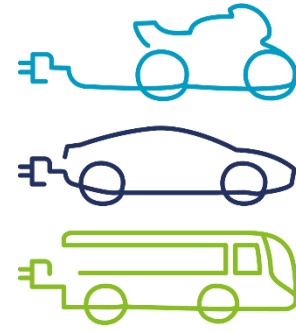


The state of play – Electric Vehicles in Australia



@EVCouncil





# ELECTRIC VEHICLE COUNCIL



- Government advocacy
- Reporting and analysis
- Advice and guidance

- Market facilitation
- Education and awareness
- Media engagement

- Focused on **EV Suitability analysis : EV Infrastructure analysis : EV communications**. Operating in UK and Australia
- Completely independent – good relationships, but no alliances with infrastructure providers, fleets or manufacturers
- Won ACT Government tender to help migrate their infrastructure and fleet – 350 vehicles and charging stations over three years
- Team has worked on pan-European projects for Tesla and Shell along with major energy companies and the 3<sup>rd</sup> largest dealership group in the UK
- ARENA grant around how to accelerate electric vehicle adoption in Australia – first phase complete, second phase major push for fleet adoption with NRMA, Ausgrid, NSW Government, South Australian government and others.



# This room is perhaps the most important in the country right now for Electric Vehicles....

- Because EV's are a societal benefit – needs to be government led
- Fleets will send the strongest and clearest message to manufacturers
- Fleets will seed secondary market with affordable EV's
- Inspire/lead the rest of the corporate market
- Fleets look at total cost of ownership and are set up to manage utilisation – they can make them work sooner in many cases!

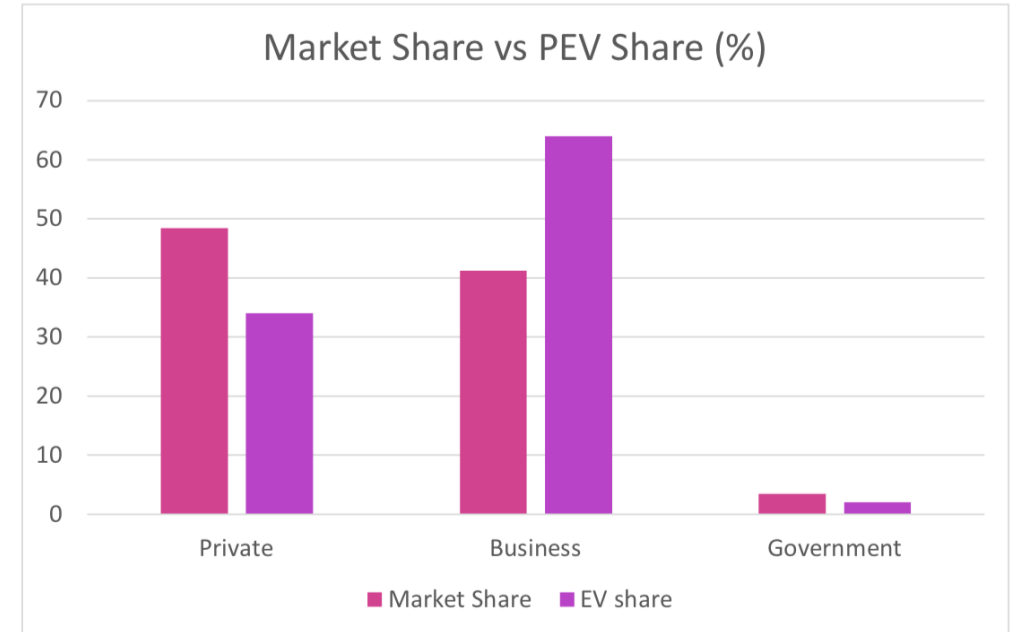
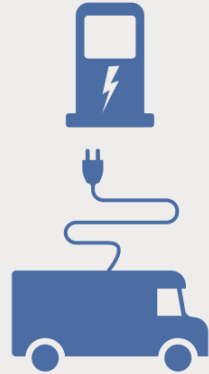
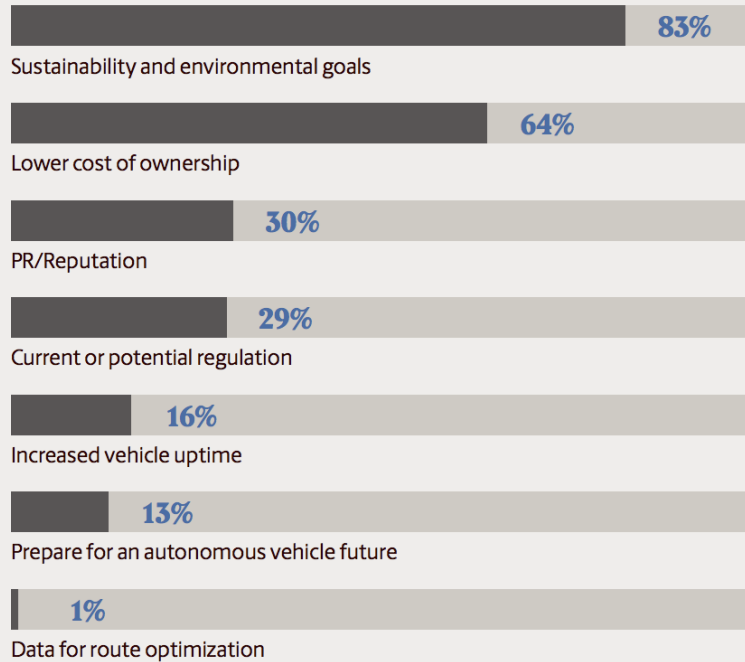


