

# Electric vehicles in New Zealand: today and tomorrow

Elizabeth Yeaman, Energy Efficiency and Conservation Authority  
New Zealand Wind Energy Association AGM, November 2017

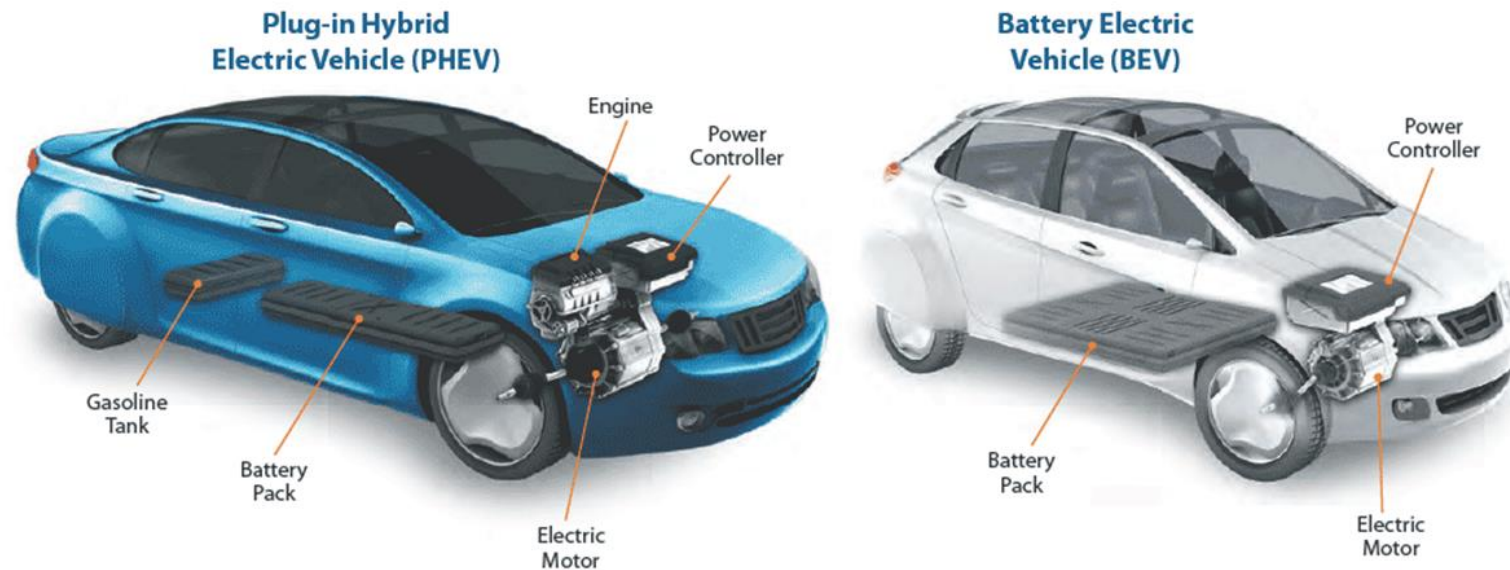


[www.electricvehicles.govt.nz](http://www.electricvehicles.govt.nz)

[New Zealand Government](http://www.govt.nz)

