



TRANSPOWER

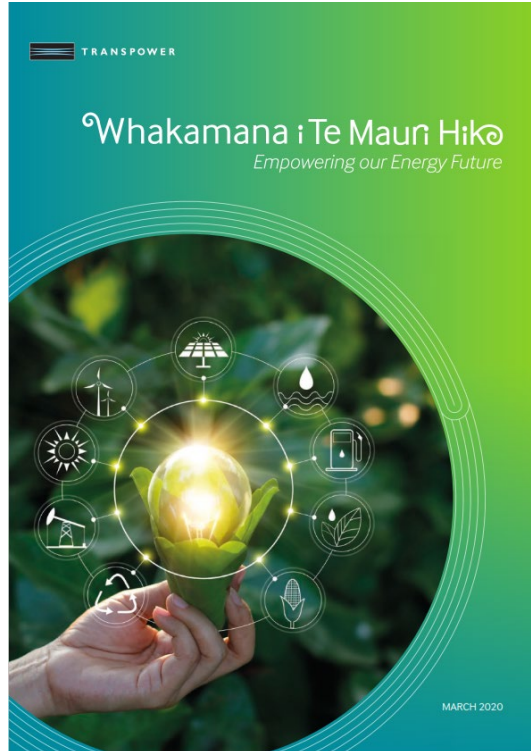


# **Decarbonising Transport**

## **Richard Hobbs – GM Strategy**

Empowering our energy future

# Whakamana i Te Mauri Hiko: empowering our energy future



# Agenda

## **1. Transport is NZ's largest and most economic emissions reduction opportunity**

2. Electric transport economics are improving rapidly and the benefits will be overwhelming
3. What are the barriers to uptake and how can we achieve this future?



# New Zealand has committed to net zero carbon by 2050

## **2030 Paris Climate Agreement target**

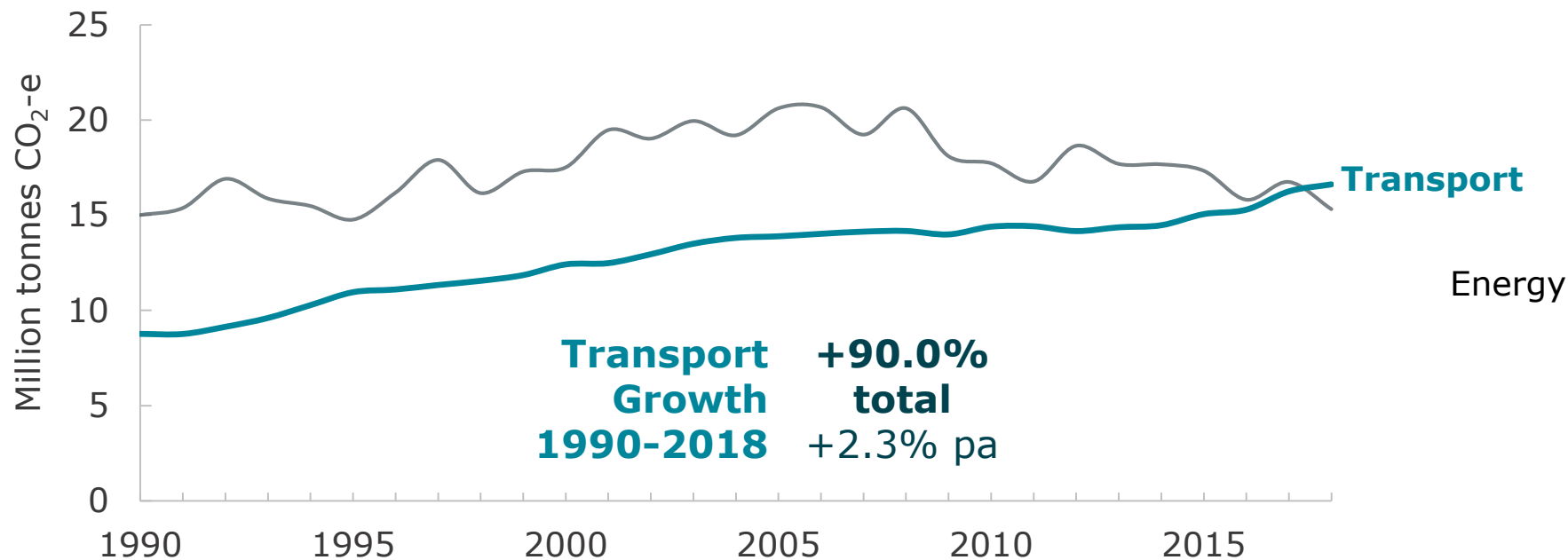
- Reduce GHG emissions by 30 per cent below 2005 levels
- Transport = ~20% of emissions covered under target

## **2050 Zero Carbon Bill target**

- Net zero GHG emissions (excluding biogenic methane)
- Transport = ~33% of emissions covered under target