Figure 2 Market share VS PEV share in Australia

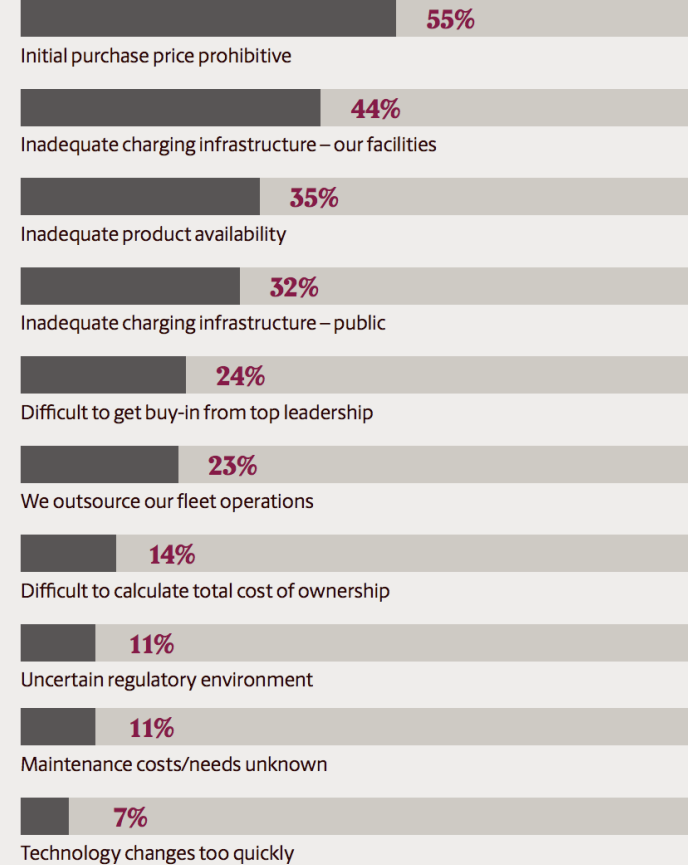
... the enthusiasm of fleet managers will make or break projects

