TRAFNIDIAETH CYMRU TRANSPORT FOR WALES

Low carbon impact strategy
2019/20

Contents

At a glance

At Transport for Wales we're ready to play our part in helping to reduce Wales' carbon emissions.

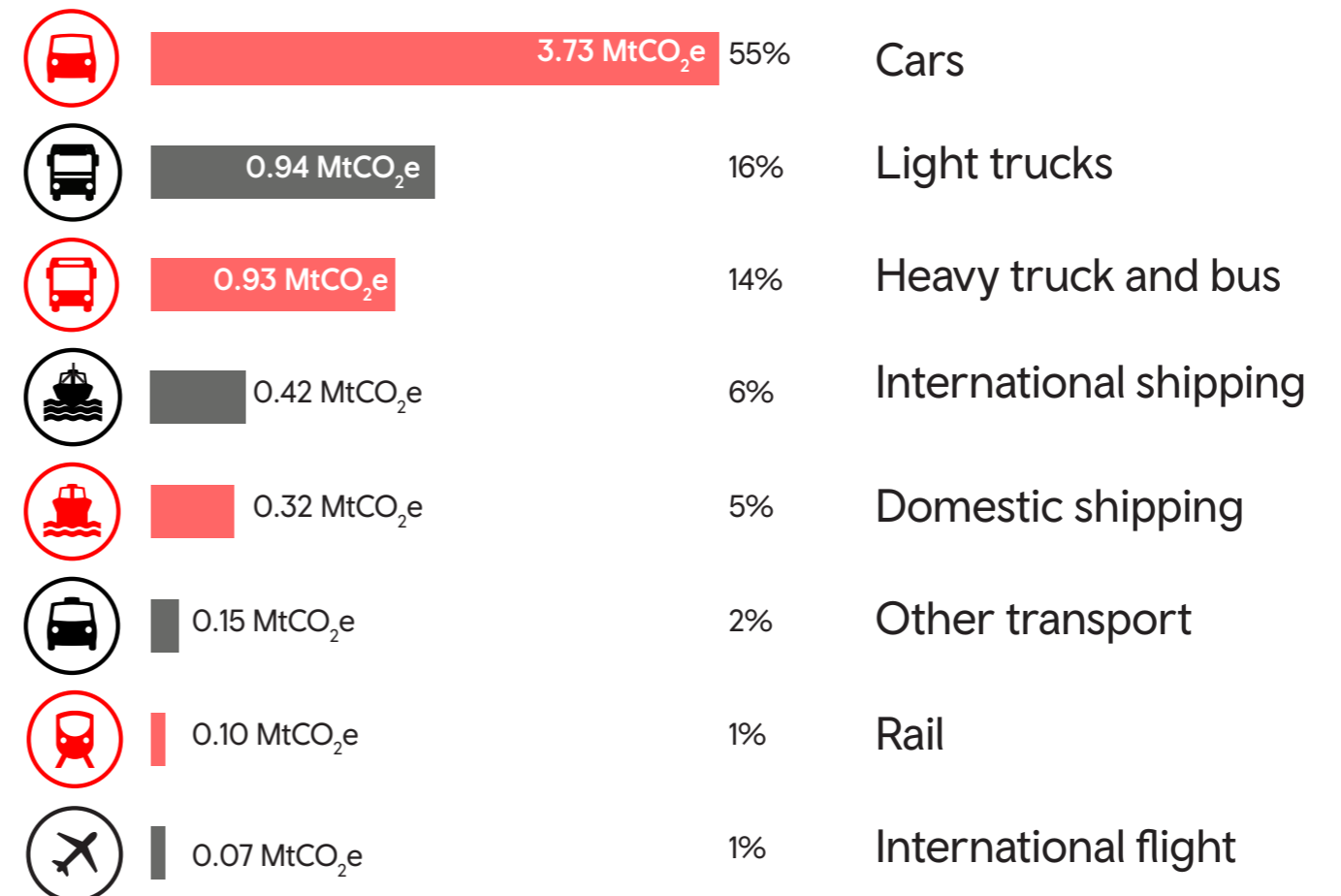**100%** renewable energy on Core Valleys Lines by 2023

50% of renewable energy generated in Wales by 2025

Over £7 million spend for renewable technology

Welsh transport emissions 2016

3.73 $MtCO_2e$	55%	Cars
0.94 $MtCO_2e$	16%	Light trucks
0.93 $MtCO_2e$	14%	Heavy truck and bus
0.42 $MtCO_2e$	6%	International shipping
0.32 $MtCO_2e$	5%	Domestic shipping
0.15 $MtCO_2e$	2%	Other transport
0.10 $MtCO_2e$	1%	Rail
0.07 $MtCO_2e$	1%	International flight

$MtCO_2e$ million tonnes of carbon dioxide equivalent

Foreword

The world's climate is changing rapidly with evidence showing that humans are responsible for the majority of global warming.

