Llywodraeth Cymru
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Energy service: annual report 2023 to 2024

How the Energy Service has supported energy efficiency, fleet and renewable energy projects between 2023 and 2024.

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Our impact

The Welsh Government has ambitious targets to reduce greenhouse gas emissions and generate locally owned, renewable energy, to help deliver a greener, stronger, fairer Wales.

Since 2018, we, the Welsh Government Energy Service, have provided public sector organisations and community groups across Wales with grant funding, as well as technical, commercial, funding and procurement advice in the transition to net zero.

This work, which includes renewable energy generation projects, solar photovoltaic (PV) installations, energy efficiency and low carbon heating system updates, and zero carbon fleet rollouts, supports Welsh Government's net zero ambitions in every corner of Wales.

Calculation details

The lifetime savings are an estimate of total financial and carbon savings over the operational lifetime of the project. Carbon savings have been calculated using the current carbon conversion factors provided by the UK Government Department for Energy Security and Net Zero and multiplied by the estimated economic life of a project. This is known as the 'persistence factor methodology'.

'Financial close' means the projects have finance formally committed and there is a high likelihood that the project will progress to implementation/installation. This finance could come from a range of sources such as an organisation's own internal funds, the Wales Funding Programme, the Welsh Government Local Energy Loan Fund, community shares or other sources. A small proportion of

projects do not progress to implementation, for various reasons. For any Welsh Government financed projects, discontinued project finance would be released for other decarbonisation projects.

Overall impact July 2018 to March 2024

Impacts from implemented projects

We have successfully supported the installation of renewable energy, building energy efficiency, low carbon heat and zero emission fleet projects across Wales:

Level of investment

- The public sector and community enterprises invested £210 million to install renewable energy, building energy efficiency, low carbon heat and zero emission fleet projects

Energy generation

- Installed 44.5 MW of new renewable energy capacity in Wales – enough to power approximately 18,000 homes

Savings forecast

- An estimated £367 million in local income and savings over the lifetime of the projects

Carbon savings forecast

- These projects will save an estimated 857,120 tonnes of CO_2e – equivalent to preventing the burning of nearly 300,000 tonnes of coal.

Projects

Number of installed projects we supported by technology type, 2018 to 2024

- 12 standalone solar farms
- 4 wind power projects
- 117 building energy efficiency and rooftop solar installations
- 55 low carbon heating systems
- 3 hydropower projects
- 34 energy efficient street lighting installations
- 200 zero emission vehicle fleet and electric vehicle charging projects

Number of installed projects we supported by organisation type, 2018 to 2024

- 297 projects for local authorities
- 53 projects for NHS Wales health boards and trusts
- 21 projects for universities
- 11 projects for colleges
- 10 projects for fire and rescue organisations
- 3 projects for national parks
- 6 projects for the National Museums of Wales

- 1 project for Natural Resources Wales
- 3 projects for the Sports Council
- 35 projects for community organisations
- 9 projects for community councils

Our achievements in 2023 to 2024

What we supported and where in 2023 to 2024

£41.6 million secured for energy efficiency, renewable energy, low carbon heat and zero emission fleet projects, supporting to financial close:

- 4 projects for 4 community enterprises
- 7 projects for 5 universities
- 9 projects for 9 colleges
- 42 projects for 19 local authorities
- 2 projects for 2 fire and rescue organisations
- 1 project for the National Museums of Wales
- 1 project for the Sports Council
- 3 projects for health boards and trusts

In 2023 and 2024, we supported public bodies and community groups to secure £41.6m in funding to support energy efficiency, low carbon heat, renewable energy, and low carbon fleet projects. This investment will save an estimated 11,524 tonnes of CO2e in the first year of saving, equivalent to the annual emissions of approximately 3,200 UK homes.

We supported large scale strategic renewables projects to meet key stage gates last year. We secured land and grid, and planning permission for 5 renewable projects to the scale of 36.2 MW. Over the coming years, these projects will boost renewable energy capacity across Wales as well as a local ownership

contribution to an investment of ~£29 million in Wales.