# What counts as an EV?

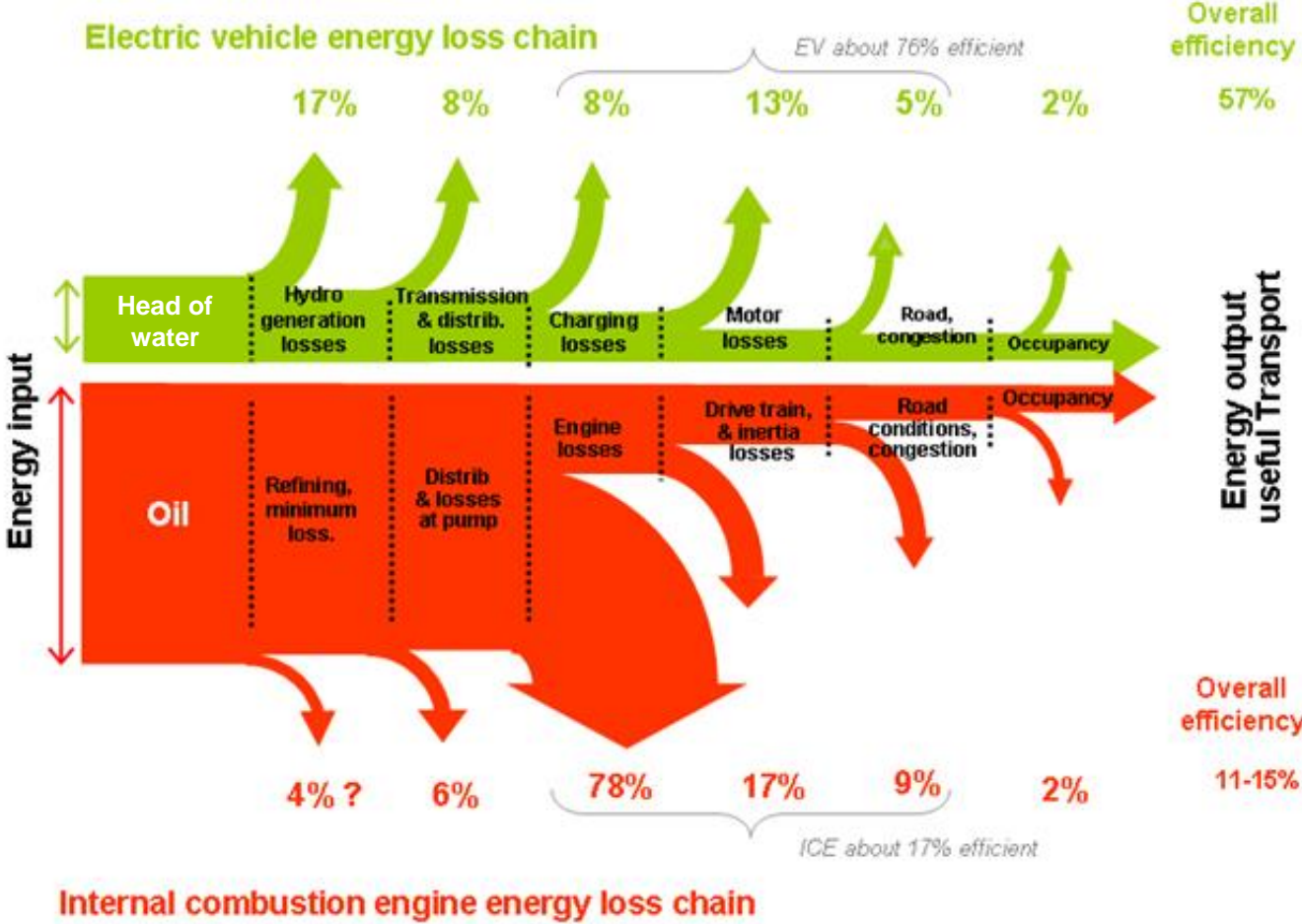
- Uses an external source of electricity for some or all of its motive power
- **You can plug it in**
- Battery Electric Vehicle (BEV) – 100% electric
- Plug in Hybrid Electric Vehicle (PHEV) – electric and petrol/diesel