In April 2019, Welsh Government were the first UK government to declare a 'Climate Emergency' and by June 2019 the UK Committee on Climate Change (UKCCC) published a new recommendation for a 95% reduction in Greenhouse gas (GHG) emissions by 2050. Welsh Government responded by accepting this new challenge and went one step further by pledging to achieve net-zero emissions by 2050.

To help achieve this ambitious goal, we've implemented our Low Carbon Impact Strategy to minimise the emissions arising from our services.

Over 3 million people rely on our country's transport infrastructure daily and our aim is to help transport in Wales become truly sustainable and fit for future generations.

Decarbonising our transport network presents a significant challenge. Over recent years, transport emissions have remained mostly stable despite vehicle efficiency gradually improving. In Wales, travel by cars and other motor vehicles contributes to around 2,000 deaths annually, mainly caused by nitrogen dioxide, ozone and particulate matter in the air.

In the short-term, we can reduce Wales' CO_2 by encouraging more people to walk, cycle or use public transport.

To support this, we're making a significant investment in the rail service and new metro system. We're overhauling both the image and reliability of public transport in Wales to make it a more desirable alternative to driving.

The improvements we're making will support Welsh Government in meeting Wales' ambitious decarbonisation targets, while also reducing inequalities, improving physical and mental health and helping reduce air pollution.

We're excited to support Welsh Government in embracing this change by investing in infrastructure and introducing our new rolling stock.

Our drivers

Climate change strategy for Wales
Achieving at least a 40% reduction in GHG emissions in Wales by 2020 against the 1990 baseline

Prosperity for all: A low carbon Wales
Laying the foundations for Wales to become a low carbon nation

Well-being of future generations (Wales) Act 2015
To make sure we're all working towards the same outcome

The Grant Agreement
Sets out our commitments to reducing carbon

Our commitments

- We're reducing rail emissions through both vehicle and fuel efficiency measures

- We're upgrading our existing rolling stock over the next 3 years

- All our electricity is procured from renewable sources with 50% of this to be generated in Wales by 2025.

- By electrifying the Core Valleys Lines we'll ensure that services along these routes consume no diesel fuel, achieving 100% zero-carbon passenger miles

- We're providing infrastructure to support the uptake of electric vehicles

- Installation of cycle storage to encourage our passengers to cycle to stations

We've also committed to installing the following at our stations:
- Solar (PV) panels,
- More efficient LED lighting
- Electric vehicle charging points

The Seven Well-being Goals

Our Sustainable Development Plan shows our commitment towards all Seven Well-being Goals, however the two that are most relevant to this Strategy are 'a Resilient Wales' and 'a Globally Responsible Wales'.

Our five ways of working

Prevention
Implementing our Low Carbon Impact Strategy in relation to traffic and traffic miles will reduce emissions as much as reasonably possible and help prevent further increases in global temperatures as well as other consequences of global warming.

Long-term
Whilst work to enable the electrification of the Core Valley Lines will cause some disruption in the short-term, once completed this will improve air quality.

Integration
By providing safe cycle routes and secure cycle storage we will integrate the railway with active travel in the community and promote the shift to more sustainable forms of transport.