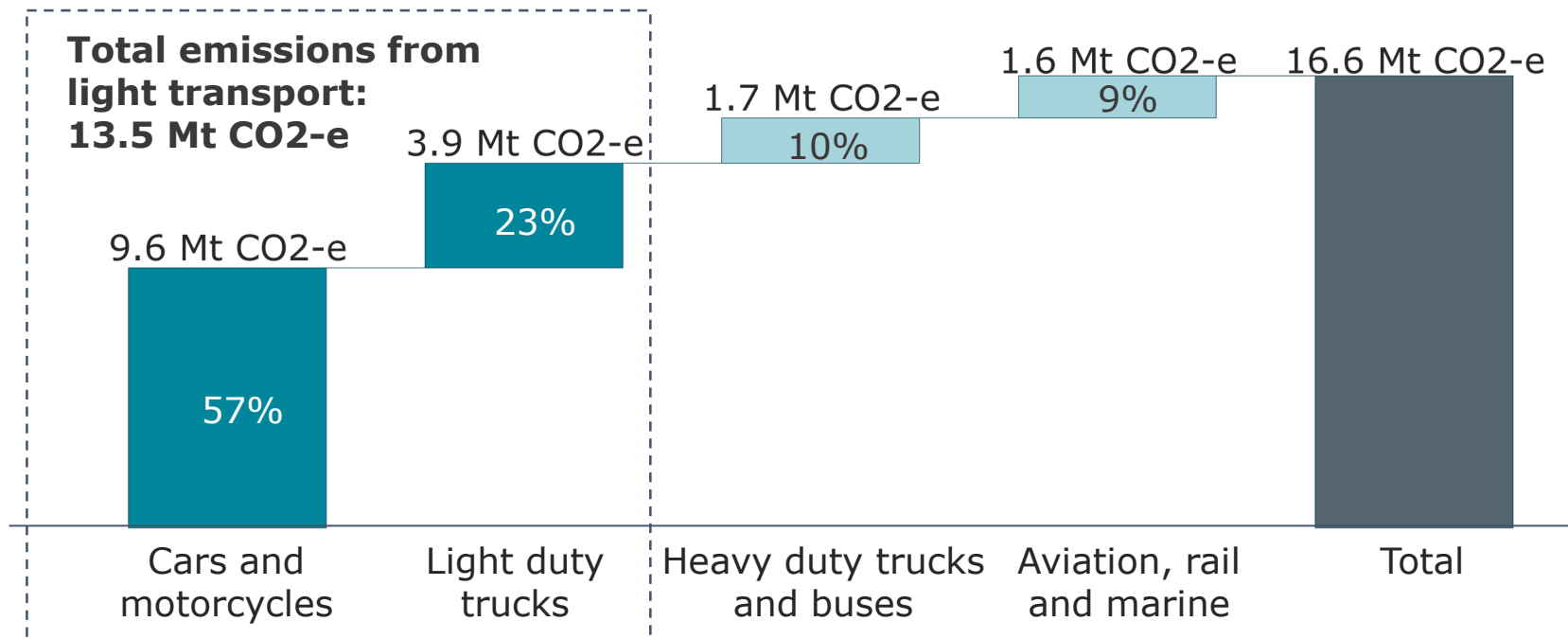
# Transport emissions have nearly doubled since 1990

## Transport and energy emissions, 1990-2018



# Light road transport represents 80% of transport emissions

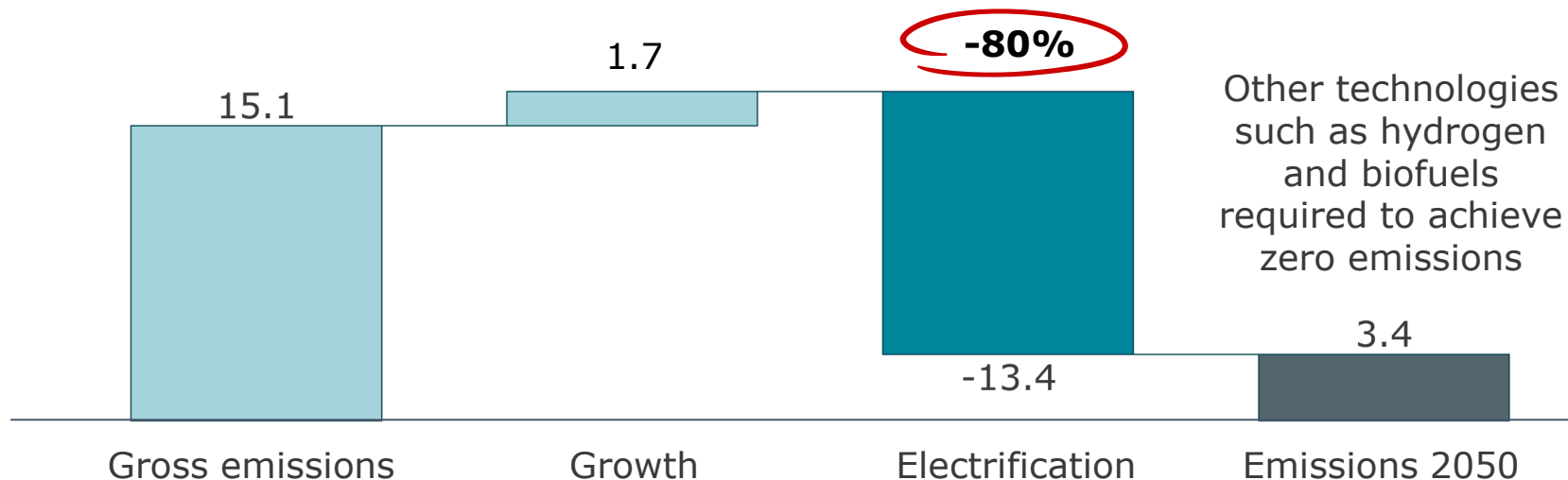
## Composition of transport emissions, 2018



