North Wales Fire and Rescue Authority

Environmental Strategy 2023 - 2030

Power Decarbonisation Plan

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Mae'r ddogfen yma ar gael yn y Gymraeg
This document is also available in Welsh

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1.0 INTRODUCTION

1.0.1 As the world faces the climate emergency, it is imperative that we act to reduce our carbon footprint and transition to a more sustainable future.

1.0.2 The Welsh Government has set ambitious targets decarbonisation in the public sector. In response, North Wales Fire and Rescue Service ("NWFRS", "the Service") has developed an Environmental Strategy covering the period to 2030 ("the Strategy").

1.0.3 In accordance with the requirements set out in the Strategy, this Power Decarbonisation Plan has been developed in consultation with the public and members of the North Wales Fire and Rescue Authority.

1.0.4 It sets out how we propose to reduce our consumption of electricity derived from the National Grid by generating renewable energy, improving energy efficiency through building fabric and behavioural changes, and how we will seek to minimise our carbon emissions from grid electricity under a 'Market-based' approach.

1.0.5 By following the measures set out in this Plan, we hope to minimise our carbon emissions under Scope 2 (purchased electricity) and play our part in achieving a net zero Welsh public sector by 2030.

2.0 RENEWABLE ENERGY PRODUCTION

2.1 Background

2.1.1 Wales faces a significant shortfall in electricity production capacity if the country is to be fully decarbonised by 2050. As global energy demands continue to rise, we also face potential shocks in hydrocarbon fuel availability, as well as significant price volatility.

2.1.2 As part of our commitment to reducing greenhouse gas emissions and transitioning to a more sustainable future, we recognise the importance of adopting renewable energy source within our Service. By embracing renewable energy technologies, we can significantly reduce our carbon footprint, lower energy costs, and contribute to a cleaner environment for the communities we serve.

2.1.3 This section outlines our plan to incorporate renewable energy into our operations, ensuring a reliable and sustainable power supply.

2.1.4 The Service operates a diverse estate of fire stations and supporting premises across the six counties of North Wales. These vary considerably in terms of age, size and construction.

2.1.5 The potential for renewable energy production across our estate is high, due to the diversity of locations, extent of flat roof area available, and typically urban or suburban locations affording good grid infrastructure. To take maximum advantage of this, we propose to employ a mix of renewable energy technologies, as set out below.

2.2 Solar Photovoltaic (PV) Systems

2.2.1 One of the most readily available and widely used renewable energy sources is solar power. We will, where viable to do so, install solar photovoltaic (PV) systems on the rooftops of our fire stations, training facilities and offices. These systems will generate electricity by converting sunlight into usable energy. By utilising solar PV, we can offset a significant portion of our energy demand during daylight hours, leading to reduced reliance on fossil-fuel based power sources.

2.3 Wind Turbines

2.3.1 In locations with suitable wind resources, we will explore the installation of wind turbines. Wind energy offers a reliable and consistent power supply, especially in coastal and windy areas. We will conduct feasibility studies to identify suitable sites for wind turbines, taking into consideration local regulations, environmental impact, and community engagement. The energy generated from wind turbines will contribute to our overall energy mix and help us achieve a greater degree of self-sufficiency.

2.4 Biomass and Biogas Systems

2.4.1 We will investigate the feasibility of implementing biomass and biogas systems within our estate. This technology is discussed further within our Heating Decarbonisation Plan.

2.5 Energy Storage Solutions

2.5.1 To ensure a consistent power supply and optimise the use of renewable energy sources, particularly at our 24-hour crewed stations, we will assess the viability of incorporating energy storage solutions into our infrastructure.

2.5.2 Battery storage systems, such as lithium-ion batteries, may be deployed to store excess energy generated during periods of high production. These stored energy reserves can then be used during times of low production or high demand, ensuring a reliable power supply and maximising the use of renewable resources.