> “ Collaboration is key if we are to meet our net zero ambitions. The Energy Service has been a hub for collaboration in the public sector and community enterprises for the last 6 years - we have built a growing momentum for decarbonisation across Wales. The impact so far is tremendous, but we know there is still much more to do. ”

David Powlesland, Head of Energy Service

Workstreams

Regional energy planning

Focusing on four key economic regions in Wales, we collaborate with partners across the public, private and community sectors to deliver regional activities that encourage sustainable growth, reduce fuel poverty and support Welsh Government’s ambitions to create a cohesive, net zero energy ecosystem. Since the workstream’s inception in 2019, we have engaged with over 300 local, regional and national organisations, to enable knowledge sharing and relationship building across the public and private sector.

In 2023 to 2024 we:

- Provided opportunities for stakeholders to come together to share learnings and collaborate.
- Supported the Local Area Energy Planning programme in each region and contributed to workshops as part of this programme.
- Advised on governance for the four Corporate Joint Committees in Wales, raising the profile of energy planning and delivery in these organisations.

- Provided support to newly appointed Regional Officers in each region to help establish regional roles in energy planning and delivery.
- Initiated the ‘All Wales Regional Meeting’ series and delivered workshops with regional officers and Welsh Government to discuss requirements for effective regional delivery of energy programmes.

Communities of practice

By providing technical guidance, sharing case studies, and enabling peer-to-peer learning, the Energy Service is encouraging public sector organisations and community enterprises to deliver their own decarbonisation projects. In 2023 to 2024, we shared guidance on topics including:

- How to decarbonise leisure centres and schools
- How to optimise the performance of existing roof top solar panels
- How to leverage hydrogen for public sector fleet vehicles
- What are Purchase Power Agreements (PPAs)
- A range of guidance notes for fleet operators

Through sharing knowledge and best practice, we are supporting the public sector and community groups to build capability and confidence within their own organisations, providing them with the tools to successfully deliver future decarbonisation projects without our support.

During Wales Climate Week, we shared guidance on how to engage with stakeholders to drive forward decarbonisation projects in a fair and effective manner. We also co-hosted a series of net zero events with Salix and Welsh Government, providing advice on low carbon heat for the public sector and leading an interactive session on stakeholder engagement.

‘Journey to a net zero Wales’ event series, co-hosted with Salix and Welsh Government. Photo credit: Kamila Jarczak

Renewable energy

Our support for renewable energy projects across Wales extends from initial concept through to financial close and completion, helping to harness Wales’ natural resources for the benefit of local communities.

Investing in community renewable energy projects

- Number of projects reaching financial close in 2023 to 2024: 2 standalone renewable energy projects for 2 organisations, in addition to 3 community

solar photovoltaic (PV) projects
- Investment: A total of £1.2 million invested in standalone renewables
- Total energy generation and carbon savings: 0.9 MW of new standalone renewable energy projects, with lifetime savings of 1,250 tonnes of CO_2e.

Case study: Egni Cydweithredol Cyfyngedig (Egni Co-op)

Solar photovoltaic (PV) panels, Egni Co-op

Summary

Community group Egni Co-op has so far installed over 4.8 MW of solar photovoltaic (PV) panels on nearly 100 rooftops across South Wales, with support from the Energy Service. In 2023 to 2024, we supported Egni to improve the modelling of its revenue projections across its full renewable energy portfolio, helping to confirm the viability of its ‘energy as a service’ business model. In 2023 to 2024, Egni installed approximately 240 kWp of capacity across South Wales. The ongoing £2.3 million project, which received £990,000 in funding from the Welsh Government Local Energy Grant, will further benefit the community by reinvesting surplus into future developments.

Impacts

- 230 MWh generation capacity across sites installed in 2023-24, increasing to 1.89 GWh when all sites are operational
- Estimated 930 tonnes CO_2e saved over project lifetime
- Projected equity returns of >£470,000, with surplus to be reinvested into further community energy developments. This includes providing educational support to schools

> “ Egni Co-op has continued to receive huge support from the Energy Service in 2023 to 2024. In addition to delivering a programme of over 2 MW of development and rooftop solar installs, our education programme engages young people in energy, leading to further reductions in carbon emissions and bills. We saved our existing 96 sites £312,000 in electricity costs in 2023, savings that wouldn’t have been possible without continued support from the Energy Service. ”

