

# Transport Scotland

The national transport agency for Scotland



# Procuring Scotland's Rolling Stock

Good for the Planet, Good for the Pocket



# Scottish Government's Purpose

## National Outcomes:

- Create a more successful country
- Give opportunities to all people living in Scotland
- Increase the wellbeing of people living in Scotland
- Create sustainable and inclusive growth
- Reduce inequalities and give equal importance to economic, environmental and social progress

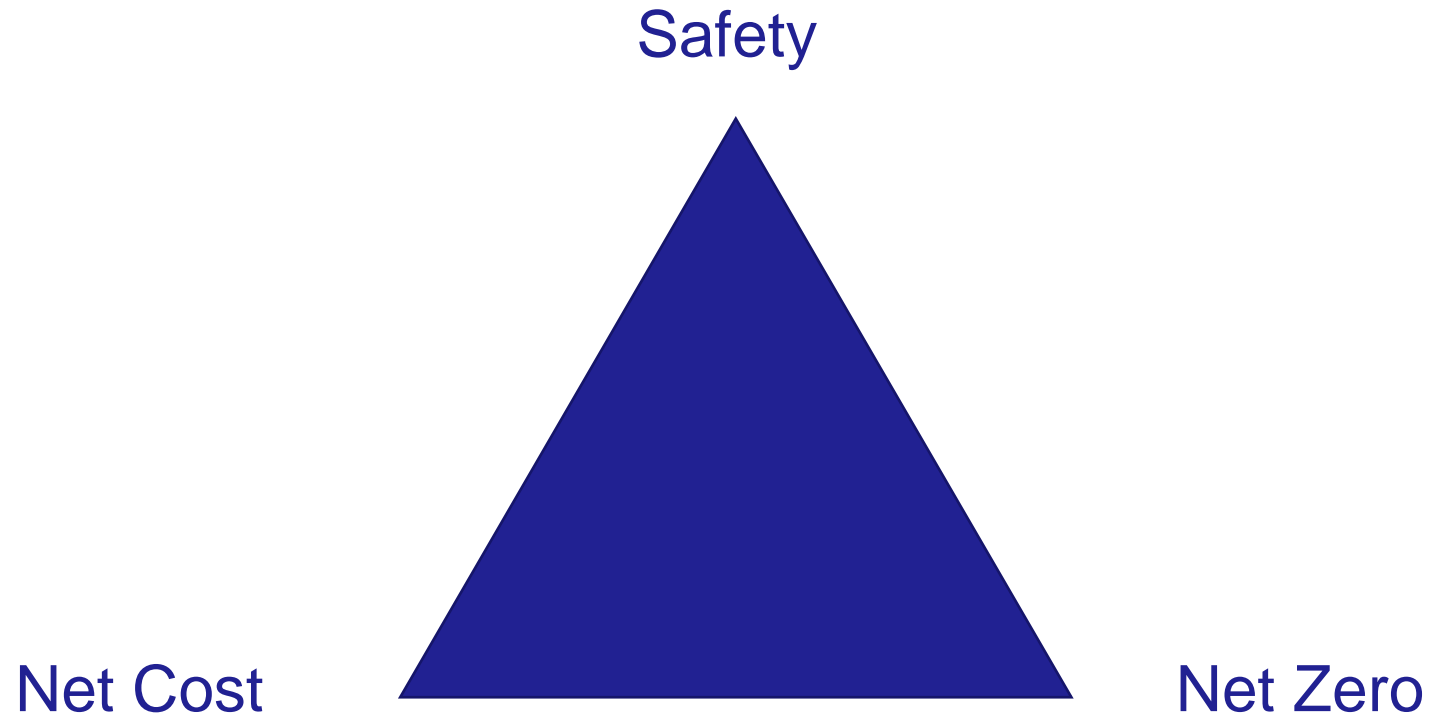
## National Performance Framework Our Purpose, Values and National Outcomes



<https://sustainabledevelopment.un.org/>  
[www.nationalperformance.gov.scot](http://www.nationalperformance.gov.scot)