2.6 Funding

2.6.1 As an emergency service, we have a particular duty to ensure that we use our financial resources judiciously to maintain and enhance the safety of the communities we serve.

2.0.5 As set out in our Environmental Strategy, we will seek to enter into performance framework agreements for the installation of renewable energy systems, and to fund them through Salix or similar schemes where possible.

2.7 Collaboration and Partnerships

2.7.1 We recognise that achieving our renewable energy goals requires collaboration and partnerships with external stakeholders, particularly at co-located sites.

2.7.2 We will actively engage with local authorities, energy providers and other organisations to explore joint initiatives and shared resources. Collaborative efforts can lead to economies of scale, increased access to funding opportunities, and knowledge sharing.

2.8 Monitoring and Evaluation

2.8.1 We will establish a comprehensive monitoring and evaluation framework to track the performance of our renewable energy systems, and ensure all contractual performance guarantees are being met.

2.8.2 This framework will include regular data collection, analysis of energy generation and consumption, and assessment of cost savings and emissions reductions. By continuously monitoring our renewable energy production, we can identify areas for improvement and optimise system performance.

2.9 Training and Awareness

2.9.1 To ensure the successful implementation of renewable energy technologies, we will provide training and raise awareness among our staff and stakeholders. Training programmes will cover system operation, maintenance and safety protocols.

2.9.2 Additionally, we will engage with the wider community and external stakeholders through public outreach, fostering a culture of sustainability and encouraging responsible energy consumption.

3.0 ENERGY EFFICIENCY

3.1 Background

3.1.1 We recognise that improving energy efficiency is a crucial element in reducing our carbon footprint and achieving our wider sustainability goals. Energy efficiency measures enable us to optimise energy use, minimise waste, and reduce our overall energy consumption. This section outlines our strategy for implementing energy efficiency initiatives within the Service.

3.2 Energy Audits and Assessments

3.2.1 We will conduct thorough energy audits and assessments across our estate to identify areas of inefficiency. These assessments will analyse energy consumption patterns in conjunction with degree-day data, identify energy-intensive equipment or systems, and highlight potential areas for improvement.

3.2.1 By gaining a comprehensive understanding of our energy use, and determining whether inefficiencies arise from behavioural or physical issues, we can target specific areas for energy-saving measures and prioritise our efforts and resources accordingly.

3.3 Upgrading Lighting Systems

3.3.1 Lighting represents a significant portion of the energy consumed in our facilities. We will prioritise the upgrade of lighting systems to energy-efficient alternatives such as LED (light emitting diode) lighting.

3.3.2 LED lighting consumes significantly less energy, has a longer lifespan, and provides better quality lighting compared to traditional incandescent or fluorescent lighting systems. Retrofitting our fire stations and other facilities with LED or similar lighting will result in substantial energy savings and reduced maintenance costs.

3.4 Building Envelope Improvements

3.4.1 Enhancing the building envelope is crucial for minimising heat loss or gain, thereby reducing the energy required for heating and cooling. We will evaluate our facilities' insulation levels, windows, doors and roofing systems to identify commercially viable opportunities for improvement.

3.5 Equipment and Appliance Efficiency

3.5.1 We will prioritise the use of energy-efficient equipment and appliances throughout our operations. When purchasing new equipment, we will consider energy ratings and weigh this into our procurement decisions. This includes appliances such as refrigerators, computers, printers and office equipment.

3.5.2 Additionally, we will implement power management practices, such as turning off equipment when not in use and enabling energy-saving settings to reduce standby power consumption.

3.6 Behavioural Changes and Staff Awareness

3.6.1 Changing behaviours and promoting energy-conscious practices amongst our colleagues is essential for long-term energy efficiency. We will develop training programmes and awareness campaigns to educate our personnel about the importance of energy conservation, emphasising simple actions like turning off lights when leaving a room, using natural light when possible, and optimising equipment usage. By fostering a culture of energy awareness, we can ensure sustained savings and a collective effort towards reducing our environmental impact.