# Electrification forecast to provide 80% of road transport emissions reductions to 2050

## Road transport electrification contribution to 2050 emissions target

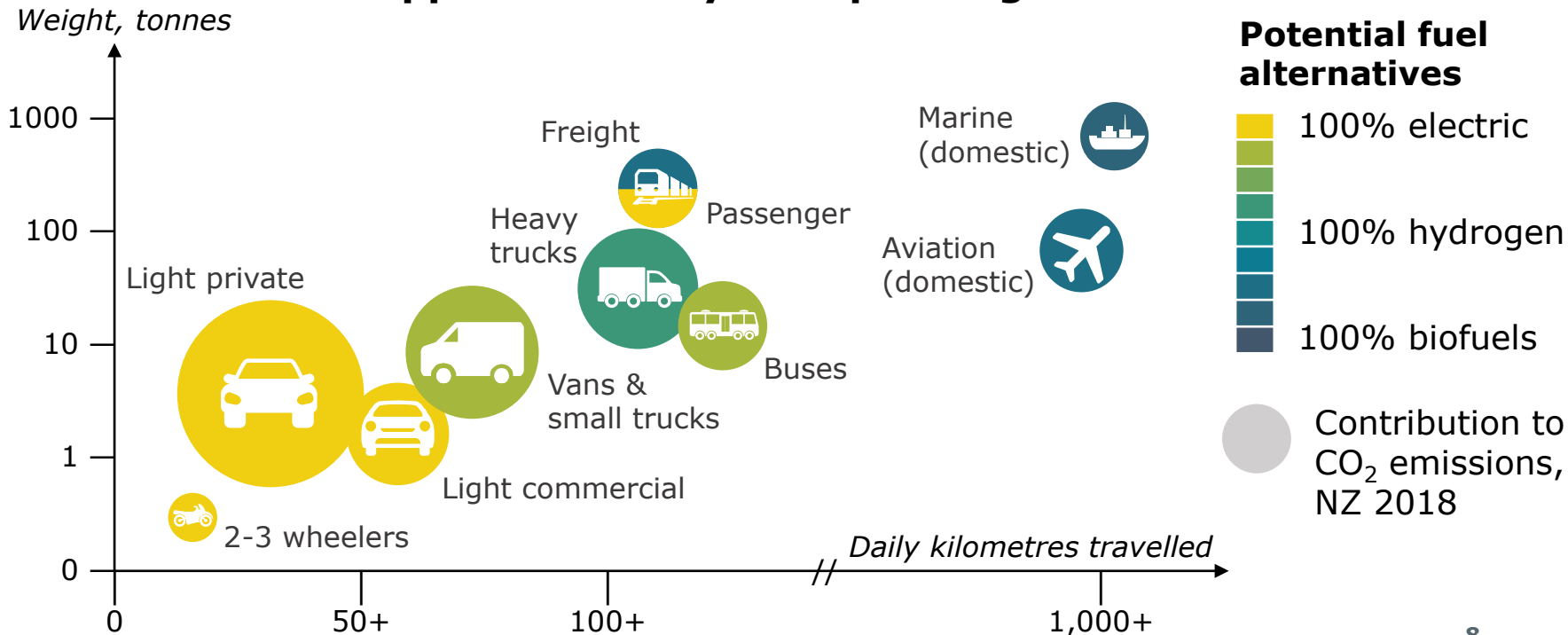
Million tonnes CO<sub>2</sub>-e



Note: Gross emissions used here reflect road transport only, and excludes aviation, marine and other sources of transport emissions  
Source: Whakamana i Te Mauri Hiko analysis and Ministry for the Environment emissions data