# This room is perhaps the most important in the country right now for Electric Vehicles....

## MOTIVATORS FOR FLEET ELECTRIFICATION



## BARRIERS TO FLEET ELECTRIFICATION

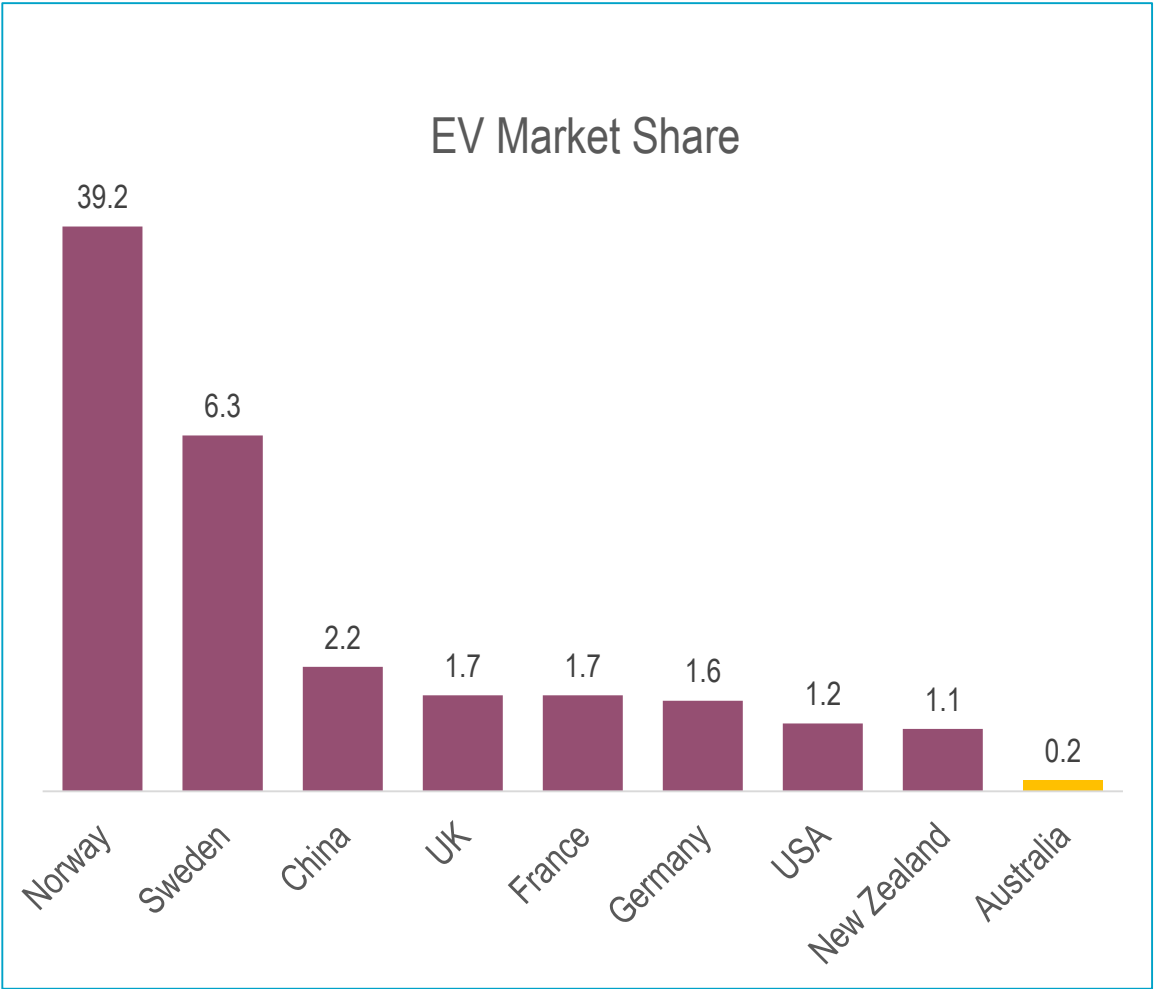
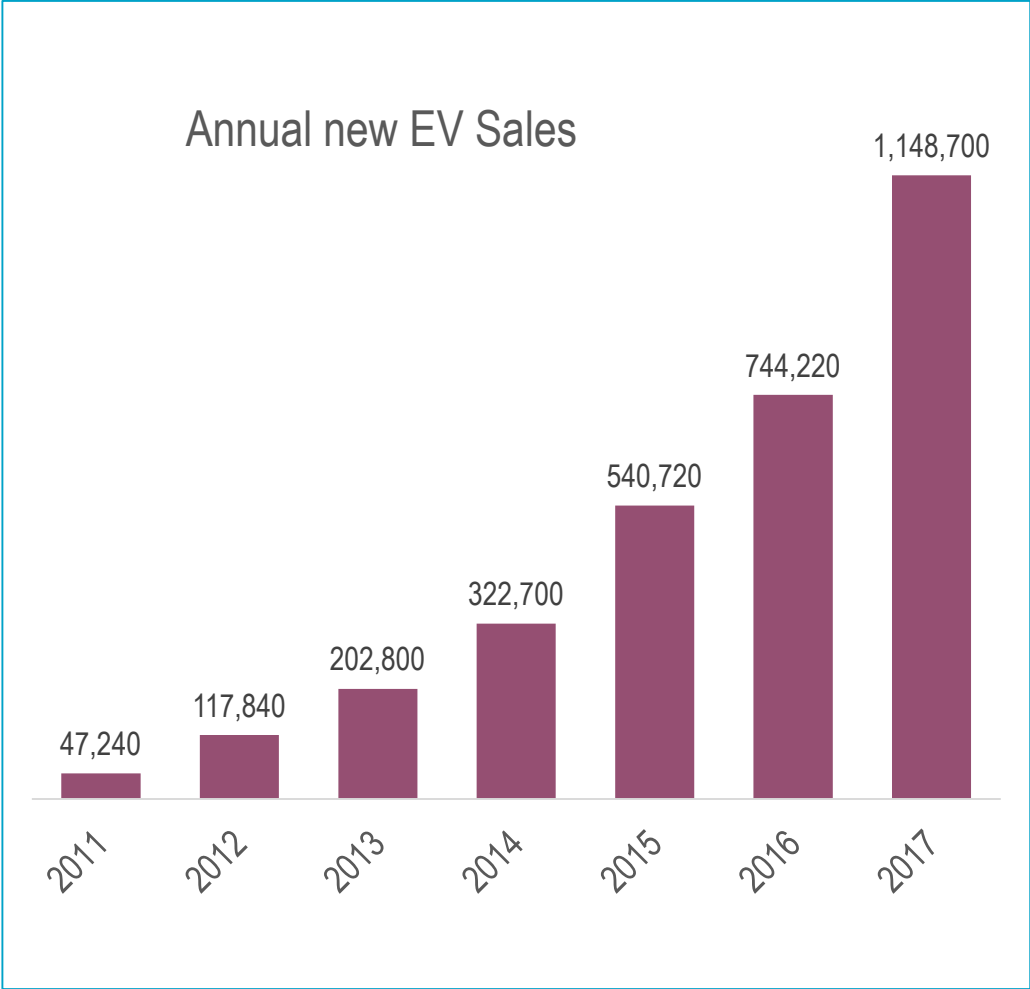


