



Low emissions Progress against short-term vision

GOALS	RECENT POSITION (2020)	RECENT PROGRESS AGAINST STEPPING STONES		VISION FOR 2025		
<p>Cheaper and less disruptive electrification</p>	<p>Concerns over cost and disruption following recent electrification schemes have undermined political support.</p>	<p>Introduction of discontinuous electrification. <u>Various TfW</u> announced Class 230 battery-hybrid trains have been introduced into regular passenger service on the Borderlands Line between Wrexham and Bidston in April 2023. Class 756 electric-battery-diesel hybrid trains tested before entering service on the Rhymney line.</p>	<p>Rail has a clear power-supply strategy, including lineside storage, distributed generation, onboard and hydrogen. This takes account of smart grid, storage and load balancing opportunities. <u>NR & RSSB</u>. T1272 is exploring charging battery/multi-mode trains while running on the existing electrified network. T1229 will publish findings on non-electrified zones of high energy demand for freight trains in autumn 2023. T1270 will examine potential for intelligent energy management using the Western Route as a case study.</p>	<p>Standards/incentives adopted to reduce the need for civil engineering while maintaining safety. <u>NR</u></p>	<p>Faster, more detailed and more effective planning and route clearance is enabled. <u>NR TDNS</u></p>	<p>New electrification schemes, including discontinuous electrification, are being developed to address cost and disruption challenges.</p>
<p>Zero-carbon self-powered vehicles</p>	<p>There are around 2,500 <100mph diesel vehicles currently active, many of which run on lines unlikely to be electrified.</p>	<p>Standards for hydrogen and battery trains and associated infrastructure are adopted. <u>RSSB</u> T1185, an enabler to the operation of battery/multi bi-mode trains re. on-network charging has been published. T1272 will develop 'rules of engagement' between battery trains and traction power networks and examine the wider requirements.</p>	<p>In-service fleet deployments for hydrogen- and battery-powered trains. <u>ROSCOs and academia</u> HyTunnel project (COF=HYT-01) completed in 2023, results will inform decisions about safety equipment, systems and procedures to address hydrogen risks in tunnels. MultiHyFuel project (COF-MHY), risk assessment review of critical scenarios and hazardous areas underway, with best practice guidance due to be published in July 2024. Great Western Railway trial of battery train and fast-charging technology on the Greenford branch line.</p>			<p>Clear transitional and replacement arrangements for Sprinters (Classes 150-159) delivering zero carbon.</p>
<p>Low carbon freight</p>	<p>Rail freight, with its significant reliance on diesel, runs the risk of being penalised while alternative modes may be more carbon intensive and increase congestion.</p>	<p>Options, criteria and business case to retrofit traction options and alternative drop in fuels are developed. <u>ROSCOs and manufacturers</u> T1229 developed a model of traction power and energy requirements for freight corridors to improve understanding of the performance demands that low carbon freight locomotives will need to deliver.</p>	<p>Clear understanding of where electrification could provide tipping point for freight traction. <u>NR TDNS</u>. An aspect of T1263, which has completed with the technical report published in March 2023, explored opportunities to increase freight services where passenger services have been thinned out.</p>		<p>Energy-optimised timetable and real-time train speed profiles are enabled for off-peak operation. <u>NR and RSSB</u> T1263 has developed a framework for freight-prioritised, low emissions pathing and regulation decisions. It considered the holistic impacts of whole network traffic and wide economic benefits of modal shift from road to rail to identify the optimised options. T1270 will assess options to regulate the traction power demand on the Western Route.</p>	<p>Clear understanding of delivery roadmap and transition arrangements for low carbon freight.</p>
<p>Increased energy efficiency</p>	<p>The industry is neither incentivised nor aligned to improve the efficiency of rolling stock or infrastructure.</p>	<p>There is a strategy for reducing losses, especially on DC network as well as handling increased freight demand on the DC rail network. <u>NR</u> HS1 shared findings from a project that involved the introduction of regenerative braking technology introduced on Southeastern trains.</p>	<p>Clear and agreed technical requirements for rolling stock efficiency and emissions reduction, including retrofit, are adopted. <u>RSSB</u> is finalizing the recommendation for Rail Air Quality Targets for the DfT. Guidance on the initial steps TOCs should take to produce Air Quality Improvement Plans will be produced by <u>RSSB</u> by September 2023.</p>			<p>Clear programme to reduce energy use is being delivered across the network.</p>
<p>Reducing polluting emissions</p>	<p>While overall emissions from rail are low, they can be significant locally. The industry's understanding of the scale, location and risk of emissions is improving through the research and implementation carried out.</p>	<p>Low-cost intelligent emissions monitoring and risk mapping is in place. <u>RSSB</u> A Stations Air Quality Monitoring Network (AQMN), developed and operated by <u>RSSB</u> is in place covering over 100 stations. Diffusion tubes are installed at all stations covered, and three reference monitors have been installed so far, with two more to be installed by end of 2023.</p>	<p>SUS-2022-012 'Industry Idling Reduction Initiative' is underway and aims to deliver tangible reductions in engine idling with best practice guidance on how this can be maintained and repeated across industry. The project will understand barriers to idling reduction, assess technical solutions and perform a cost / benefit analysis on various mitigation options.</p> <p>SUS-2022-030 'Onboard trains particulate matter speciation' is also underway and aim to further understand the sources, composition and potential health impact of particulate matters found onboard train. Tests and sampling will be completed by summer 2023. Report including mitigation measures will be finalised by end of 2023.</p>		<p>A programme of trials to test and compare mitigation options is delivered. <u>Various</u> T1235 developed a testing protocol for retrofit emissions mitigation options for diesel rolling stock. TOCs and ROSCOs are working on various mitigation options to reduce diesel emissions from their fleets as part of their National Rail Contracts and Business Plan Commitments. <u>NR</u> announced a trial of new purification devices at platforms 10 and 11 at Birmingham New Street.</p>	<p>Air Quality Improvement Plans are in place and in action at locations where one is required.</p>