

Carbon Emissions Reduction – North Wales Fire and Rescue Authority

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Contents

It is unlikely that the Authority will meet its statutory obligations and become net carbon zero by 2030 unless there is a step change in performance.

| | |
|---|----|
| Summary report | 4 |
| Detailed report | 7 |
| It is unlikely that the Authority will meet its statutory obligations and become net carbon zero by 2030 unless there is a step change in performance | 7 |
| The Authority does not have an accurate baseline position on all its carbon emissions | 7 |
| The Authority does not have a comprehensive plan to reduce its carbon emissions and become net carbon zero | 8 |
| The Authority has made some progress in some areas but needs a step change in activity to meet Welsh Government targets | 10 |
| The Authority does not have appropriate arrangements in place to monitor and evaluate its progress to becoming net carbon zero | 13 |

Summary report

Summary

What we reviewed and why

- 1 Human behaviour is a major contributing factor to the long-term shift in average weather patterns. Widely recognised as humanity’s biggest challenge, addressing climate change requires individuals, communities, organisations, regions and countries to all play their part. The Paris Agreement, a legally binding treaty on climate change, was adopted in 2015 by 196 parties (including the UK) and reflects an international commitment to achieve the economic and social transformation required to reduce greenhouse gas emissions¹.
- 2 In Wales, our legislative framework to reduce greenhouse gas emissions was strengthened through the Environment (Wales) Act 2016. The Act sets a legal target of reducing emissions by 95% by 2050 and sets out a system of five-yearly carbon budgets and interim objectives to progress towards this². As part of this, the Welsh Government has committed to achieving a net carbon zero public sector by 2030, and its climate emergency declaration in 2019 reaffirmed its ambition of increasing the pace of change towards a low carbon economy.
- 3 There is a cost to reducing carbon emissions, but this must be balanced with the much higher cost of doing nothing. The Well-being of Future Generations (Wales) Act 2015 is therefore key to how Welsh public bodies are addressing these challenges. By implementing the sustainable development principle and contributing to the national wellbeing goal of a Globally Responsible Wales, North Wales Fire and Rescue Authority (the Authority) can demonstrate its contribution to addressing the climate emergency.

What we found

- 4 We undertook the review during the period November 2021 to January 2022. Our review sought to answer the question: ‘Is the Authority making good progress in reducing its carbon emissions and fully contributing to Wales’s public sector becoming carbon neutral by 2030?’ Overall, we found that: **It is unlikely that the Authority will meet its statutory obligations and become net carbon zero by 2030 unless there is a step change in performance.**
- 5 We reached this conclusion because:
 - the Authority does not have an accurate baseline position on all its carbon emissions;
 - the Authority does not have a comprehensive plan to reduce its carbon emissions and become net carbon zero;

¹ [The Paris Agreement, United Nations Climate Change](#)

² [Wales’ commitment to tackling climate change, Welsh Government](#)

- the Authority has made some progress in some areas but needs a step change in activity to meet Welsh Government targets; and
- the Authority does not have appropriate arrangements in place to monitor and evaluate its progress to becoming net carbon zero.

Recommendations

6 The table below sets out the recommendations that we have identified following this review.

Recommendations

R1 Develop an accurate carbon baseline by:

- creating a database to accurately capture all Scope 1, 2 and 3 emissions data;
- introducing a collection process to regularly update the baseline;
- auditing information in the baseline to ensure it is accurate;
- ensuring gaps in information in respect of water metering, the impact of carbon offset work and data on buildings are captured;
- ensuring the impact of the pandemic and the switch to more home and agile working are reflected in the carbon baseline.

R2 Develop a specific plan for carbon reduction that sets out the actions that the Authority will take to become net carbon zero and to meet Welsh Government targets covering:

- Energy consumption and waste
- Estates
- Fleet and vehicle infrastructure
- Workforce
- Procurement and supply chain
- Organisational working
- Collaboration and partnership
- Offsetting

Recommendations

- R3 Revise the Vehicle Replacement Programme policy and agree the Authority's strategy for replacing diesel appliances and improving the charging infrastructure across the Service area. As part of this process the Authority should:
- review the notional lifespan of electric and hybrid vehicles to better inform future planning assumptions;
 - review current capital spending on fleet replacement and electric charging infrastructure to ensure the Authority has sufficient funding set aside to support the transition to a low carbon fleet; and
 - identify opportunities and introduce reciprocal agreements to access and make the best use of electric charging points owned by the public sector across the North Wales region.
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- R4 Engage and involve staff in planning for carbon emissions reduction to ensure they take ownership of the Authority's plans for improvement and are fully contributing to delivery of key actions.
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- R5 Strengthen how progress in delivering actions to reduce carbon emissions and delivery against Welsh Government targets are progressing and resulting in improvement by:
- regularly reviewing progress in delivering agreed actions for reducing CO₂e in Authority plans;
 - comparing performance with others to benchmark and identify opportunities to support improvement;
 - focussing on reporting and evaluating how the Authority is progressing to becoming net carbon zero by 2030; and
 - monitoring progress in delivering Welsh Government targets of reducing overall carbon emissions by 63% by 2030; 89% by 2040; and at least 100% (net zero) by 2050.³