## There are still many questions for fleet managers....

- Are they really coming?
- Are they really socially beneficial?
- But Electric Vehicles just cost more!
- What about residual value?
- What about range (distance)?
- How do we deal with complicated new infrastructure required?



# Are electric vehicles coming?



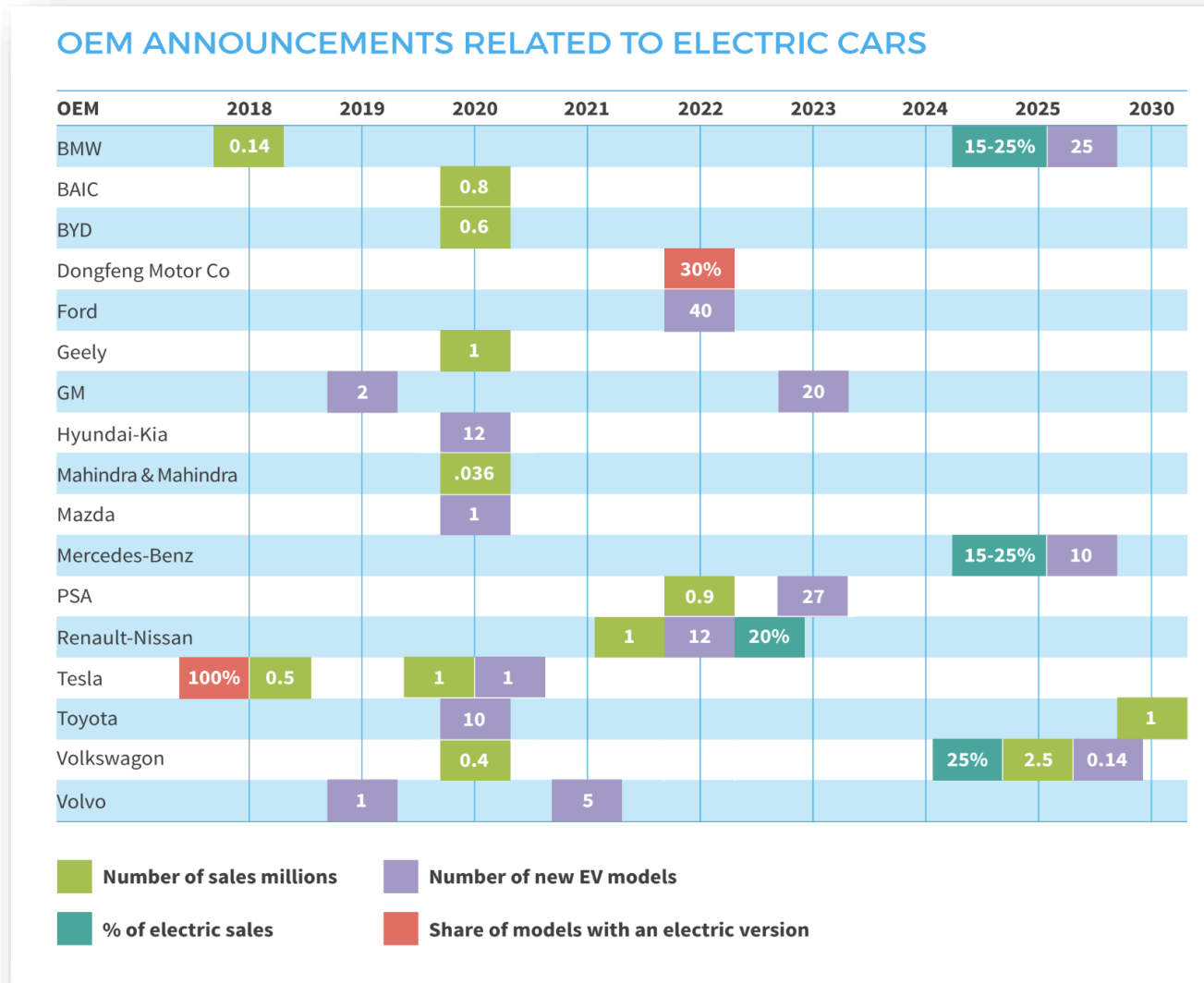
# Are they coming?

Country	Target	Year
China	100%	TBC
UK	100%	2040
France	100%	2040
Norway	100%	2025
Netherlands	100%	2025
Japan	20-30%	2030
India	30%	2030
New Zealand	64,000	2021
USA	3.3m	2025
Germany	6m	2030