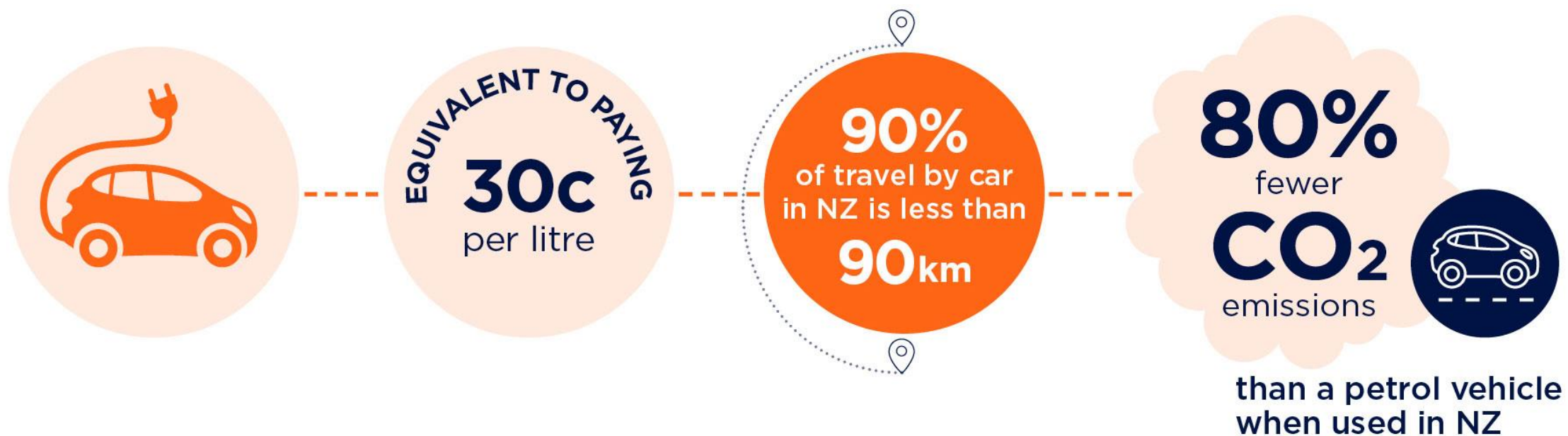
# This includes heavy EVs



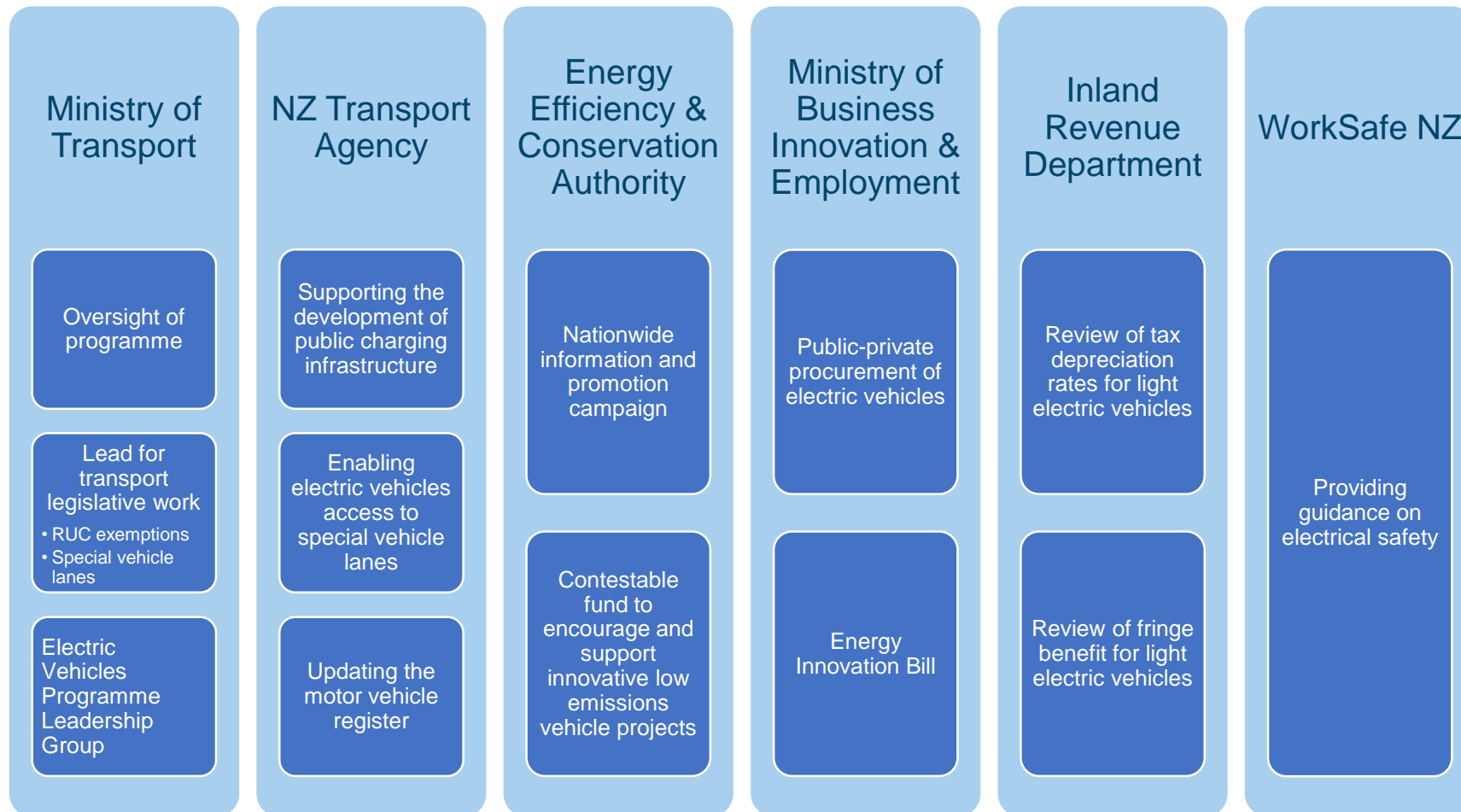
# EVs: energy efficient and switch to low carbon energy