³ [Climate change targets and carbon budgets, Welsh Government website, November 2021](#)

Detailed report

It is unlikely that the Authority will meet its statutory obligations and become net carbon zero by 2030 unless there is a step change in performance

The Authority does not have an accurate baseline position on all its carbon emissions

- 7 A carbon baseline is an inventory of sources of carbon emissions from business activities. This is typically a one (or more) year snapshot that serves as a reference point for organisations to understand and track their changing emissions over time. In order to plan and budget for reducing carbon emissions and becoming net carbon zero, public bodies need to confidently understand the extent of their emissions by developing and keeping up to date a carbon baseline. This will then be used as a foundation for a carbon roadmap which can show the pathways that are available to practically meet Welsh Government targets.
- 8 The Authority has some key information related to activity relating to emission of carbon dioxide (CO₂) and other greenhouse gases (measured in carbon dioxide equivalents or CO₂e). For instance, the Authority reported in 2019-20 that its CO₂e as KW hrs were 1,318,794 for electricity, 2,965,006 for gas and Liquefied Petroleum Gas (LPG), and 18,796 for renewable electricity.
- 9 This is a helpful starting point, but the Authority acknowledges that the data it has collated is not accurate, being more of a broad estimate which cannot be compared with any accurate carbon baseline. In addition, there are also some gaps. For instance, water metering, estates and measuring and capturing the impact of offsetting activity. Consequently, the Authority does not know how well it is currently performing and what else it needs to do.
- 10 Historically, the Authority used the Carbon Trust [Carbon Footprint Calculator](#) to record CO₂e data⁴. The Authority also participated in the Welsh Government's Public Sector Net Zero Carbon Reporting pilot and [Public Sector Route Map](#) for decarbonisation. It is not a mandatory requirement for public bodies to use this method to measure emissions but, overall, the Authority sees it as a helpful framework to support its work.

⁴ The Carbon Trust Standard is a certification scheme. Applicants are awarded certification if they meet three sets of criteria relating to carbon measurement, carbon reduction and effectiveness in managing emissions.

- 11 While the Authority has brought together some data, most recently reported in the Energy Consumption Reduction and Decarbonisation Report in March 2021, this does not cover Scope 3 emissions. The Carbon Trust⁵ categorises emissions into three categories or 'Scopes', defined as:
- **Scope 1** – covers direct emissions from owned or controlled sources such as fuel combustion and emissions from fleet;
 - **Scope 2** – covers indirect emissions from the generation of purchased electricity, steam, heating and cooling consumed by the Authority; and
 - **Scope 3** – includes all other indirect emissions that occur in the Authority's procurement, supply and value chain. This would cover for instance purchased goods and services, business travel, employee commuting, waste disposal, use of sold products and investments.
- 12 The importance of addressing the purchased goods and services element of Scope 3 is underlined by research that shows that these can account for around 60% of an organisation's total CO₂e footprint⁶. Going forward, and in a very short timeframe, the Authority will need to develop a comprehensive recording system to accurately capture and report on Scope 1, 2 and 3 emissions to help it develop its strategy for reducing carbon emissions.
- 13 The Authority cannot effectively plan or deliver against the decarbonisation agenda without understanding its starting point. Creating a more accurate baseline is therefore a priority for the Authority. However, this will prove challenging given that no single officer is dedicated to managing carbon emissions reduction activity and staff feel they are doing what they can 'on top of the day job'. The Authority has recently appointed a Member Champion for sustainability but lacks a dedicated lead for sustainability. The Authority has recognised this gap and is planning to address it.

The Authority does not have a comprehensive plan to reduce its carbon emissions and become net carbon zero

- 14 Despite not having an overarching strategy to reduce carbon emissions, the Authority has some wider plans in place. For example, the Authority adopted a Sustainable Development Action Plan in 2008 that ran until 2020. Over this 12-year period the plan aimed to reduce energy and fuel consumption by 60%; greenhouse gas emissions (CO₂e) by 60%; and waste sent to landfill by 75%. However, performance at March 2018 showed that energy and fuel consumption had fallen by 19% and CO₂e by 27%. No information was reported on waste sent to landfill.

