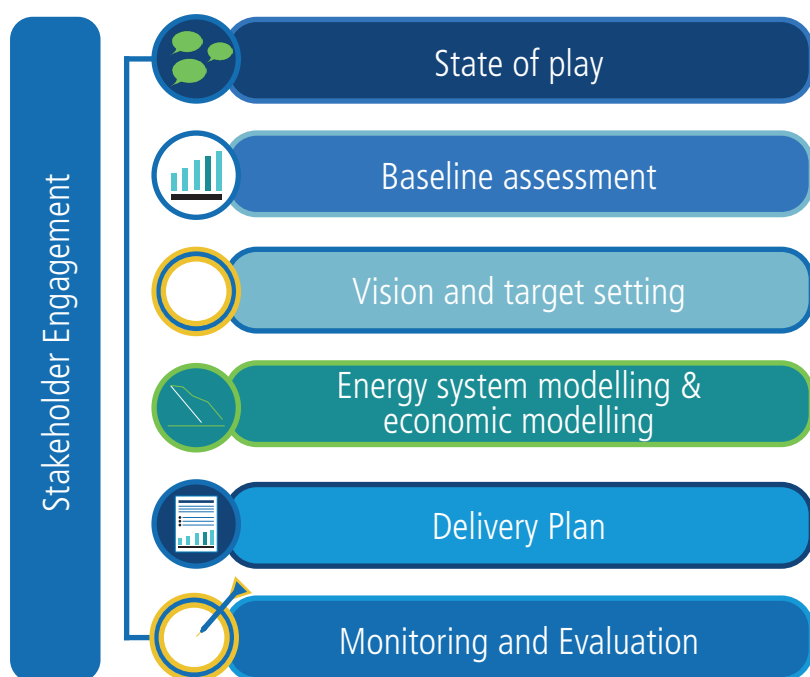
We will be introducing a new workstream dedicated to fleet decarbonisation in 2020-21. This will involve rolling out the regional approach tested in Gwent. We will work with public bodies across Wales to accelerate their plans to transition their fleets to ultra-low emission vehicles before 2025.

Local ownership policy guidance

Welsh Government has introduced a policy for all new energy projects to have at least an element of local ownership from 2020. The Local Ownership Working Group (LOWG) was set up to support community groups, public and private sector developers and decision-makers in meeting this policy objective. Our role was to coordinate the working group on behalf of Welsh Government. We gathered substantial and detailed evidence from a wide range of stakeholders. We produced a guidance document and case studies of shared ownership in practice, designed to help community groups, public and private sector developers to secure and maximise local benefits for Wales. These documents are due to be published later this year.

Regional energy planning

We are working alongside stakeholders in the Cardiff Capital Region, North Wales, Mid Wales and the Swansea Bay City Region to implement long-term regional energy strategies. This work aims to encourage a 'place-based' approach to decarbonisation and to embed energy topics into wider plans for economic development, under the regional City Deals and Growth Deals. These strategies will help to deliver targets for decarbonisation and help maximise the opportunities for people in Wales to benefit from a greener economy.



The energy planning work involves public, private and third-party stakeholders in each region. In 2019-20 we hosted a series of workshops to capture insight and ideas from key influencers in all four regions. This fed into our 'state of play' regional energy assessments and informed the 'energy vision' and targets for decarbonisation in each region. We calculated the current energy demands, carbon emissions and energy generation at a regional level for Mid Wales, North Wales and the Cardiff Capital Region. We also assessed the options for cutting carbon emissions at a regional level.

The energy strategies, owned by the regions, set out a future vision for decarbonising each region along with the priorities for achieving that vision, such as housing retrofit, national grid infrastructure and decarbonising agriculture. By March 2020, the energy strategies for three regions had been drafted; we will be working with the regions in 2020-21 to finalise and start to implement these strategies. The overall outcome will be for each region to have an effective governance structure to coordinate public, private and community collaboration to deliver decarbonisation impact over the longer term.



Llywodraeth Cymru
Welsh Government

Gwasanaeth Ynni Energy Service

Cefnogi yndrech Cymru i greu economi carbon isel lwyddiannus
Supporting Wales' drive towards a successful low carbon economy