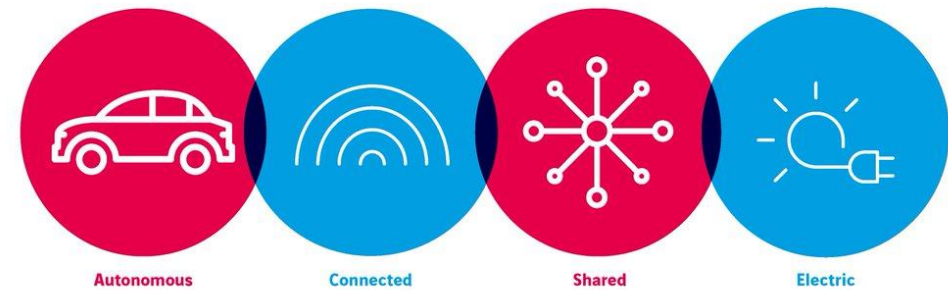
# Manufacturer commitments



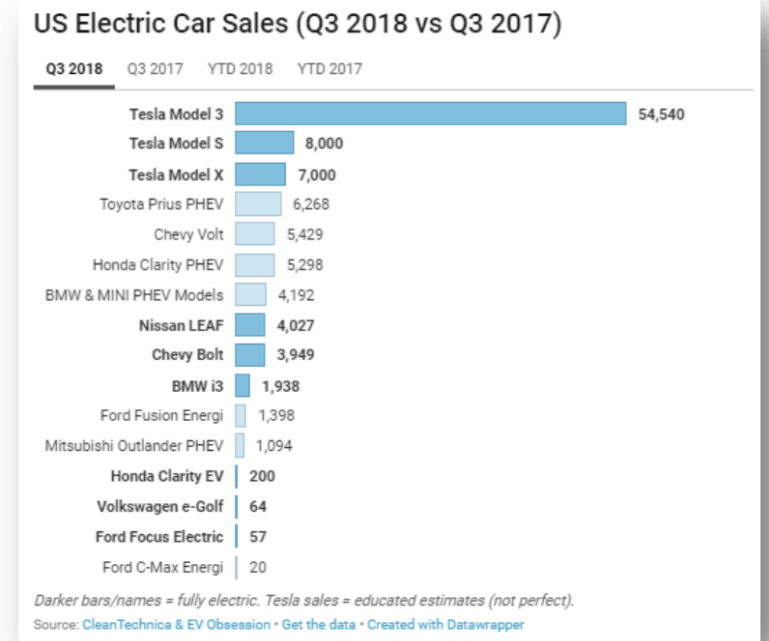
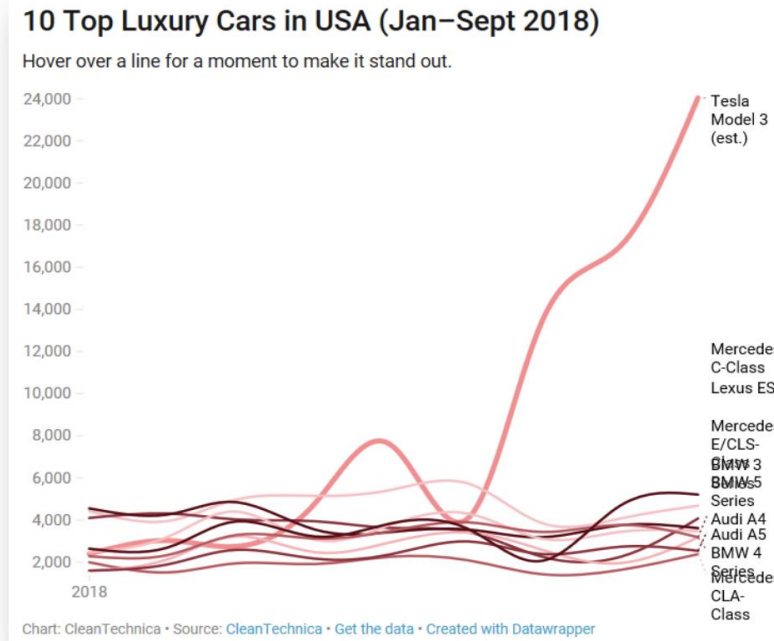
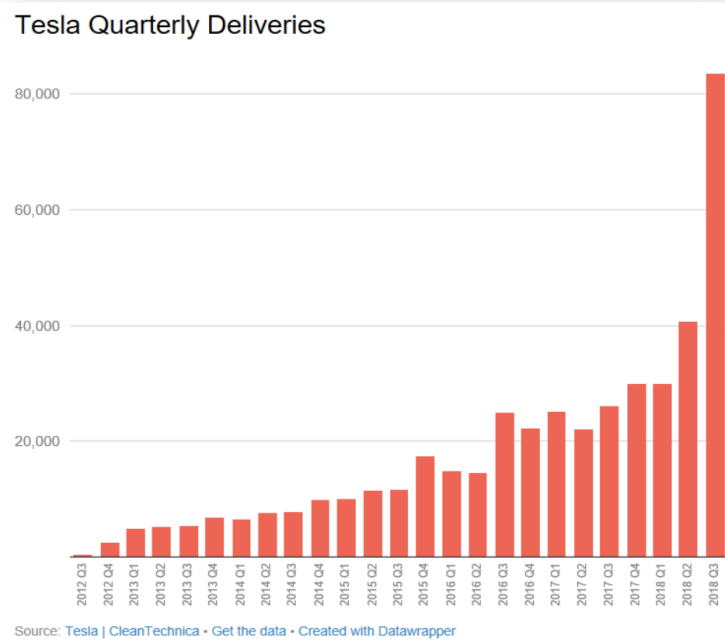
# Electric vehicles – part of an integrated future

- Part of the "ACES"
- All manufacturers on the journey
- Driven by low emission standards
- Driven by technological innovation
- Driven by long term economic impact and societal benefit
- Will eventually reach price parity
- Simpler to manufacture -> greater competition in the long term
- Part of an integrated mobility strategy.