⁵ <https://www.carbontrust.com/resources/briefing-what-are-scope-3-emissions>

⁶ [Welsh Procurement Policy Note WPPN 12/21: Decarbonisation through procurement – Addressing CO₂e in supply chains](#), Welsh Government, December 2021.

- 15 Since the conclusion of this plan, the Authority has not developed a dedicated or single plan for carbon reduction. Rather, it has focussed activity on a range of supporting strategies that provide direction on improving sustainability more broadly. For instance, the Improvement and Wellbeing Plan 2020-21 includes an objective to develop ways of becoming more 'environmentally conscious' in order to minimise the impact of the Authority's activity on the environment. Likewise, the Authority undertook a public consultation in 2019 to help shape and develop an Environment and Sustainability Strategy. This work has not progressed given that the Authority's priority was to respond to the pandemic.
- 16 Whilst the Improvement and Wellbeing Plan 2020-21 broadly sets out the Authority's priorities for action, the scale of planned activity falls short of reducing carbon emissions. For example, it focuses on establishing a Strategic Board with responsibility for developing the Authority's work in this area, commits to exploring opportunities to reduce single use plastics and to identify ways to reduce and make better use of water, waste, energy and fuel. However, we found that too many of the planned actions are at the 'exploring' and 'understanding' stage rather than meaningful, outcomes-focused actions that support the Authority's journey to becoming net carbon zero.
- 17 As a minimum we would expect the Authority to focus on five core areas; the big-ticket items that will make a significant contribution to reducing CO₂e. These are:
- **Buildings** – improving energy efficiency and insulation in buildings, using sustainable materials such as green roofs and water harvesting systems in redevelopment and new build and developing and/or using renewable energy sources such as photovoltaic cells (PVC) and wind turbines on sites.
 - **Procurement** – estimating value chain emissions by mapping out the high emission areas of procurement and identifying ways to reduce emissions when procuring goods and services.
 - **Fleet** – reviewing current fleet performance, setting thresholds and creating optimised routes for standard travel. Consider alternatives to diesel and petrol vehicles and set out plans to go electric that cover vehicle replacement and charging infrastructure. Updating fleet replacement programmes and ensuring sufficient resources are set aside to meet the increased costs in switching to a low carbon fleet.
 - **Land** – delivering carbon offsetting⁷ and promoting environmental and biodiversity initiatives.
 - **Ways of working** – reviewing operational policies and budgets to ensure carbon emissions are reduced in the way the Authority delivers its services. Using the Authority's wider influence to encourage others, and its own staff, to reduce carbon emissions in what they do and how they do it.

⁷ Carbon offsetting comes from projects that reduce the amount of greenhouse gases entering the atmosphere and soaking up CO₂e directly from the air. They must lead to real reductions or sequestration of carbon which needs to be measured and quantified. To ensure the validity of the projects they must meet rigorous conditions.

- 18 Importantly, the new Chief Fire Officer, who took up post in the summer of 2021, is bringing fresh impetus to the carbon emissions reduction agenda. In her first 100 days she has completed a root and branch strategic review and identified four core priorities for the future, one of which is improving and prioritising how the Authority will deliver its carbon emissions responsibilities and become net carbon zero by 2030. This leadership is crucial in making the step change needed to tackle this challenging agenda.
- 19 The engagement of employees in energy and carbon saving is an effective way to motivate staff and successfully achieve the Authority's environmental goals. We found that while staff have a broad understanding of the challenges that need to be addressed in how estates, fleet and energy usage contribute to CO₂e, the majority of those who responded to our survey (63%) did not know the Authority's starting point for reducing CO₂e and whether the Authority had an accurate baseline.
- 20 Positively, 79% of survey respondents are aware of the Welsh Government target for the public sector to reduce carbon emissions to net zero by 2030. However, fewer than half of survey respondents (46%) are aware of the Authority's priority actions for reducing carbon emissions. Only 26% of those members of staff responding to our survey strongly agreed or agreed that the Authority is measuring progress to reduce carbon emissions. However, only 36.2% were aware of the targets that had been set to reduce carbon emissions and only 15% believe that the Authority will meet Welsh Government targets.
- 21 The Authority acknowledges that there is more work to do to effectively communicate why carbon emissions reduction is important and the vital contribution individuals can make to helping to promote, lead and deliver the Authority's responsibilities.