# Electricity will be critical but it is not the only fuel needed to decarbonise transport

## Decarbonisation opportunities by transport segment

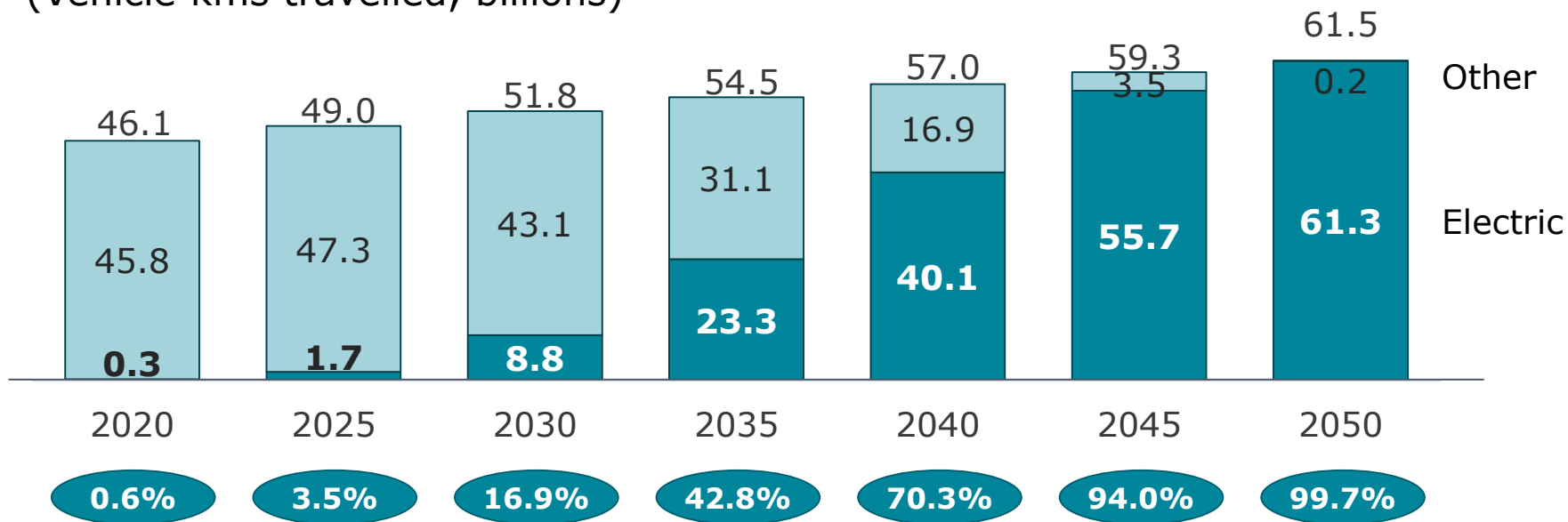




# Rapid uptake of light EVs to drive transport decarbonisation

## Light transport distance travelled by fuel type

(Vehicle kms travelled, billions)