Dan McCallum, Director, Egni Co-op

Case study: YnNi Teg, Bwlchgwynt G100 Solar

Summary

The Bwlchgwynt G100 solar project will install approximately 580kW of ground-mounted solar PV alongside a 900kW wind turbine, currently operated by community group YnNi Teg. By locating solar and wind generation technologies side by side, the project will make better use of existing grid assets, helping Wales progress towards its net zero targets. Working closely with the community developer in the early stages of the project, the Energy Service supported YnNi Teg through advice and recommendations, including analysis of the site generation profiles, support to access funding, and preparation of an investment case for project finance. The £1 million project received £730,000 in funding from the Welsh Government Local Energy Grant.

Impacts

- 500 MWh of power generated each year
- Estimated 1,500 tonnes CO_2e saved over project lifetime
- Projected equity returns of >£190,000, with surplus to be reinvested into further community energy developments. This includes providing advice to other community energy organisations, as well as YnNi Teg's future generation plans
- Creation of a £72,000 Community Benefit Fund
- Estimated £680,000 benefit to local economy

> “ The Energy Service's help and advice in determining the viability of a co-generation scheme and securing the construction finance in challenging economic circumstances is why we will be building the Bwlchgwynt solar array this summer. We greatly value the continued support from the

> Energy Service for our mission to install more community-owned renewables in Wales. ”

Jon Townend, Executive Director, YnNi Teg

Building energy systems

In 2023 to 2024, we worked with councils, universities and other public bodies across Wales to help meet the Welsh Government’s ambitions for a net zero public sector by 2030. We supported energy efficiency and renewable energy projects for public sector buildings, installing LED lighting, solar PV panels, new air handling systems and building management system controls to help Wales use less energy.

Improving public sector buildings across Wales

- Number of projects reaching financial close in 2023 to 2024: 16 building energy efficiency and renewable energy projects for 9 organisations
- Investment: A total of £13.5 million secured
- Carbon savings forecast: 59,870 tonnes of CO_2e
- Cost savings forecast: £24.7 million estimated savings over the economic lifetimes of the projects
- Re:fit: Of the £13.5 million invested, £11.8 million was secured for 2 Re:fit projects.

Case study: Torfaen Council, Schools PV programme

Summary

The Energy Service supported Torfaen Council with its successful funding application for £1.2 million from the Wales Funding Programme, which resulted in the installation of roof mounted solar photovoltaic (PV) panels across 14 schools. We provided continual support throughout the project, which aimed to reduce grid electricity consumption to help Torfaen Council meet it carbon reduction goals, save money for the schools, as well as provide a learning opportunity for students.

Measures

- 715 kW of roof mounted solar PV panels

Impacts

- Estimated 2,459 tonnes CO_2e saved over project lifetime
- Estimated combined savings of £240,000 in running costs each year across the 14 schools
- Plan to integrate learnings and data from the project into the curriculum

> “ The solar installation project through Everwarm is an exciting opportunity for the whole school community, especially the eco-council, to get involved. Not only will the school make huge cost and energy savings, but it will equip our pupils with vital life skills and knowledge about green energy for the future. ”

Susan Roche, Headteacher, Garnteg Primary

Case study: Swansea University, Energy Saving Project Phase 1

Swansea University, LED lighting

Summary

The Energy Service supported Swansea University with its three-phase energy efficiency programme to decarbonise the university's energy systems and

support its ambitions to reach net zero by 2035. Working closely with the estates technical and project services teams, as well as the finance team, we supported with energy audits and initial financial modelling, helping Swansea University to secure £2.4 million from the Wales Funding Programme.

Measures

- LED lighting installed across 6 buildings with a combined footprint of over 44,000 sqm
- Solar photovoltaic (PV) roof installation
- Building management system control improvements

Impacts

- £292,938 annual savings
- Estimated 11,593 tonnes CO_2e saved over project lifetime
- More comfortable and environmentally friendly learning environment for students
- Practical opportunities to further research and teaching, inspiring student skills and research impact for the wellbeing of future generations and sustainable development

> “ Swansea University has embarked on an ambitious programme to decarbonise our energy systems as part of efforts to achieve net zero by 2035. We recognise we have a lot of work to do to meet these targets and are grateful for the vital support we received from the Energy Service. By helping us with energy audits and initial financial modelling, we have been able to implement several improvements across the University estate, resulting in annual savings of more than 500 tonnes of CO2e whilst also supporting learning and research impact for sustainable development and

> the wellbeing of present and future generations. ”

Greg Ducie – Swansea University, Director of Estates and Campus Services.