## FOUR CONVERGING TRENDS

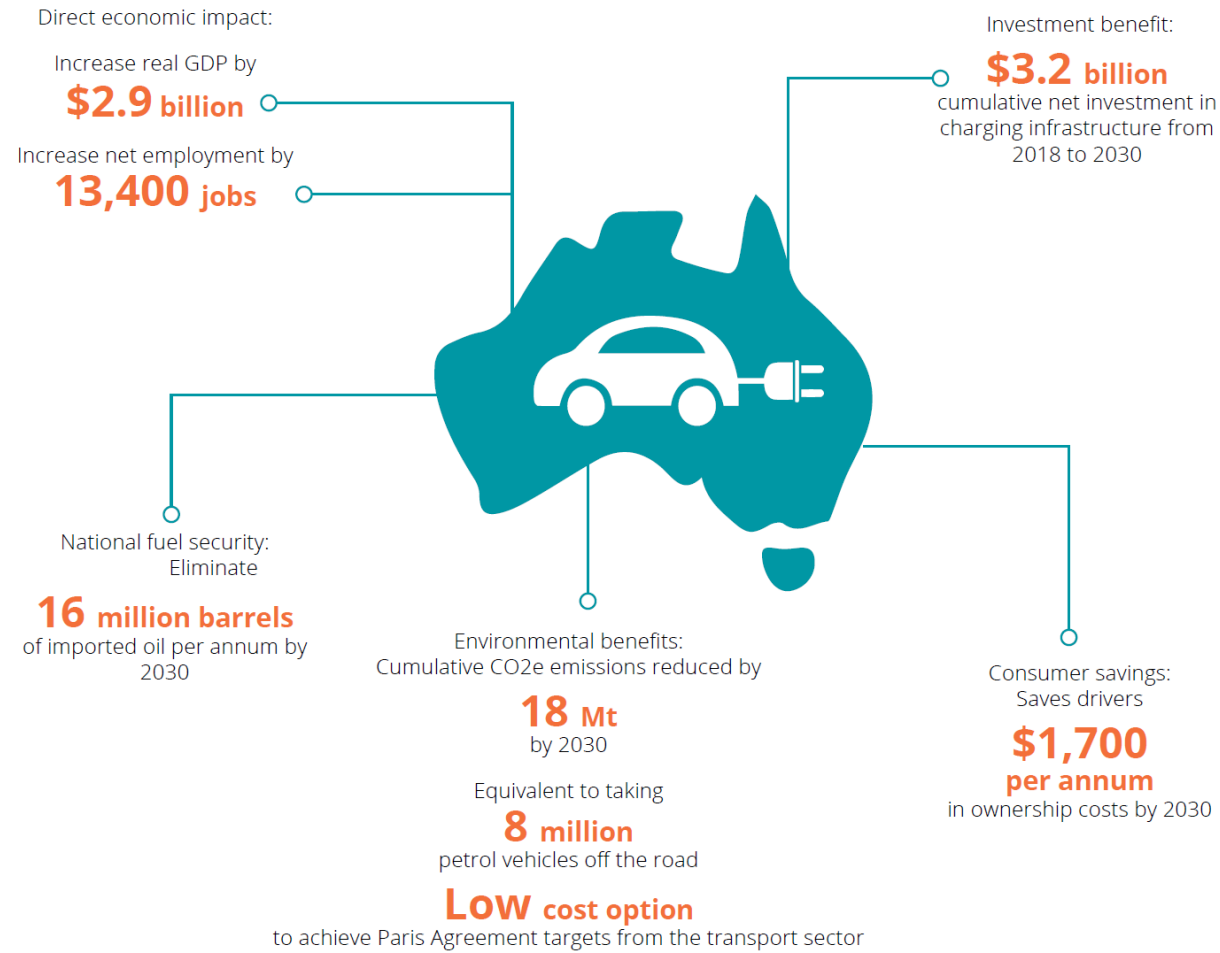


# Electric vehicles – the Tesla effect



The Model 3 is being made and shipped at 30% margins!