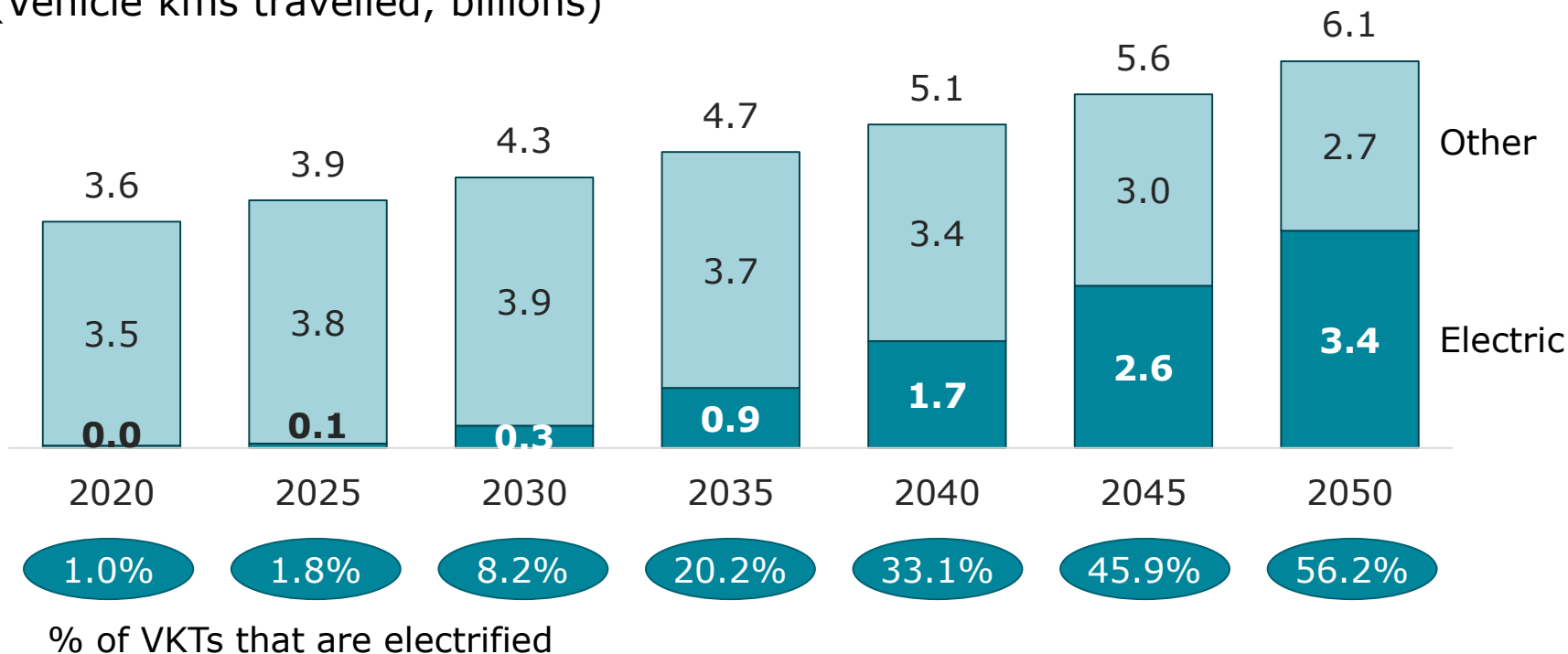


% of VKTs that are electrified

## ...and slower, but meaningful uptake in heavy vehicles

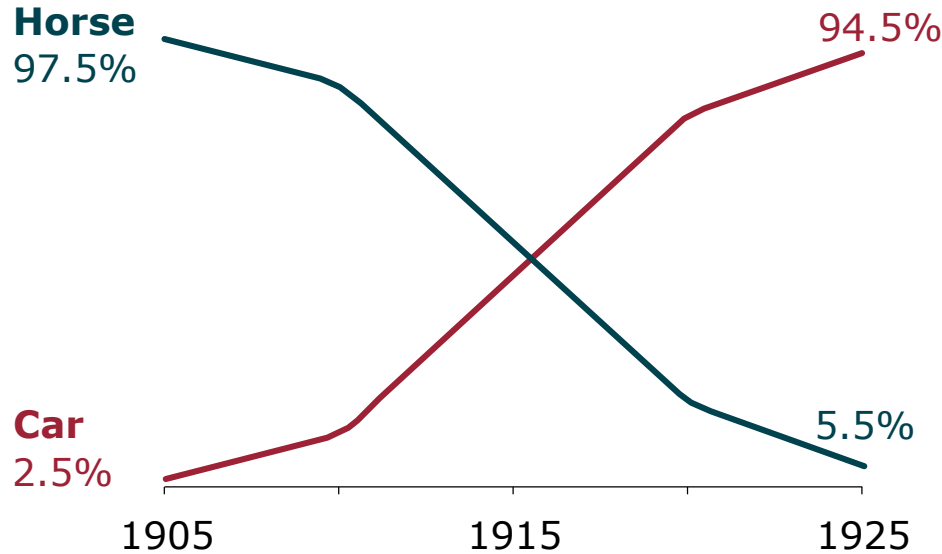
### Heavy transport distance travelled by fuel type

(Vehicle kms travelled, billions)