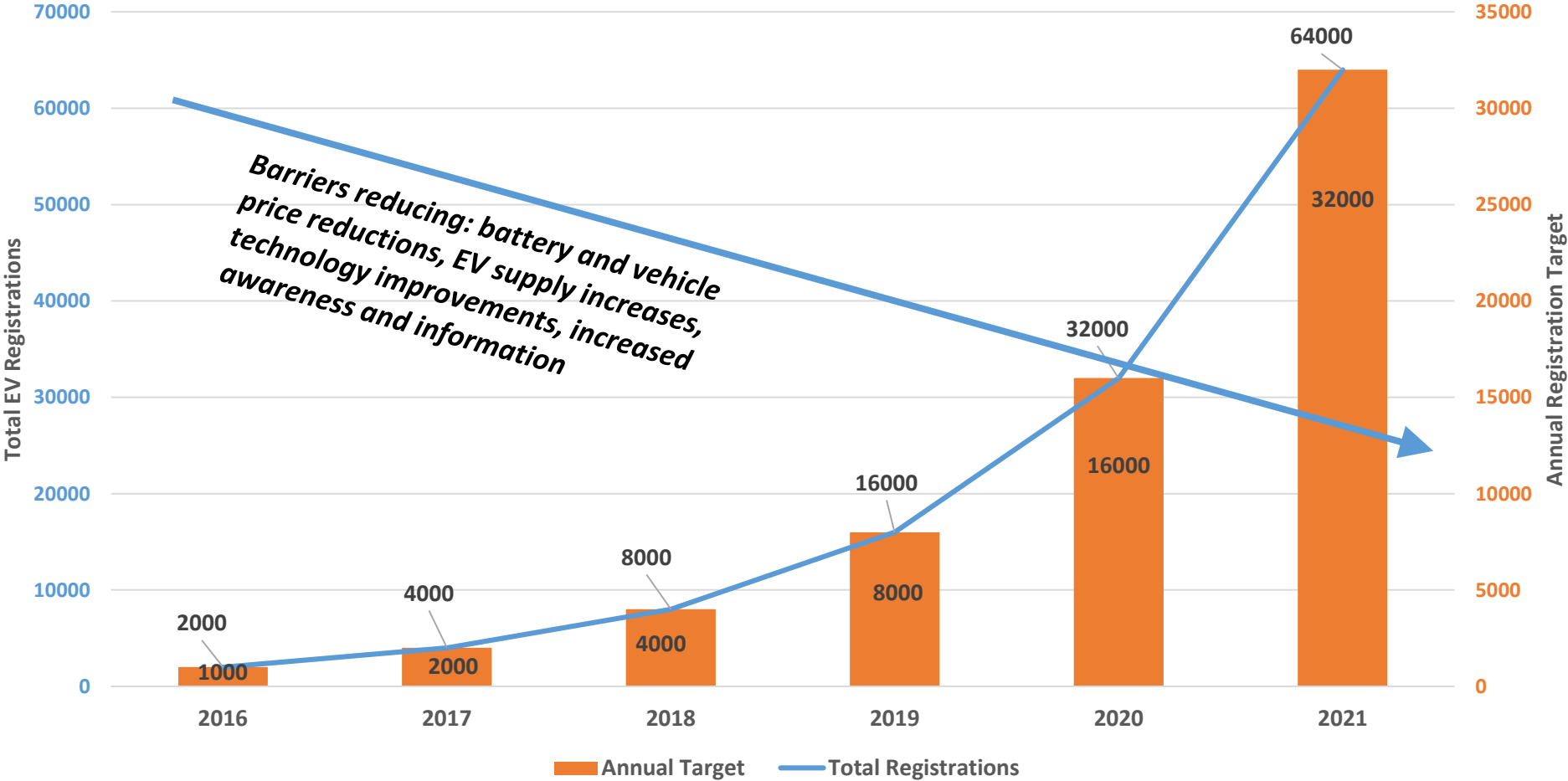
# New Zealand's EV advantage



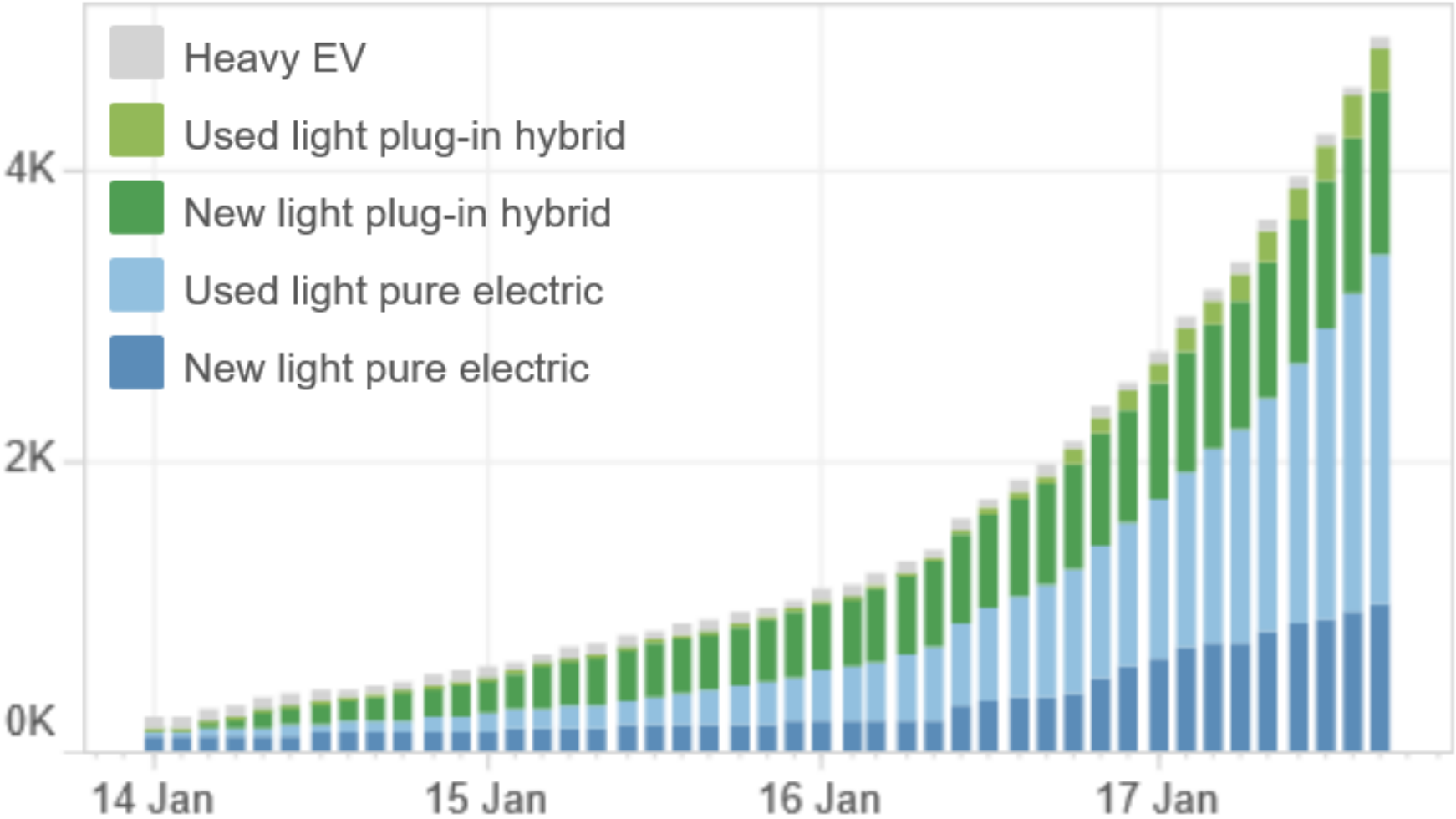
# The Government's EV Programme



# New Zealand's EV target