# TS Rail's "Holy Trinity"



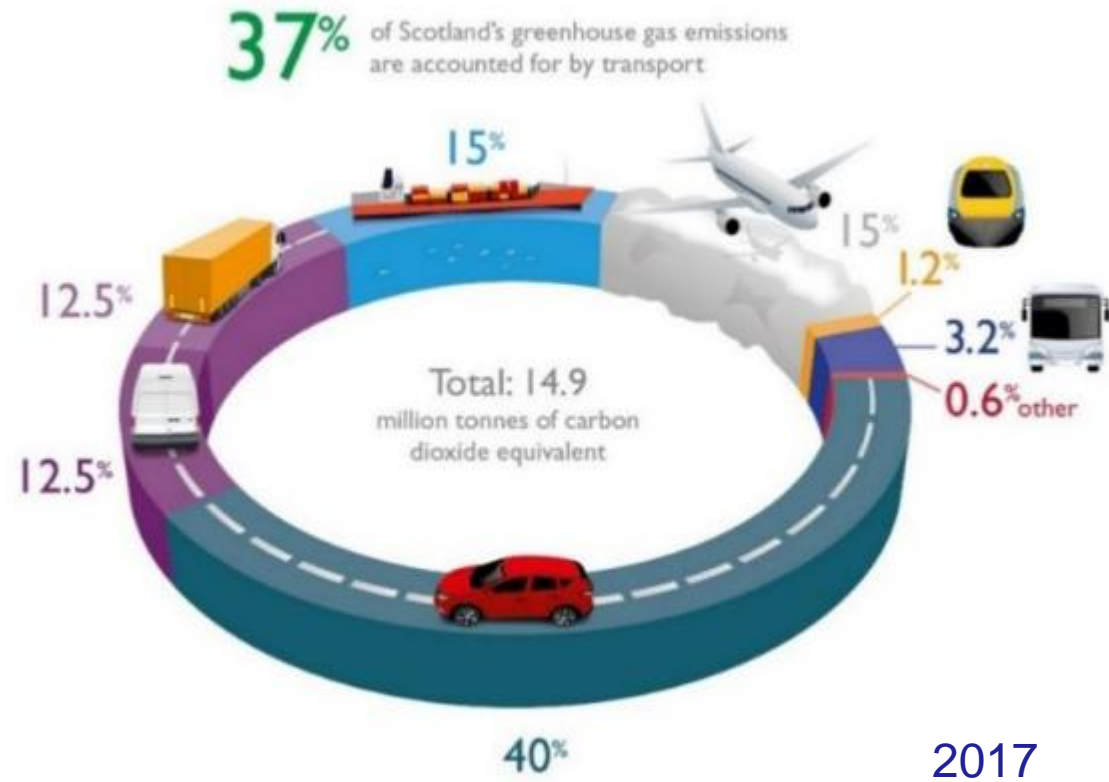
# Climate Change – An Existential Threat

- Already evident in everyday lives
  - extreme rainfall and associated flooding
  - more intense and frequent heatwaves
  - more frequent & severe storm activity
- exceptional is becoming the new norm
- **An unavoidable priority for action**



# Does Modal Shift Matter?

## Car Occupancy Rates 2018



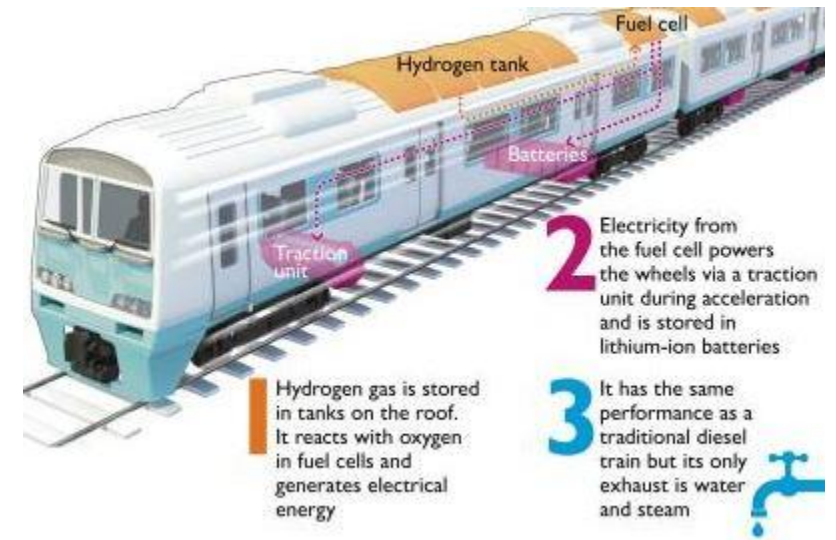
[www.netzeronation.scot](http://www.netzeronation.scot)