Collaboration
We're collaborating with a number of other organisations to ensure we achieve our vision of a low carbon railway.
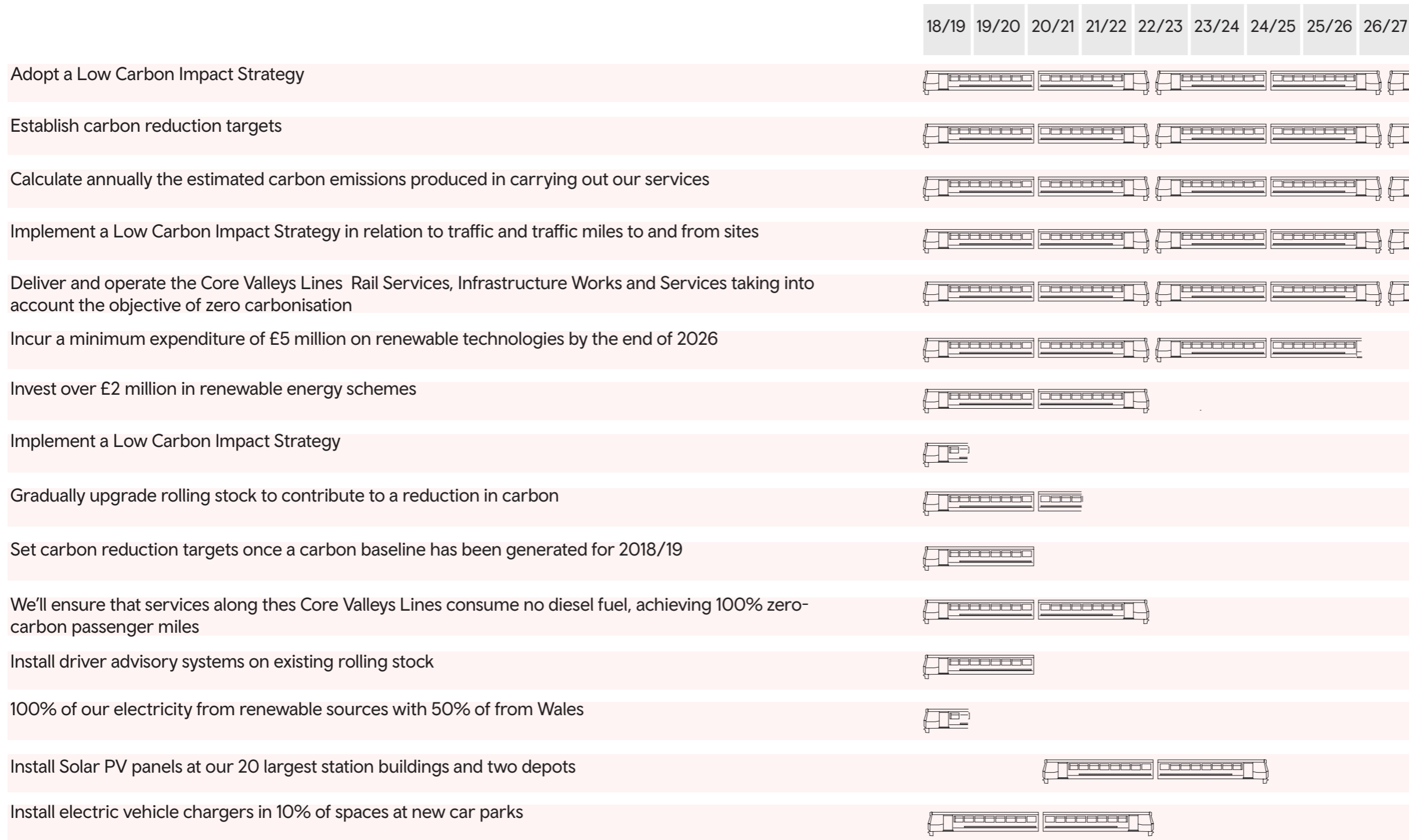
Involvement
We're all working towards the same goal.

Timeline

Financial year

Activity	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27
Adopt a Low Carbon Impact Strategy	●	●	●	●	●	●	●	●	●
Establish carbon reduction targets	●	●	●	●	●	●	●	●	●
Calculate annually the estimated carbon emissions produced in carrying out our services	●	●	●	●	●	●	●	●	●
Implement a Low Carbon Impact Strategy in relation to traffic and traffic miles to and from sites	●	●	●	●	●	●	●	●	●
Deliver and operate the Core Valleys Lines Rail Services, Infrastructure Works and Services taking into account the objective of zero carbonisation	●	●	●	●	●	●	●	●	●
Incur a minimum expenditure of £5 million on renewable technologies by the end of 2026	●	●	●	●	●	●	●	●	
Invest over £2 million in renewable energy schemes	●	●	●	●					
Implement a Low Carbon Impact Strategy	●								
Gradually upgrade rolling stock to contribute to a reduction in carbon	●	●	●						
Set carbon reduction targets once a carbon baseline has been generated for 2018/19	●	●							
We'll ensure that services along thes Core Valleys Lines consume no diesel fuel, achieving 100% zero-carbon passenger miles	●	●	●	●					
Install driver advisory systems on existing rolling stock	●	●							
100% of our electricity from renewable sources with 50% of from Wales	●								
Install Solar PV panels at our 20 largest station buildings and two depots			●	●	●	●			
Install electric vehicle chargers in 10% of spaces at new car parks	●	●	●	●					