Low Carbon Heat Grant

In 2023 to 2024, the Energy Service supported local authorities to retrofit low carbon heating systems in public buildings through the Low Carbon Heat Grant (LCHG). This year’s funding aims to help local authorities across Wales accelerate the transition away from fossil fuels and reduce carbon emissions as part of their drive towards net zero, with future rounds of the grant potentially to be expanded beyond local authorities.

Working with local authorities to deliver low carbon heating

- Number of projects reaching financial close in 2023 to 2024: 54 low carbon heat projects for 11 local authorities
- Investment: A total of £16.3 million invested, of which £14.8 million was secured through the Low Carbon Heat Grant (LCHG)
- Total capacity installed and carbon savings forecast: 5.5 MW of new installed low carbon heat capacity, with lifetime savings of 128,193 tonnes of CO_2e.

Case study: Isle of Anglesey Council, Llangefni Council Office heat pumps

Summary

The Isle of Anglesey Council secured a £1 million Low Carbon Heat Grant (LCHG) to replace gas-fired boilers at its main offices in Llangefni with a two-stage heat pump solution, air source followed by water source. The Energy Service assessed the LCHG project, which will provide 100% of the heating and hot water demand for the Council's office building.

Measures

- 2 x 500 kW heat pumps, with 1 MW thermal capacity
- Air handling unit upgrades
- Electrical distribution board installed
- Solar photovoltaic (PV) panels, solar carports and battery storage planned (funded separately).

Impacts

- 8,100 tonnes CO_2e saved over project lifetime

> “ The Energy Service was critical in helping us secure the Low Carbon Heat Grant, which enabled us to replace the old gas-fired boilers in our Llangefni offices with energy efficient, low carbon heat pumps. Anglesey is proud of its efforts to reduce the carbon emissions of our buildings and is leading the way in trialling new and emerging energy efficiency technologies. The new heat pumps build on these efforts, as they're

> expected to save over 8,000 tonnes of CO_2e over the lifetime of the heating systems. ”

Meilir Hughes MRICS - Chief Asset and Property Officer

Case study: Carmarthenshire County Council, heat pumps for schools

Carmarthenshire County Council, heat pumps for schools

Summary

Following a successful pilot scheme, the Energy Service managed the applications for Round 1 of the Low Carbon Heat Grant (LCHG), through which Carmarthenshire County Council received £3.8 million in funding to install heat pumps in six schools. Working alongside the schools to raise awareness, the Energy Service helped deliver this ambitious project to improve the heating systems by replacing old, inefficient oil and gas-fired boilers. Additional works were also completed, including replacing radiators, installing loft and cavity wall insulation, as well as fitting new building management systems to control the heat pumps.

Measures

- 18 air source heat pumps installed
- 13 buffer vessels and domestic hot water vessels fitted
- Over 160 radiators replaced
- Loft and cavity wall insulation fitted
- Electricity grid connections upgraded
- New building management systems installed to control the heat pumps
- Double glazing installed at one school

Impacts

- 29,490 tonnes CO_2e saved over project lifetime
- Increased comfort levels and an improved learning environment at the schools for staff and pupils
- Local businesses were engaged to provide resources for the installation, boosting the local economy and supporting the community

> “ Thanks to the Low Carbon Heat Grant, we’ve taken the first significant steps in tackling the significant challenges associated with the decarbonisation of heating across our portfolio. Following the success of our Round 1 funded works in six primary schools, we’re now ready to begin scoping a much more ambitious phase of works that will seek to replace fossil fuel systems in our high energy consuming sites, such as our leisure centres and care homes. ”

David Neil Evans, Corporate Energy Officer, Carmarthenshire County Council

Transport

We work with public bodies across Wales to help them transition to zero emission vehicle fleets. From funding for electric cars and vans to advice on the right charging infrastructure for the job, we are helping Wales to navigate the road to zero carbon travel.