SCOTLAND'S RAILWAY  
BETTER IN THE MAKING

# Decarbonise Scotland's Railway - Smartly

- Decarbonisation Action Plan July 2020
- Move away from diesel to green sources
  - Electric
  - Battery
  - Fuel cell & green hydrogen
- Principal aim
  - electrify the network
  - passenger and freight benefits
- Where this is not possible
  - Battery-electric trains
  - Accelerate hydrogen train development and logistics deployment in Scotland



# Timeline 2020 - 2035

Railway electrification in Scotland, 2020

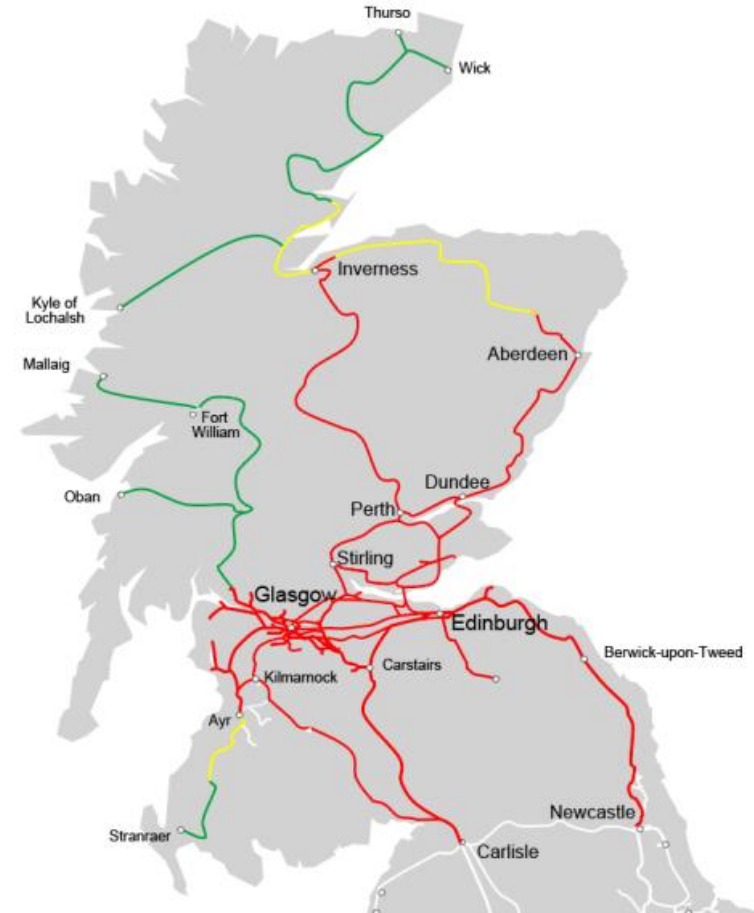


Map showing railway electrification in Scotland, 2020

## Electrification in Scotland 2020

- Electrified network
- Non-electrified network

Railway - decarbonised network in Scotland, 2035



Map showing decarbonised rail network in Scotland, 2035

- Electrified network (sections of route may include discontinuous – or intermittent – electrification and the use of battery/electric bi-modes) and the electrification of some freight only lines may be subject to review
- Alternative traction - transition solution
- Alternative traction - permanent solution



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# How the strategy evolved



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Current fleet 1037  
passenger  
vehicles