Our objectives

We'll implement our Low Carbon Impact Strategy. **We're adopting this low carbon impact strategy to help minimise our greenhouse gas emissions in line with the principles and goals set out in the Welsh Government publication 'Climate Change Strategy for Wales'.**	We'll develop our Low Carbon Impact Strategy collaboratively. We'll also implement a Low carbon impact strategy in relation to traffic and traffic miles to help monitor and minimise movements to and from sites for the transporting of the workforce and materials.
We'll estimate carbon emissions that will be produced in carrying out our services and, provide an annual estimate and a breakdown of how this was calculated.	We'll work with the Carbon Trust to collect the required data and then calculate our operational carbon footprint for our offices, stations and depots as well as trains and fleet of vehicles for the baseline year 2018/19. We'll create anorganisational footprinting tool which follows the Greenhouse Gas Protocol Corporate Standard so that we can calculate the carbon footprint of our direct operations.
We'll establish carbon reduction targets by 1st April 2020.	Once our operational (Scope 1 & 2) carbon baseline for year 2018/19 has been calculated, we will establish carbon reduction targets.
Where reasonably practicable, we'll deliver and operate the Core Valley Line rail services, infrastructure works and services taking into account the Welsh Government's objective of zero carbon.	The introduction of the new Metro Vehicles with 25kV/battery hybrid-running capability in 2023 will allow us to meet this obligation. We'll also work to further reduce our carbon footprint by: • Installing smart energy meters to monitor energy usage and show ideas/evidence of how this can be reduced, • Hiring fully electric/hybrid vehicles/machinery to reduce emissions, • Installing charging points/use existing charging points for vehicles and help promote 'green energy', • Using cab/vehicle monitors to record and supply feedback to drivers regarding fuel efficiency and demonstrate how this can be improved • Using a carbon calculator to record carbon emissions throughout the project and demonstrate ways in which to reduce carbon emissions • Installing Solar panels at compounds/stations, • Demonstrating how we're using solar-powered machinery/plant and charging stations or similar.

By no later than 31 December 2023, we'll ensure that the rail service covering the Core Valleys Lines will consume no diesel fuel and achieve 100% passenger capacity miles under zero carbon power (except for Special Events and recovery from perturbation).	New Tri-Mode (diesel, battery and electric) trains are being introduced in 2023: • Seven Tri-mode trains with 3-carriages • 17 Tri-mode trains with 4-carriages • 36 Tram-trains with three-carriage The Tri-mode trains use a mix of electricity and battery to power trains to Rhymney and Coryton with being used Vale of Glamorgan, Barry and Penarth routes. The Tram-trains will us electrici and battery power trains to Merthyr Tydfil, Aberdare and Treherbert. The Core Valleys Lines will consume no diesel fuel and so meet this objective.
We'll upgrade our trains to reduce carbon emissions.	We're introducing new trains to replace our Pacers. These new trains will have improved vehicle and fuel efficiency measures installed to help reduce carbon emissions. However, the greatest reduction in carbon emissions will be due to a shift to more sustainable travel op-tions such as public transport and cycling. Examples of how we will promote this shift include: • creating safe cycle routes to our stations • equipping stations with safe cycle storage • providing up to date, easily accessible travel information • installing electric vehicle chargers at some of our locations
We'll install driver advisory systems on rolling stock to give drivers feedback on performance of fuel efficiency by April 2020	At present, driver advisory systems are installed on all our fleet with the exception of the c153's and Driving Van Trailer's.
We'll ensure that 100% of our electricity is from renewable sources with 50% of this generated from Welsh renewable sources by 2025. We'll monitor and report on these percentages.	All our electricity is provided by SSE on it's Green tariff. This tariff provides REGO (Renewable Energy Guarantee of Origin) certificates for each megawatt hour of renewable energy generated. The consumption used is matched with an equivalent volume of renewable electricity generated from large scale wind and hydro sources and exported on to the National Grid. A monthly report shows how the energy used was generated

Subject to surveys and gaining necessary approvals, we'll install solar panels at our 20 largest stations and two depots between April 2021 and April 2024.

We'll install solar panels at:

Abergavenny – 130m2

Bridgend – 130 m2

Bangor – 118 m2

Hereford – 250 m2

Leominster – 100 m2

Holyhead – 380 m2

Llanelli – 100 m2

Newport – 380m2

Prestatyn -194m2

Shrewsbury - 320m2

Wrexham General – 300m2

A £2,339,000 fund will be made available for renewable energy schemes including installing Solar PV panels at stations and depots where feasible, new re-cycling bins at stations and new rainwater harvesting schemes by 1st April 2023.