# The transition will be rapid... and likely even faster than we predict

## United States market share of car vs horse, 1905-1925



# Agenda

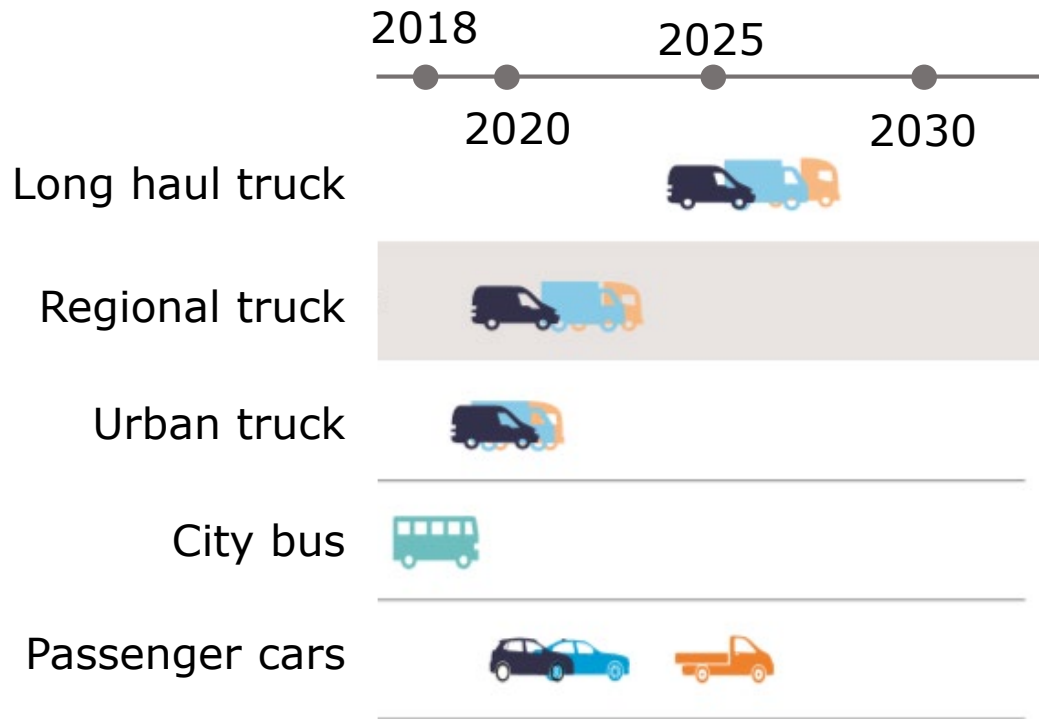
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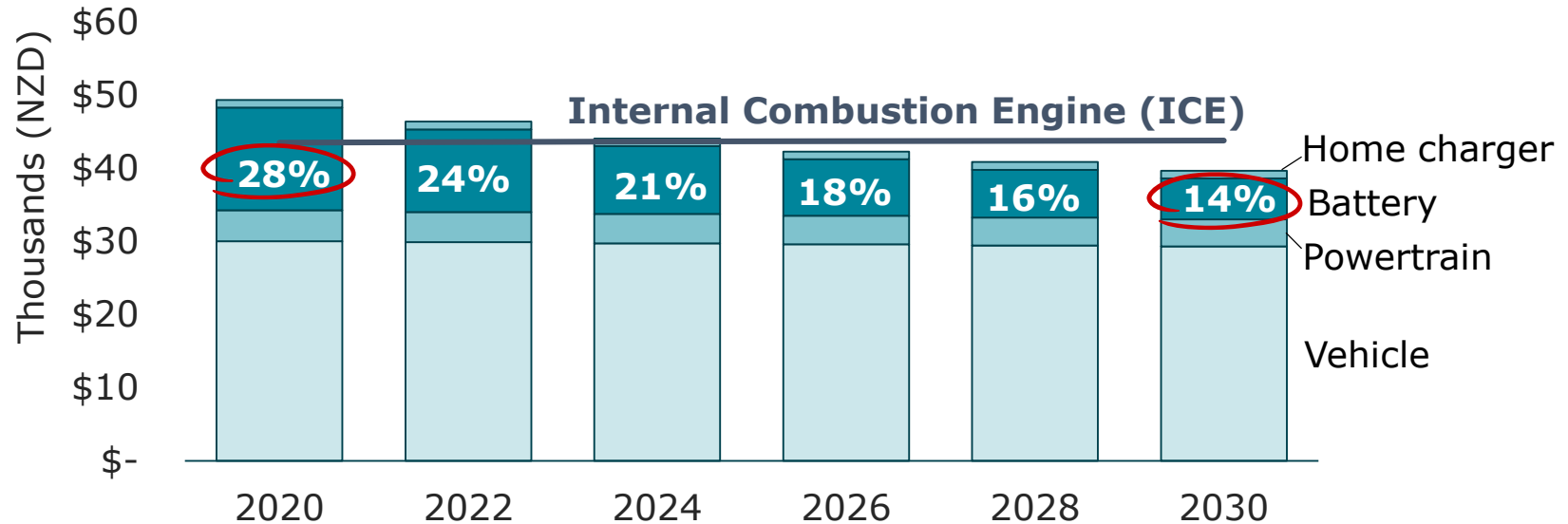


# Today Total Cost of Ownership (TCO) is already lower for some EVs



# Sticker price parity to be reached in 2024

## Breakdown of projected medium BEV and ICE pre-tax prices in the U.S.



Source: Bloomberg New Energy Finance, EV Outlook 2020

# Battery and renewable energy costs are declining rapidly

## Global price benchmarks: Solar, wind & batteries



**Battery costs  
2015-2020**



**Solar generation  
costs  
2010-2020**



**Wind generation  
costs  
2010-2020**

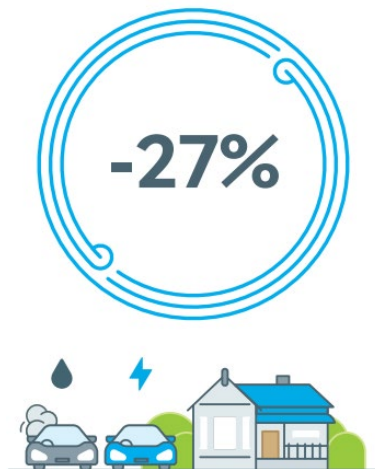
# Average household energy bill significantly lower by 2035