65% need  
replaced



Intercity



Rural / Scenic



Suburban



Life Expiry = 285 vehicles

Decarbonisation = 388 vehicles

Customer offer

Operational flexibility

Maintenance  
rationalisation

Staff competence

Infrastructure, depots  
and stabling

£



# How the strategy evolved



**Current fleet 1037  
passenger  
vehicles**

**Life Expiry 2026-2028**



**Life Expiry 2035-37**

**Life Expiry 2030-31**

**20xx Suburban**

- Decarb units to replace C156 DMU
- New EMU to replace life expired units
- Fleet cascade

**20xx Rural / Scenic**

- Decarb units to replace C158 DMU
- Fleet cascade

**20xx Intercity**

- Decarb units to replace HST

**20xx Suburban**

- Decarb units to replace C158 DMU
- New EMU to replace life expired units

**20xx Suburban / Intercity**

- Decarb units to replace C170 DMU



# Quality, Modal Shift

- Modern EMU, BEMU much more reliable (HMU?)
- Better acceleration and braking improves network capacity
- More attractive offering supports modal shift from car to rail
  - decarbonisation for free
- Configured for post-pandemic patronage
- Modern diesel trains cascaded to rural routes, extending benefits beyond decarbonised routes



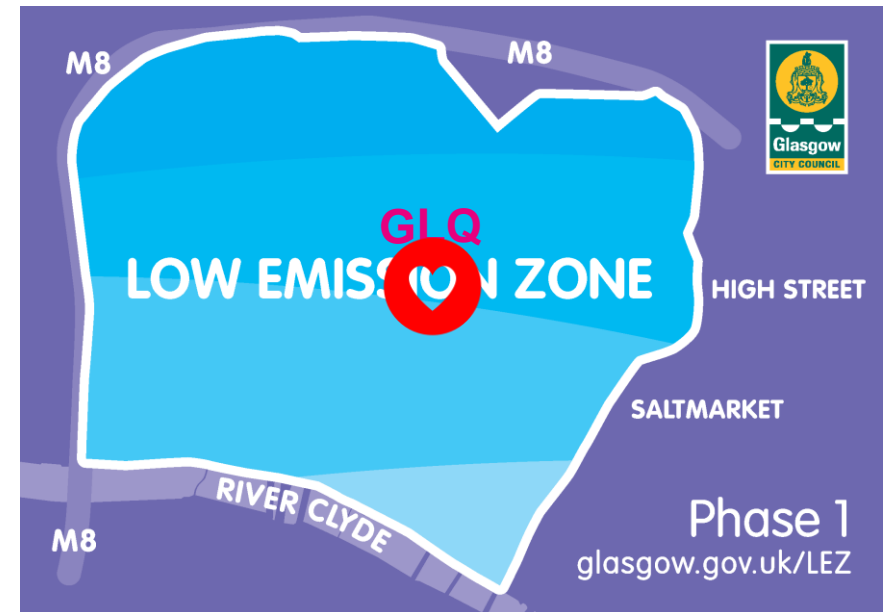
# Cost

- Reducing the cost/mile lowers Transport Scotland's operating costs
- Additional electrification infrastructure maintenance and renewals costs are significantly outweighed by operating cost savings
- EMUs and BEMUs much better Opex than modern DMU
- BEMU slightly higher costs than EMU
  - slightly lower energy efficiency
  - higher battery maintenance/replacement
- HMUs much worse Opex, but suited to rural routes



# Other Driving Factors

- Do nothing is not an option
  - Current fleet lifetime and condition
  - Configuration not suited to post-pandemic requirements
  - Climate Change and air quality concerns
- Alignment
  - Decarbonised infrastructure roll-out
  - Depots, stabling
  - Systems change e.g. C-DAS for BEMU
  - Funding
- Team Scotland
  - Delivery capacity
  - Rate of change capability





# Interior



Not this!



This



# Equality, Sustainability

- Reflecting post-pandemic Scotland
  - Fully accessible
  - Much better boarding at no cost
  - Family-friendly
  - Active travel provision
  - Suburban, not commuter
- Scottish supply chain opportunities, short- & long-term







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