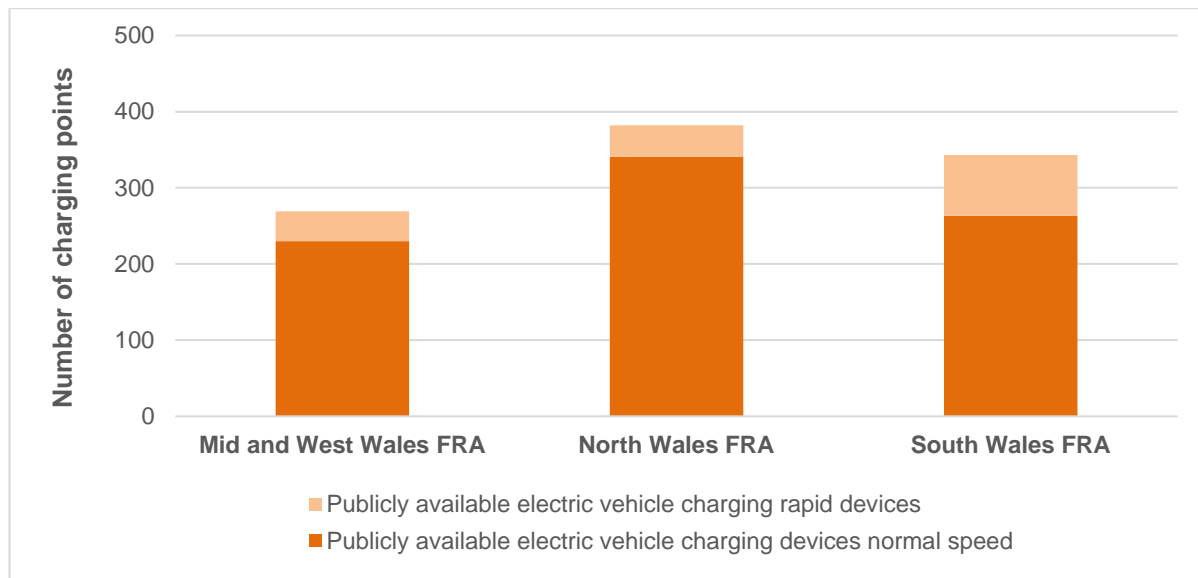
The Authority has made some progress in some areas but needs a step change in activity to meet Welsh Government targets

- 22 Within an organisation, carbon is generated by both people, through their actions, and assets, through their design and use. In order to reduce emissions, it will be necessary for the Authority to target both asset design and behaviour. We found pockets of good work that the Authority is already doing to help it become net carbon zero.
- 23 For instance, several stations have benefited from investment in energy efficiency measures such as Passive Infrared Sensors, PVCs and electricity generation schemes. The Authority has also completed a window and door replacement programme and roughly 90% of its estate has benefitted from the installation of energy efficient UPVC double glazed windows and doors. In addition, 27 of the 44 stations' appliance bay doors have also been replaced and the Authority has also upgraded boiler systems at many stations and in its headquarters building.

- 24 The world of fleet has never seen such a period of change and reducing CO₂e from the Authority's fleet is a big priority. We found that the Authority has leased several electric non-operational support vehicles and is piloting these to determine options for becoming fully electric in the future. While this demonstrates the Authority's commitment to reduce emissions from fleet, some significant risks remain, particularly around heavy vehicles, which make up the majority of frontline fire appliances.
- 25 Due to their specialist nature, these heavy vehicles have long life policies and are more challenging to decarbonise. Switching to alternative models, while theoretically feasible in some locations, has to be balanced with the potential impact on operational capability. It is not always appropriate to move to smaller vehicles if this impinges on the Authority's ability to respond to an emergency.
- 26 There are some significant challenges to overcome in switching to a primarily electric fleet. For instance, through our audit work we understand that there are only two electric fire engines on the market, but they cost in the region of £600,000 per vehicle. This is significantly higher than the amount usually spent on replacing diesel appliances. In addition to having to spend much more on electric vehicles, there is also a likelihood that the electric vehicles will need to be replaced more frequently and the notional 15-year lifespan of a diesel appliance will need to be reduced in future planning assumptions. Hydrogen vehicles, which could offer a workable solution, are in development but are not considered a realistic option at present.
- 27 To fully realise the potential of electric fleet will also require adequate charging infrastructure across the Authority's area of operation. It is essential that there is a comprehensive and competitive electric vehicle charging network in place. If the charging network is perceived as inadequate, then this will be a major barrier to electric vehicle take-up by all public bodies. The scale of the shift to electric vehicles should not be underestimated. While it is difficult to know precisely how much charging will be needed, UK Government forecasts⁸ suggest that at least 10 times more charge points will be needed by 2030 than currently exist.
- 28 To support this transition requires the Authority to work in partnership with other public sector bodies in its area of operation to make full use of the current charging infrastructure. We found that progress on this has been limited across North Wales to date and much work remains. ONS data shows that in October 2021 across the North Wales region there are 341 publicly available electric vehicle charging devices (all speeds), of which 41 are rapid charging units – **Exhibit 1**.

