

# Road to Zero

Zero Emission Public Transport for Northern Ireland

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# Translink – By Numbers

- 4k staff – one of largest employers in NI
  - Supporting over 6k jobs in NI
- Operates 13k services every day
  - 300k passenger journeys per day
- Maintains 1,400 buses and trains
  - 44m miles per year
  - 68% of NI population within 30 mins travel time of a major urban centre via public transport
- Maintains over 80 bus and rail stations & halts
  - 8k P&R spaces
- Maintains a £3bn railway asset
  - 300+ miles of rail track and over 1,600 civil structures



# Climate Positive Strategy

- **50% reduction** in our current emissions **by 2030 or sooner** (BitC Climate Action Pledge)
- **Net Zero by 2040 or sooner**
- **Climate Positive by 2050**

## Framework To Achieve Climate Positive:

- **Priority 1 - Greener Vehicles** (Bus Fleet Strategy, Rail Strategy, Supporting Systems)
- **Priority 2 – Greener Infrastructure** (Energy Strategy & Sustainable Infrastructure)
- **Priority 3 – Greener Business** (Biodiversity, Circular Economy, Active Travel)

TOGETHER  
FOR OUR  
PLANET







# Translink Fleet Roadmap

2020



2020  
First Hydrogen Bus



2021  
100 Zero Emission buses



2022  
Euro VI  
conversion  
complete

2030



2027/29  
New Trains 4  
Bi-Mode



2026-27  
Enterprise fleet  
replacement



2032  
Introduce  
Zero  
Emission  
Coach



2027-2040  
Zero Emission technology  
on rail network



2040  
Zero Emission Fleet

2040

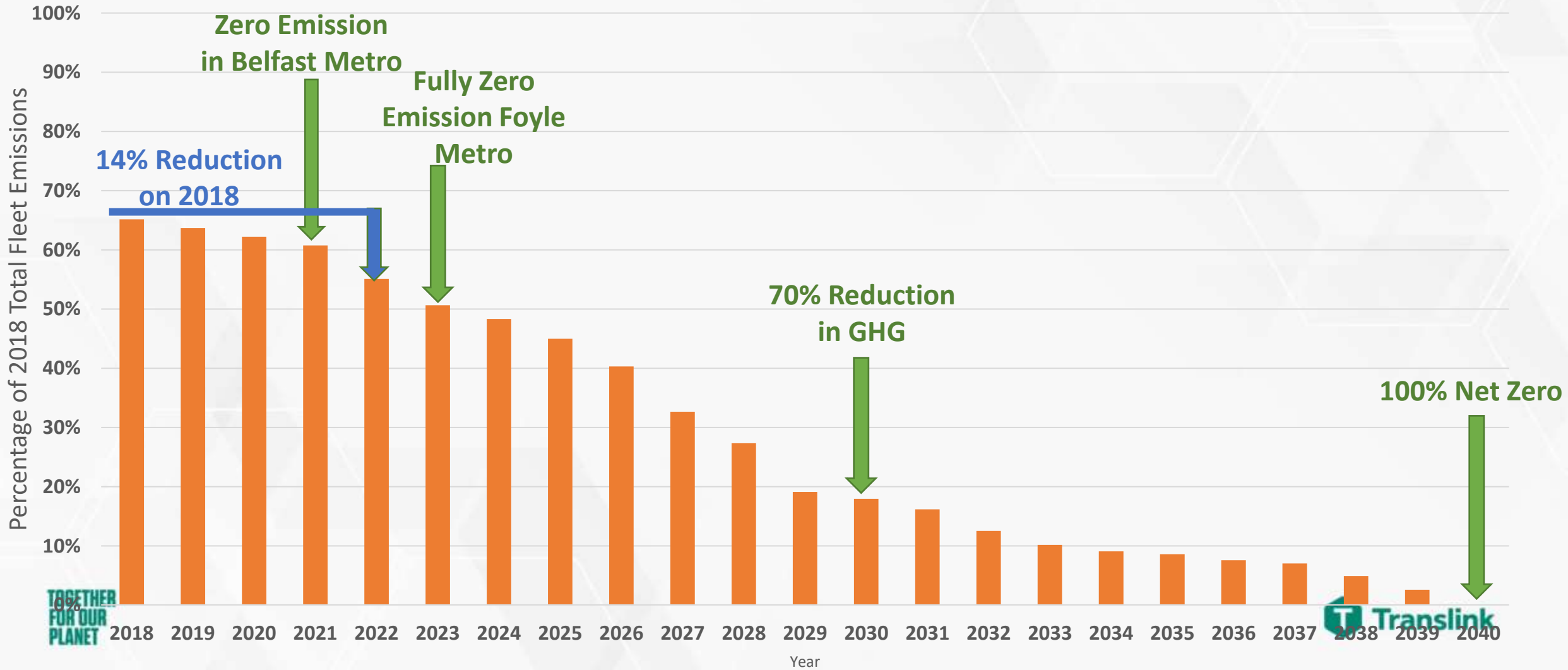
Become  
Climate  
Positive

2050



Better.  
Connected

# Translink Bus Fleet Milestones



# Translink Zero Emission Bus Programme

## NIH2 Pilot



**3 Hydrogen buses  
for Belfast - live  
Dec 2020**

## Phase 1



**80 Electric buses  
and 20 Hydrogen  
for Belfast – live  
March 2022**

## Phase 2



**New Foyle Metro Electric  
Fleet ,Derry~Londonderry  
- go live Summer 2023**

## Phase 3



**100 Electric buses  
for Ulsterbus and  
Metro – go live  
Summer 2024**



# NIH2 Consortium Project (Proof of Concept)

- Consortium formed with Power NI
- £4.2m project
- £1.9m OZEV funding (UK Government)
- 3 Hydrogen Double Deck Buses – entered service December 2020
- First Hydrogen Refuelling Station in Ireland
- Upgrades to Workshop to make Hydrogen safe facility
- Hydrogen to be manufactured on Wind Farm in Co. Antrim





## PHASE 2 – Belfast Metro

- 20 FCEV Double Deck Buses
- Installation of Hydrogen Refuelling Station
- Upgrades to Workshop to make Hydrogen safe facility
- Project Cost £15m
- First buses entered service April 2022
- Hydrogen supplied from mainland GB