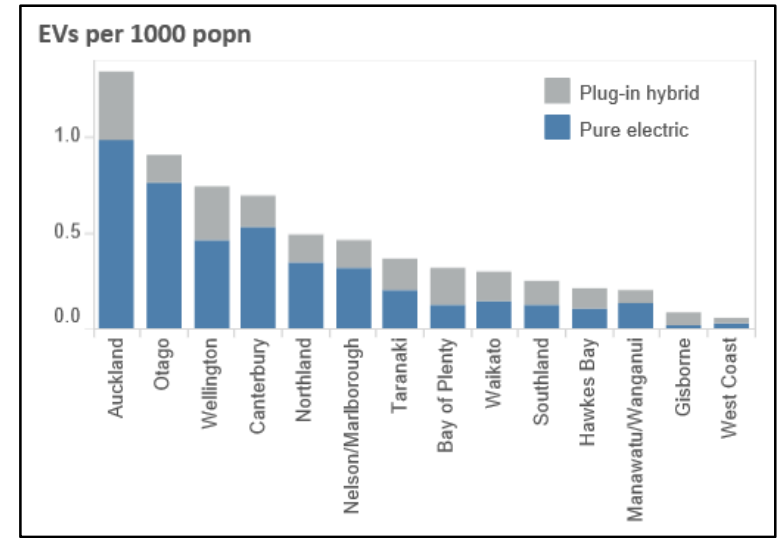
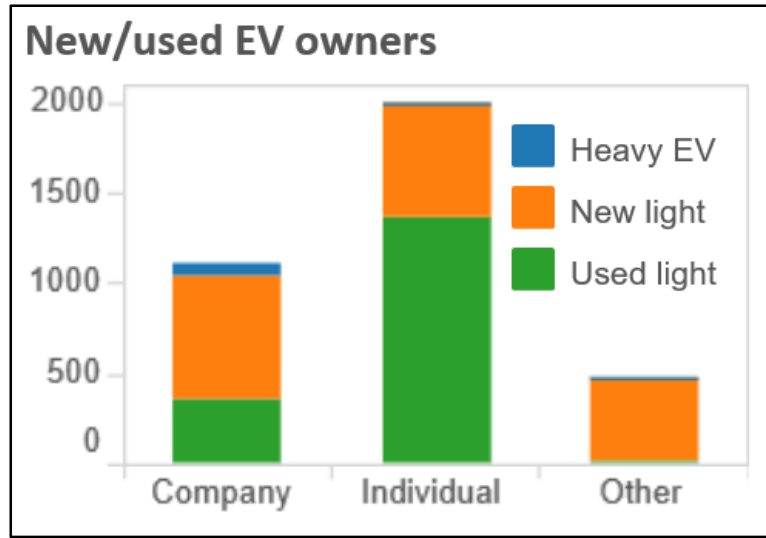
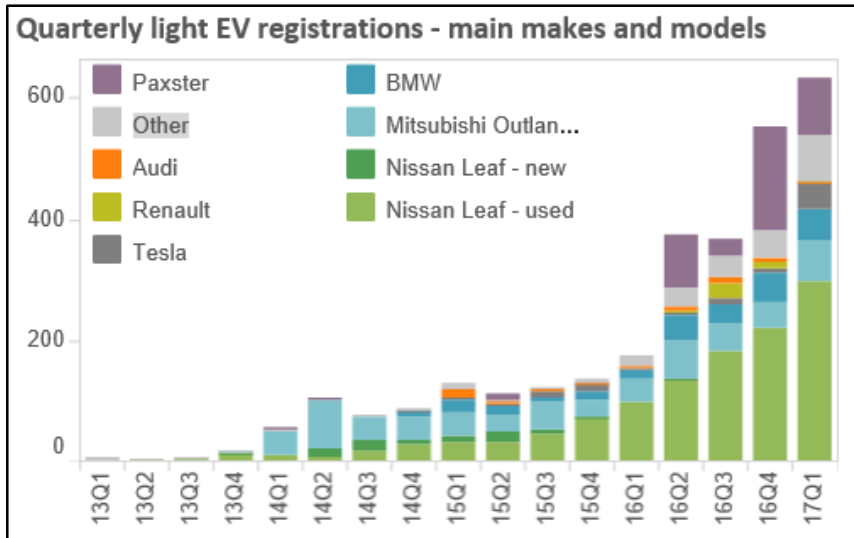
# 4,000 EV target for 2017 reached 5 months early