Transitioning to a zero carbon transport system

- Number of projects reaching financial close in 2023 to 2024: 77 fleet projects for 36 organisations
- Investment: A total of £9.4 million invested in electric vehicles and charge points
- Total carbon savings: Saving 2,158 tonnes of CO_2e – equivalent to taking 1,500 average passenger cars off the road for one year.

Case study: Local Authority collaborative procurement

Summary

The Energy Service, in collaboration with colleagues from Welsh Government, launched a procurement initiative for electric vehicles aimed at the public sector. The collaborative procurement framework streamlined the acquisition process, providing a clear and efficient pathway for public sector organisations in Wales to transition to electric vehicles (EVs). Cardiff-based EV solutions provider FleetEV was chosen to supply vehicles to public sector organisations participating in the collaborative procurement initiative.

Impacts

- 241 electric vehicles procured to date, including cars and vans
- Estimated savings to public of £660,000, with figure set to rise as more vehicles are procured
- Substantial fuel bill savings over lifetime of EVs
- Reduction in tail pipe emissions will improve local air quality, helping to reduce respiratory illnesses and other health issues associated with air pollution

> “ This landmark initiative is a significant stride towards a sustainable Wales, uniting Local Authorities to drive both considerable savings and our acceleration to Net Zero. It's more than just new vehicles; it's about charting a just and sustainable future for our public services. FleetEV's role exemplifies Welsh innovation, spearheading our joint efforts towards environmental and economic sustainability. ”

Jim Cardy, Senior Programme Manager, Welsh Government Energy Service

> “ I am pleased to see Local Authorities leading the way on decarbonising their fleet whilst also driving down costs. It is essential we collaborate and use our existing funding and procurement levers in a more innovative and cooperative way to achieve net zero. This is a really good example of working together to achieve more. ”

Rebecca Evans MS, Minister for Finance and Local Government

Case study: Public sector and further education ZEV and EVCI grant

Merthyr Tydfil County Borough Council, electric fleet

Summary

The Energy Service launched the Zero Emission Vehicle (ZEV) and Electric Vehicle Charging Infrastructure (EVCI) grant to support Welsh public sector organisations transition to zero emission vehicles and install charging infrastructure. The £4.4 million investment aims to reduce carbon emissions and local air pollution by covering the cost difference between ZEVs and their

internal combustion engine equivalents, as well as supporting the installation of EV charging infrastructure. We worked closely with clients to provide expert advice on infrastructure and vehicles that would best suit their needs, helping to drive the adoption of clean, zero emission vehicles and infrastructure across Wales.

Impacts

- Additional £2.1 million investment from participating organisations, for a total combined £6.5 million investment
- 111 zero emission vehicles delivered
- 4.8 MW of new charging capacity installed across Wales
- Supported 32 public sector bodies with successful implementation of projects
- Significant cost and CO_2e savings over lifetime of vehicles

> “ The support and guidance provided by the Energy Service has been instrumental in helping Merthyr Tydfil County Borough Council kickstart and make progress towards our goal of a fully zero emission vehicle fleet. We now have the confidence to move forward with purchasing only zero-emission vehicles in the future. The Energy Service's expertise has been an invaluable resource in our journey to a cleaner, greener fleet. ”

Ioan Vantu, Transport Manager, Merthyr Tydfil County Borough Council

Welsh Public Sector Net Zero Reporting

The Energy Service delivered its first year of Net Zero Reporting during 2023 to 2024, taking over responsibility from the previous provider. This voluntary annual

carbon reporting cycle, which aims to support decarbonisation of the public and community sectors, helps Welsh Government to identify the scale of the public sector challenge. It shares results with the organisations involved to help them develop their own emission reduction plans.

During our first year of delivery, we undertook mobilisation activities to establish a new team, and successfully delivered the main reporting requirements, as well as development activities related to the treatment of renewables, use of the website, and data management. The reporting mechanism helps to track Welsh public sector organisations' progress towards net zero targets, providing valuable data and insights on renewables, land sequestration, building energy demand, and more.