We'll spend £5,000,000 on renewable technologies, including the installation of photovoltaic panels, LED lighting and rainwater harvesting equipment by April 2026

We've also created a list of stations that we feel are ideal locations to have rainwater harvesting schemes installed:

Abergavenny

Aberystwyth

Bangor

Cardiff Central

Carmarthen

Colwyn Bay

Flint

Hereford

Holyhead

Llandudno Junction

During our initial surveys, we noted the number of recycling bins present on our stations (and their condition) and will use this information to guide us when investing in new recycling bins.

LED lights are highly efficient, offer significant reductions in energy use and are available for virtually every application. They also emit less heat than traditional bulbs as well as having longer operating lives. Working together with Network Rail (who own the canopies and luminaires at our stations), we'll install these wherever possible. We'll also ensure that LEDs are installed at our other locations and make use of additional energy saving measures such as time switching, PIR and daylight sensors.

We'll support an increase in electric vehicle charging by installing charging points in 10% of available spaces at our new car parks. We'll also install charging points at other suitable stations across our network to ensure the infrastructure is in place to encourage the use of electric vehicles.

At present, the following list of stations will be considered for the installation of electric vehicle charging points.

Bangor

Barry

Cardiff Central

Chester

Hereford

Newport

Port Talbot

Radyr

Severn Tunnel Junction

Shrewsbury

Carmarthen

Haverfordwest

Bridgend

Wrexham General

Colwyn Bay

Tenby

Appendix 1

Environmental targets

"Scope 1, 2 and 3 Emissions"

Scope 1: emissions that arise from sources that we own or control. For example from fuels we use to heat or power premises or vehicles

Scope 2: emissions generated by electricity that we, our contractors and supply chain use

Scope 3: emissions that are a consequence of our, our contractors and our supply chains activities but occur from sources that we don't own or control. For example emissions associated with waste, water, business travel, commuting and procurement.

Description	Target	Measure	Reporting frequency
Carbon (CO2e) Scope 1 emissions Core Valleys Lines Traction (diesel)	100% reduction by the end of 2023	• Kilogram per unit of Passenger Carrying Capacity kilometre (Target) • kilogram per passenger km (no target) • Total tonnes (no target)	Annually
Carbon (CO2e) Scope 1 emissions Wales and Borders traction (diesel)	30% reduction by the end of 2023	• Kilogram per unit of Passenger Carrying Capacity kilometre (Target) • kilogram per passenger km (no target) • Total tonnes (no target)	Annually

Description	Target	Measure	Reporting frequency
Carbon (CO2e) Scope 2 emissions – electricity procured by the ODP	100% reduction by the end of 2023	Total tonnes	Annually
Carbon (CO2e) Scope 3 emissions - Embodied carbon in any Associated Project (as defined in Appendix 1 of Schedule 3B to the ODP Grant Agreement)	Agreed as part of Preliminary Design and Discovery Phase. Aim is zero net carbon.	Total tonnes per individual project	End of individual project
Carbon (CO2e) Scope 3 emissions Wales and Borders operations	N/A	• Total tonnes carbon saved through modal shift • Total tonnes carbon saved through rail service assuming passenger journeys made by rail would have been made by road	Annually
Carbon (CO2e) Scope 3 emissions Core Valleys Lines Operations	N/A	• Total tonnes carbon saved through modal shift • Total tonnes carbon saved through rail service assuming passenger journeys made by rail would have been made by road	Annually

Description	Target	Measure	Reporting frequency
Energy and fuel from renewable sources from Wales or areas served by the TfW	50%	Kilowatt hours (kWh), therms, litres % of total electricity % of other fuels and energy sources	Annually
Waste diverted from landfill for re-use, recycling or other recovery applications including waste to heat / energy	95% by the end of 2020	% of total waste	Annually
Waste to landfill	5% by the end of 2020	% of total waste	Annually
Air Pollution	100% reduction for Core Valleys Lines and 80% reduction for Wales and Borders by the end of 2023	• kilogram nitrogen oxide per passenger km (target) • Total tonnes	Annually

Description	Target	Measure	Reporting frequency
Air Pollution	N/A	• Total tonnes nitrogen oxides saved through modal shift • Total tonnes of nitrogen oxide saved through rail journeys which otherwise would have been made by road	Annually
Enforcement/ information notices	Zero	Number received	Annually
Environmental fines or prosecutions	Zero	Number received	Annually
Environmental incidents	Zero	Reported through environmental management systems	Annually
Environmental training records	100% personnel briefed/trained	% employees briefed/ trained	Annually

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