<http://www.transport.govt.nz/research/newzealandvehiclefleetstatistics/monthly-electric-and-hybrid-light-vehicle-registrations-dec-2016/>



# Who is buying what and where?



Aucklanders buying 2<sup>nd</sup> hand import Nissan Leafs as private vehicles  
 2013 onwards (Gen2) Nissan Leafs come ready for Vehicle to Grid

# EV information campaign [www.electricvehicles.govt.nz](http://www.electricvehicles.govt.nz)



ABOUT ELECTRIC VEHICLES WHAT NZ IS DOING WHAT CAN I DO NEXT?

I love my ev.

Curious about electric vehicles?

Check out these videos to find out how an EV could be the right choice for you.

EV charging, at home and out and about

Driving electric every day

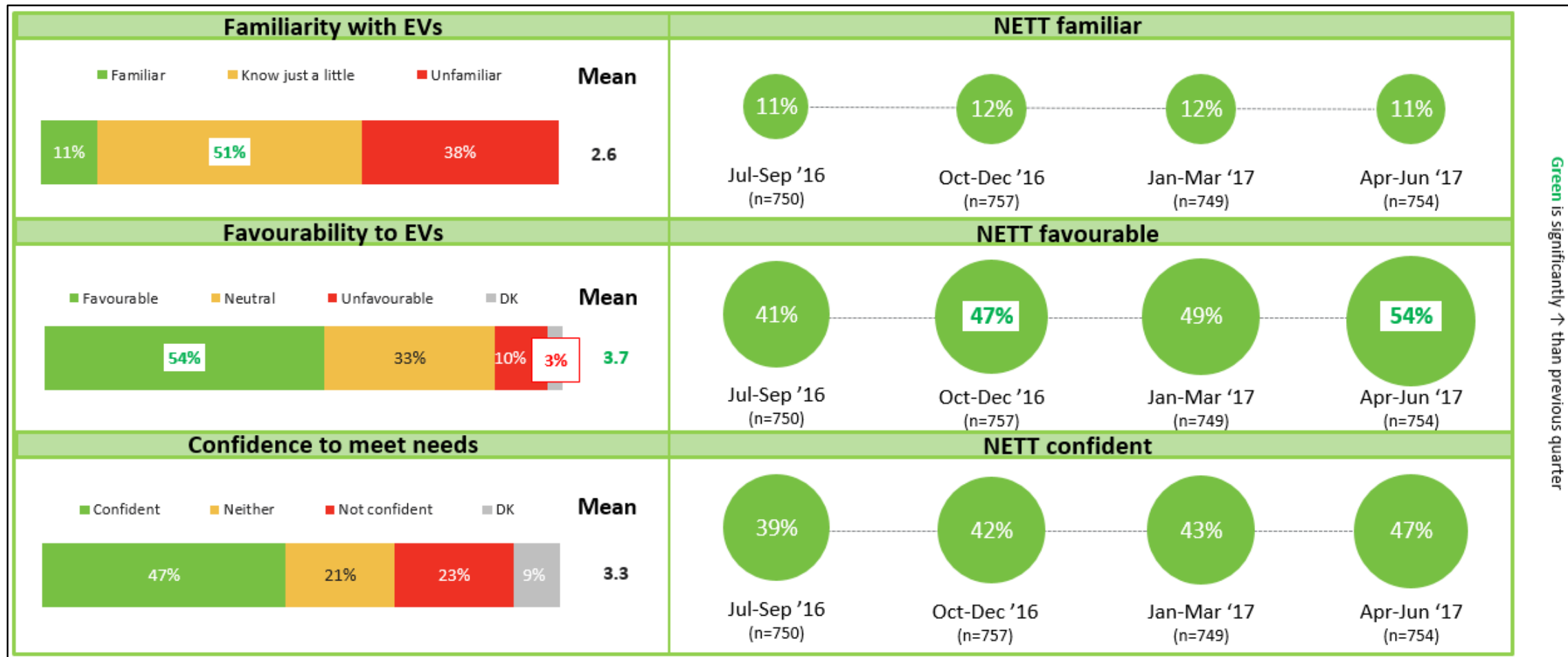
Electric Vehicles, Drive the Future

Find out why an EV might be right for you.