## Forecast change in annual 2035 energy bill for household with two vehicles

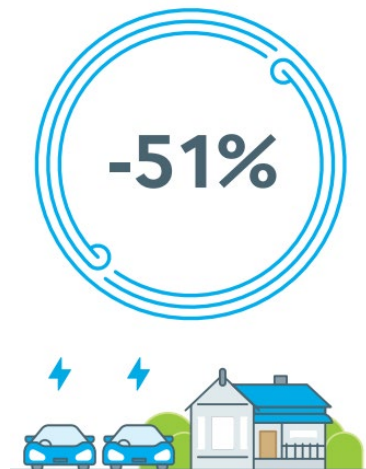
2 Petrol vehicles



1 Petrol, 1 Electric



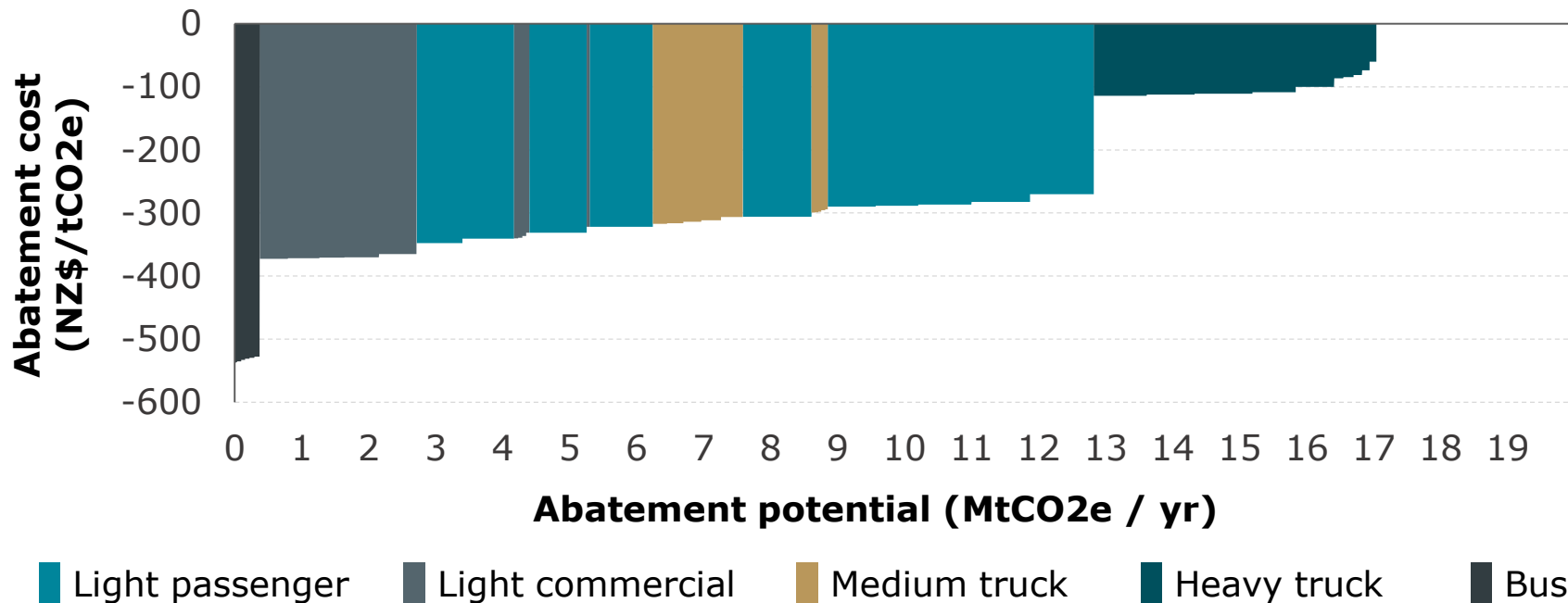
2 Electric vehicles





# By 2030 reducing transport emissions will save money!

## EV transition marginal abatement cost curve, 2030



# The electric revolution is starting...

## Light fleet: Westpac



Westpac has transitioned over 30% of its fleet to electric

([Drive Electric](#), [Westpac](#))

## Commercial trucks: Countdown



Countdown recently purchased five electric delivery trucks

([NZ Herald](#))

## Heavy freighters: AlSCO



AlSCO is currently trialling New Zealand's first electric heavy freighter

([Stuff](#), [AlSCO](#))

## ...and in public transport

### Buses: Metlink



By 2023, Metlink will have 98 new electric buses in Wellington

([Metlink](https://www.metlink.org.nz/))

### Rail: Auckland Transport/KiwiRail



KiwiRail is currently electrifying Papakura to Pukekohe

([Auckland Transport](https://www.aucklandtransport.co.nz/), [KiwiRail](https://www.kiwirail.co.nz/))

### Ferries: Wellington East by West



By the end of 2020, Wellington is due have its first electric ferry

([NewsHub](https://www.nzherald.co.nz/), [The Driven](https://www.thedriven.co.nz/))