3.7 Monitoring and Data Analysis

3.7.1 We will establish a robust monitoring and data analysis system to track and evaluate our energy consumption patterns and the effectiveness of our energy efficiency measures. This will allow us to identify anomalies, and make data-driven decisions about where to focus resources and provide continuous improvement to our energy conservation practices.

3.8 Collaboration and Sharing Best Practices

3.8.1 We recognise the importance of collaboration and sharing best practices with other fire and rescue services and relevant stakeholders. By engaging in knowledge exchange, participating in industry forums, and partnering with energy efficiency organisations, we can benefit from shared experiences, innovative solutions and funding opportunities.

4.0 ELECTRICITY PROCUREMENT

4.1 Background

4.1.1 We recognise the importance of responsible electricity procurement to support our transition to a low-carbon future. By procuring renewable and clean energy sources, we can significantly reduce our carbon footprint, contribute to the development of renewable energy infrastructure, and align with national and international climate goals. This section outlines our strategy for electricity procurement, focusing on renewable energy sources and sustainable procurement practices.

4.2 Renewable Energy Contracts

4.2.1 We will prioritise entering into long-term contracts for procuring renewable energy from reliable sources. These contracts will ensure a stable and predictable supply of clean electricity for our estate.

4.2.2 We will seek agreements with renewable energy providers, who in turn purchase energy for the National Grid from sources such as wind farms, solar power plants, and biomass facilities, to derive the entirety of our electricity consumption from renewable sources by the end of Financial Year 2024/25.

4.3 Power Purchase Agreements (PPAs)

4.3.1 Power Purchase Agreements (PPAs) offer an effective mechanism for procuring renewable energy directly from generators. We will explore the possibility of entering into PPAs with renewable energy developers, enabling us to purchase electricity at competitive rates while supporting the expansion of renewable energy capacity.

4.3.2 PPAs can provide long-term price stability and a direct connection to specific renewable energy projects, giving the Service the potential to support local projects within the communities we serve.

4.4 Green Energy Certification

4.4.1 From the beginning of Financial Year 2025/26, we will aim to procure electricity with green energy certification, where commercially viable to do so. Certifications such as Renewable Energy Guarantee of Origin (REGOs) and the Renewable Energy Certificate System (RECS) provide transparency and assurance that the electricity supplied to our facilities via the National Grid is derived from renewable sources.

4.4.2 By choosing certified renewable energy, we will ensure that our procurement aligns with the goals of the Welsh Government and our Environmental Strategy, as well as contributing to the decarbonisation of the National Grid.

4.5 Energy Market Engagement

4.5.1 Active engagement in the energy market allows us to explore innovative procurement options and capitalise on emerging opportunities. We will monitor energy market developments, including government initiatives, regulatory change, and financial incentives, to maximise the benefits of electricity procurement.

4.5.2 By staying informed and engaged, we can adapt our procurement strategy to optimise cost savings, renewable energy utilisation, and environmental impact.

4.6 Monitoring and Reporting

4.6.1 We will establish robust monitoring and reporting mechanisms to track and evaluate the environmental impact of our electricity procurement. This includes tracking the proportion of renewable energy in our electricity supply, monitoring emissions associated with electricity consumption, and reporting progress towards our targets.

4.6.1 Regular reporting will allow us to identify areas for improvement, assess the effectiveness of our procurement strategies, and transparently communicate our achievements to stakeholders.

4.7 Collaboration and Partnerships

4.7.1 We recognise the value of collaboration and partnerships with electricity suppliers, industry organisations, and relevant stakeholders. Engaging with renewable energy providers, local energy communities, and other fire and rescue services allows us to share best practices, leverage collective purchasing power, and collaborate on renewable energy projects. Collaborative efforts can lead to innovative solutions, cost savings, and a stronger collective impact in driving the transition to a decarbonised energy sector.