EV Electric Vehicles Drive the Future

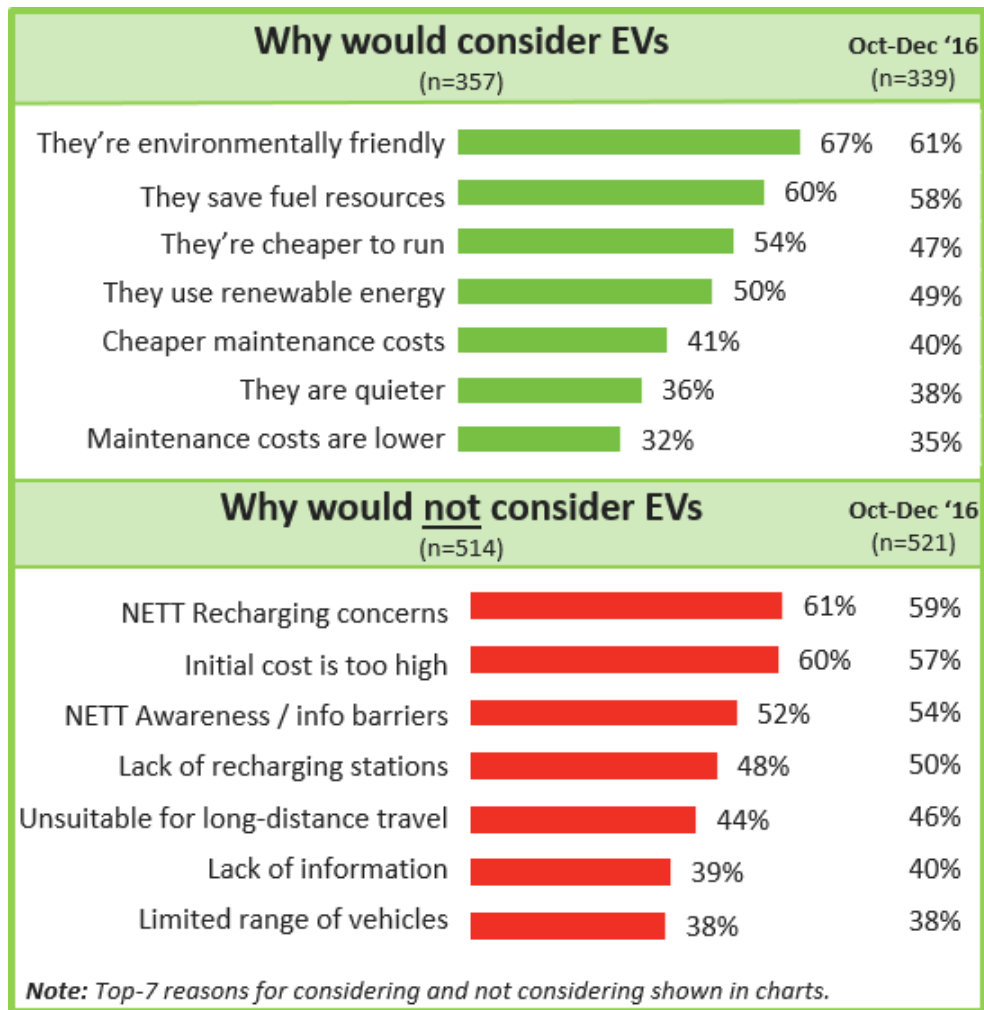
New Zealand Government

# Increasing favourability, & confidence in EVs



*EV3 How would you rate your familiarity with Electric Vehicles? / EV4 How favourable or unfavourable is your overall opinion or impression of Electric Vehicles? / EV5 To what extent are you confident that Electric Vehicles can meet your needs?*  
 Base: Total sample Jul-Sep '16 (n=750), Oct-Dec '16 (n=757), Jan-Mar '17 (n=749), Apr-Jun '17 (n=754)

# Kiwi's views about EVs



Only half of people know that EVs are cheaper to run

Charging related concerns are the most significant barrier to EVs

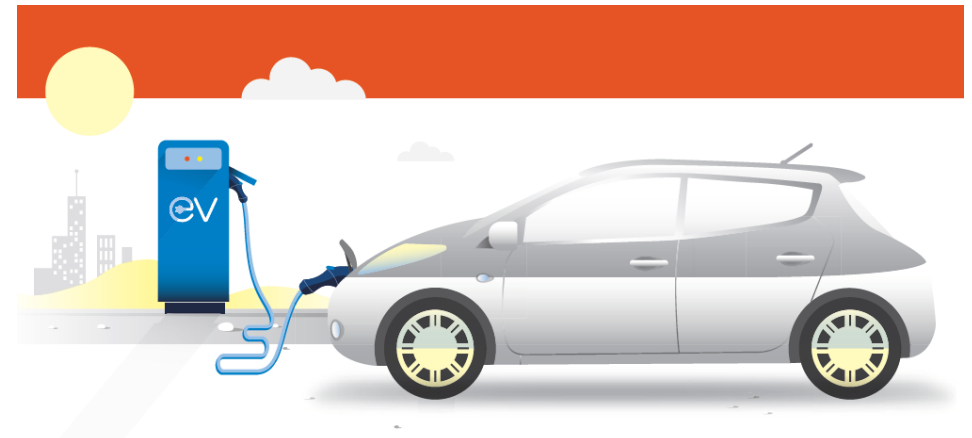


# Plug in at home or out and about



It's easiest and cheapest to charge at home overnight – 92% of EV owners in NZ prefer to charge at home\*

Sometimes you may want to top up when you are out, or on a longer trip. There's an ever increasing number of public charging stations around the country – to find one download an app