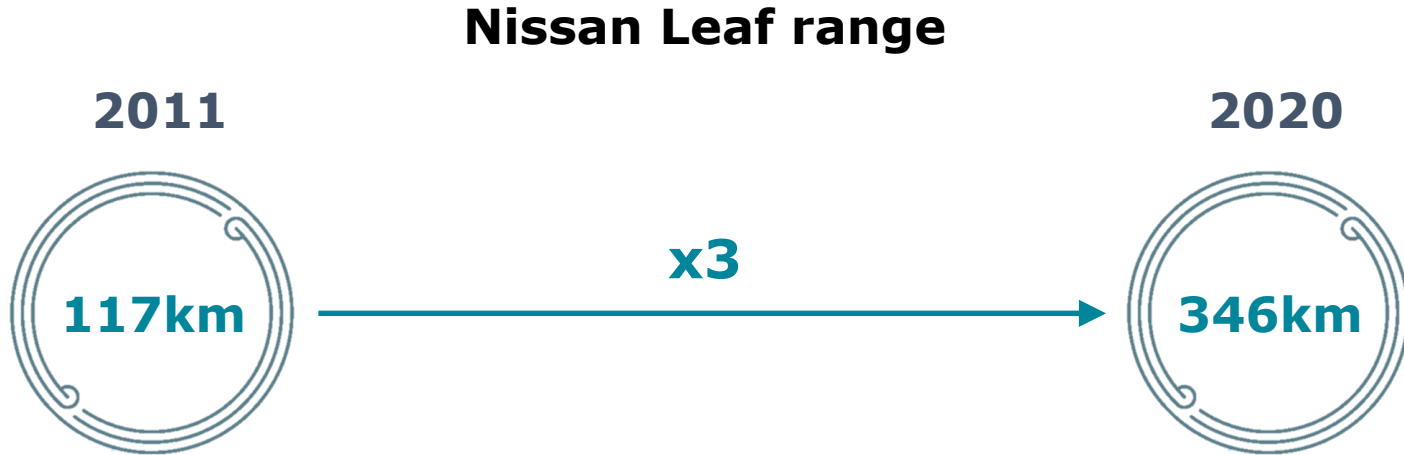
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# Range: Improving trends for vehicle range will continue



# Charging infrastructure: Growing but will need to expand

## EV chargers across New Zealand

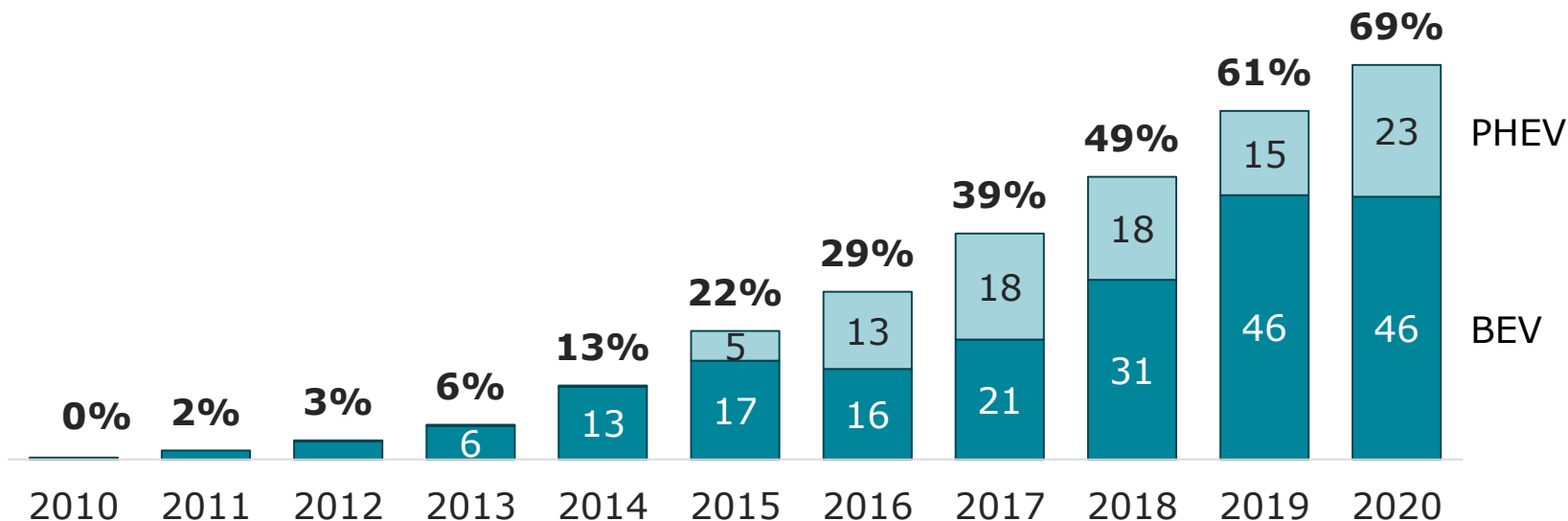


## Speed by charger type



# Policy: Need for strong and decisive policy

## Proportion of new Norwegian cars that are EVs (%)



# What do we need to make this a reality?

- **Strengthened policy**
  - Government and councils to rapidly convert their fleets
  - Address up front capital cost barriers
  - Behavioural incentives for uptake
- **Improve charging infrastructure network** – faster and more ubiquitous charging
- **Pricing and smart charging to incentivise 'off-peak' charging**
- **Planning and investment by electricity networks to enable EV uptake**
- **New renewable electricity generation** to meet increased demand



# Whakamana i Te Mauri Hiko: empowering our energy future