⁸ <https://www.gov.uk/government/publications/electric-vehicle-charging-market-study-final-report/final-report>

Exhibit 1 – Publicly Available Electric Vehicle charging points by Welsh Fire and Rescue Authority area in October 2021



Source: ONS, Electric vehicle charging device statistics: October 2021

- 29 Given these challenges, it is unsurprising therefore that our survey of staff found that the main barrier to becoming net carbon zero is the cost of investment required in infrastructure, vehicles, offices and stations. We conclude that without significant investment by the Authority and partners in charging infrastructure and development of alternatives to diesel appliances, the Authority will find it difficult to deliver a net carbon zero fleet.
- 30 While avoiding and reducing emissions remains the Authority’s priority, the ability to achieve Net Zero by 2030 will be extremely difficult without a form of offsetting due to the scale of technology and investment required. Carbon offset schemes allow public bodies to invest in environmental projects in order to balance out their own carbon footprints. The projects are most commonly designed to reduce future emissions and soaking up CO₂e directly from the air through the planting of trees and other biodiversity projects. Some organisations offset their entire carbon footprint while others aim to neutralise the impact of a specific activity.
- 31 The Authority has not delivered significant offsetting activities to date. A small number of initiatives have been rolled out at the headquarters building and include a butterfly garden, hedgerow and green amenity space for staff. Beyond this however, little work has taken place and there remain opportunities to widen out current approaches. The Authority will also need to ensure it is able to demonstrate the impact of its current initiatives and any additional activity it delivers in its revised baseline.
- 32 Changing how organisations work, consume products and services that come from natural resources, can measurably reduce CO₂e. We found that the Authority has focused on some good initiatives to both change behaviours but also the way it

delivers services. The Authority has a long history of upcycling materials and equipment – most notably as part of Operation Florian where the Authority has donated vehicles, equipment, supplies and expertise to help services in less well-off countries.

- 33 The shift to home working brought on by the pandemic also helped the Authority reduce carbon emissions although the long-term impact of this has not been worked through. The Authority is also continuing with online meetings (or hybrid meetings with some face-to-face) and recently adopted an Agile Working Policy which applies to eligible staff (mostly those in the corporate centre). Carbon reduction was one of the considerations during its development, mainly around reducing commuter miles, although the impact of take-up amongst staff is not monitored in this way.
- 34 The engagement of employees into energy and carbon saving is an effective way to motivate staff and successfully achieve environmental goals. By taking a strategic approach to engagement, public bodies can establish shared ownership of carbon and energy targets and ensure that leaders are held to account. A robust and clear sustainability strategy should have employee engagement at its core.
- 35 Our survey of staff found that the Authority needs to do more to engage with its workforce on the decarbonisation agenda. For example, one of the five main barriers identified by staff to help become net carbon zero relates to a lack of involvement of Fire and Rescue Service staff in planning and delivering priorities for reducing carbon emissions. The new Chief Fire Officer is engaging staff and Members in tackling the big risks facing the Authority, and is starting to bring them on this journey.

The Authority does not have appropriate arrangements in place to monitor and evaluate its progress to becoming net carbon zero

- 36 Fire Authority members receive six monthly updates on progress against the wellbeing objective and through the Annual Performance Assessment and forward planning processes, as well as broad updates on the Biodiversity Action Plan. However, officers and Members we interviewed acknowledged that at present the Authority is not scrutinising and evaluating sufficient data on carbon emissions nor the actions that are required to deliver improvement and become net carbon zero.
- 37 Reporting does not include any analysis against Welsh Government targets or retrospective performance against targets adopted by the Authority and there is no benchmarking or comparison of performance with others. We conclude that it is not possible for Members to monitor and hold officers to account for progress because of these weaknesses.

- 38 As a minimum we would expect the Authority to establish performance evaluation systems that allow it to:
- judge how it is making progress to becoming net carbon zero by 2030;
 - show its improvement against Welsh Government targets of reducing overall carbon emissions by 63% by 2030; 89% by 2040; and at least 100% (net zero) by 2050;
 - compare and benchmark its performance with other similarly sized Fire and Rescue Services to be able to identify opportunities for improvement; and
 - monitor delivery of agreed actions for reducing CO₂e in adopted Authority plans.



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