\* <http://flipthefleet.org/2017/media-release-electric-vehicle-owners-prefer-charging-home-filling-petrol-station/>

# EV fast charging infrastructure rapidly expanding





# Round 1 approved projects

## Demonstrations:

- 100% electric delivery vans: Foodstuffs
- 100% electric taxis: Green Cabs
- 100% electric buses: Auckland Transport; Transit Group
- PHEV car share: Mevo; Z Energy

## Infrastructure:

- EV truck conversion facilities: Waste Management
- Charging at park and ride: Auckland Transport
- Smart poles with EV charging: Auckland Transport
- Charging on tourist routes: Thames-Coromandel DC; Unison (Taupo-Napier)
- Other charging: The Warehouse (20 stores); Counties Power (Pukekohe); PowerNet (Southland)





# Round 2 approved projects

## Demonstrations:

100% electric medium trucks: Civic Ltd; PNCC

100% electric courier vans: NZ Post

100% electric shared fleet for businesses: Yoogo

100% electric rental cars: Europcar

100% electric shuttle buses: Snap Rentals

**450 kW** opportunity charged buses: Transit

EV battery refurbishment: Blue Cars

## Infrastructure:

On-street residential charging: Wellington City Council

Eastland Pacific Coast Highway: Eastland Group

Eastern Bay of Plenty: Horizon Networks

Northland Crimson Coast Highway: Northland RC

ChargeNet: Dunedin to Queenstown; Invercargill to

Queenstown; Christchurch to Picton via Lewis Pass



# Road User Charges

**Light vehicles:** Light EVs (eg cars and vans) are exempt from RUC until 2021

**Heavy vehicles:** From 1 September 2017 heavy EVs will be exempt from road user charges until they make up 2% of the heavy vehicle fleet.

Examples of what this is worth:

Vehicle	Definition	RUC rate (GST incl)	Example annual distance	Example RUC exemption saving
Urban delivery truck	Under 6 tonnes, dual rear wheels	\$66 / 1,000 km	30,000 km	\$1,980 / year
Regional freight truck	12 – 18 tonnes, 3 axle	\$292 / 1,000 km	75,000 km	\$21,900 / year

# Auckland EV trial – phase 2

- EVs are able to use 11 transit lanes on state highways in Auckland for a 12 month trial
- Lanes were selected taking into account safety and impacts on traffic flow and public transport
- Lanes will be prepared with the required signs and road markings over the upcoming weeks
- EV drivers must check the signage at the start of each lane to ensure they are eligible to use it

For more information contact [evprogramme@nzta.govt.nz](mailto:evprogramme@nzta.govt.nz) or visit [www.nzta.govt.nz/ev-special-vehicle-lanes](http://www.nzta.govt.nz/ev-special-vehicle-lanes)



# Opportunities for EVs: intra-regional freight

78% of freight movements (million tonnes all modes) are within regions\*



Nine Australian manufactured SEA EV10 trucks delivered to Kings Transport, Melbourne in July 2017  
UPS expanding their fleet of EV trucks operating in London from 50 to 72 this year

\* <http://www.transport.govt.nz/assets/Uploads/Research/Documents/National-Freight-Demand-Study-Mar-2014.pdf> Table 3

# Potential charging infrastructure demand

Fleet assumption: 20 delivery trucks @ 150kWh



- Overnight re-charge at 22kW AC:
  - = 0.44 MW load added to network
  - ~ 130 Nissan Leafs charging at the same time
  - ~ average demand of about 400 households
- Potential day top-up at 50kW DC (lunch time):
  - = 1MW load added to network
  - ~ 300 Nissan Leafs charging at the same time
  - ~ average demand of about 1,000 households

# What's coming next...



Daimler Mercedes-Benz pilot production of 18 and 25 GVM trucks underway, with full-scale production expected 2020

# What's coming next...



Tesla plans commercial production of 100% electric trucks in 18-24 months

# What's coming next...



This year two large ferries, Tycho Brahe and Aurora, will operate completely on battery power between Helsingør (Denmark) and Helsingborg (Sweden), a distance of approximately 4 km carrying more than 7.4 million passengers and 1.9 million vehicles annually



# 100% electric and autonomous cargo ship



Construction starts this year in Norway with manned operation scheduled from 2018 and autonomous operation in 2020

# Short range electric passenger aircraft



Zunum Aero, whose investors include Boeing and Jet Blue, is aiming to have 10-12 seat plug-in hybrid electric commercial passenger aircraft in service by 2022

# What you can do now

1. Test drive an EV if you haven't driven one yet
2. Try out an EV through car share companies like CityHop in Auckland, Mevo in Wellington and Yoogo in Christchurch, or from rental car companies like Hertz Auckland, Europcar, Blue Cars and Snap Rentals
3. Find out more about EVs for your household or company by visiting [www.electricvehicles.govt.nz](http://www.electricvehicles.govt.nz)
4. Consider developing an innovative EV project for application to the Low Emission Vehicles Contestable Fund  
<https://www.eeca.govt.nz/funding-and-support/low-emission-vehicles-contestable-fund/>



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