# Hydrogen Fuel Cell Electric Vehicle



# Fuel Cell Electric Bus

- Wrightbus StreetDeck Hydroliner (FCEV)
- Hydrogen Fuel Cell power train and its battery pack can store up to 48KWh
- 6 hydrogen gas storage tanks which can hold 27KG/1120 Litres
- Filling Pressure – 350 Bar



# Hydrogen Refueling Station – Milewater Service Centre





# Hydrogen Refueling Station - Newtownabbey



# Hydrogen Refueling Station - Newtownabbey



# Zero Emission Bus Options

## Battery Electric Vehicle (BEV)

## Fuel Cell Electric Vehicle (FCEV)

>1500 BEVs in operation in UK/Ire

~100 FCEVs in operation in UK/Ire

Capital cost 1.8 times higher than diesel

Capital cost 2 times higher than diesel

Operational cost better than diesel

Operational cost higher than diesel

Range 130-170 miles/ Charge 3 – 6 hours

Range 200-220 miles/ refuel 6 – 10 mins

No garage modifications necessary

Garage Modifications necessary

Energy efficiency 73%

Energy efficiency 22%

Readily available source of Green Renewable Electricity

Very limited supply of Green Hydrogen in NI/ROI



# Translink Hydrogen Bus Projects – The Positives

- Zero Emission – addresses climate change and air quality concerns
- Vehicles have performed well so far
- Infrastructure works – well managed, lots of learnings
- Strong collaboration across supply chain
- Well received by customers and drivers
- Staff skills transition
- Strong support from Government, Councils and other stakeholders
- Raises profile of Public Transport as a solution to climate crisis
- Suitable for Urban/Suburban duty cycles



# Hydrogen Buses – Challenges

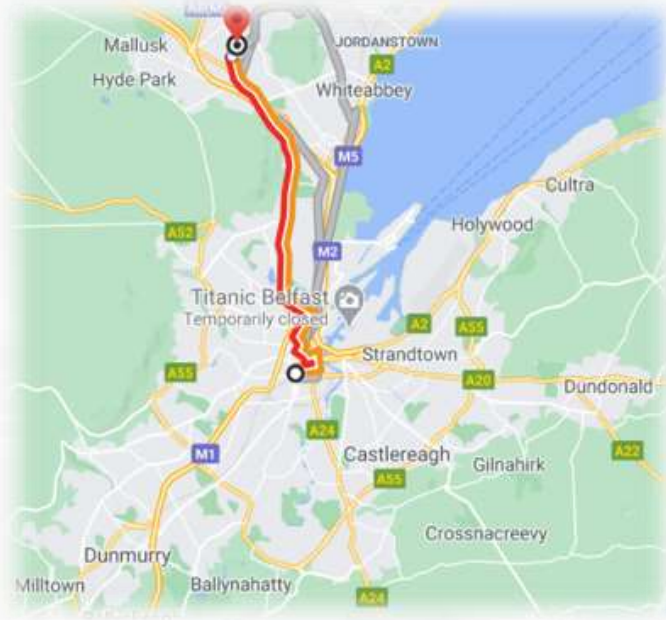
- Capital and operating costs
- Challenges of upscaling
- Depot capacity implications – land take
- Energy/Logistics – transport to point of use, fuel storage
- Infrastructure costs - refuelling, garage conversions, power connections
- Garage modifications – Hazard vs risk based approach
- Availability and cost of Green Hydrogen
- Rate of technological development – Batteries, Hydrogen fuel cells infrastructure and vehicle technology



# Vehicle Deployment

## Hydrogen Fuel Cell

- 20 FCEVs operating on the Antrim Road Corridor
- Stabled, maintained and fuelled from Newtownabbey and Milewater Service Centre



## Battery Electric

- 80 BEV used across the Belfast Metro network where practicable, with conversion of the Hollywood Rd, Castlereagh Rd and Cregagh Rd
- Stabled, maintained and charged at Short Strand and Milewater Service Centre





# The Future



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FOR OUR  
PLANET





# Thank You



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