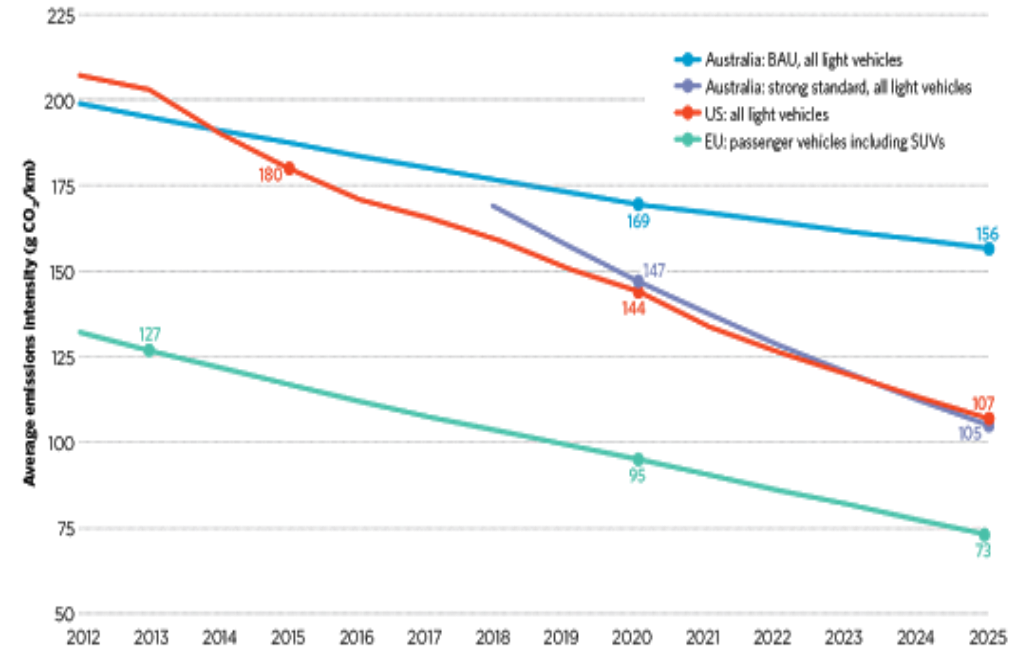
# Do they deliver societal benefit?



# Do they deliver societal benefit?

- Australia has the worst transport energy efficiency in the developed world
- Third largest and fastest growing source of emissions

## Global road transport emissions comparison



Road transport emissions in Australia (MT CO2)

The 2018 International Energy Efficiency Scorecard:

<https://aceee.org/sites/default/files/publications/researchreports/i1801.pdf>

# Do they deliver societal benefit?



Part of a societal shift in infrastructure

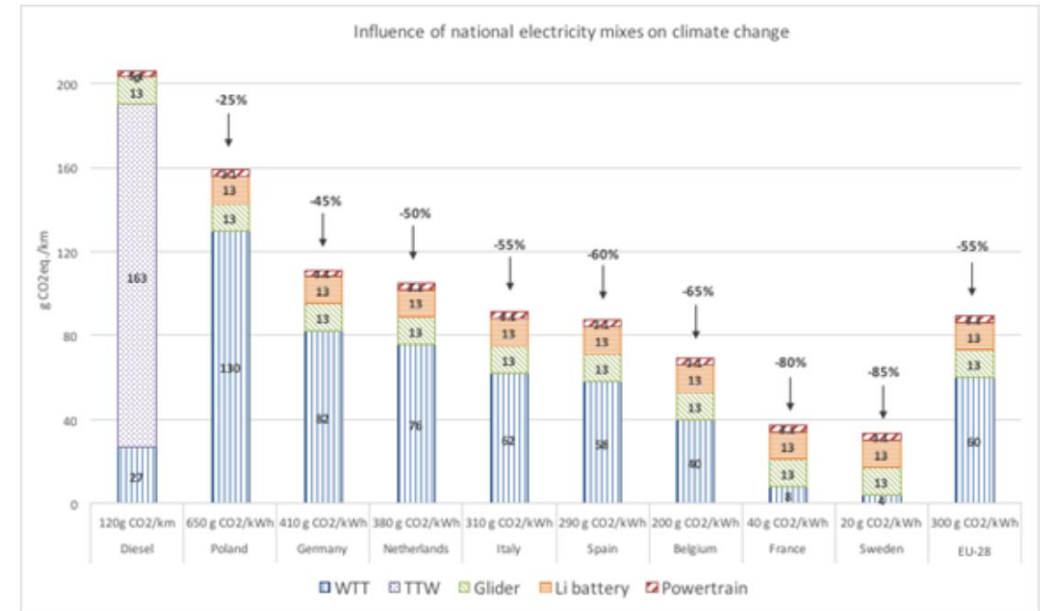
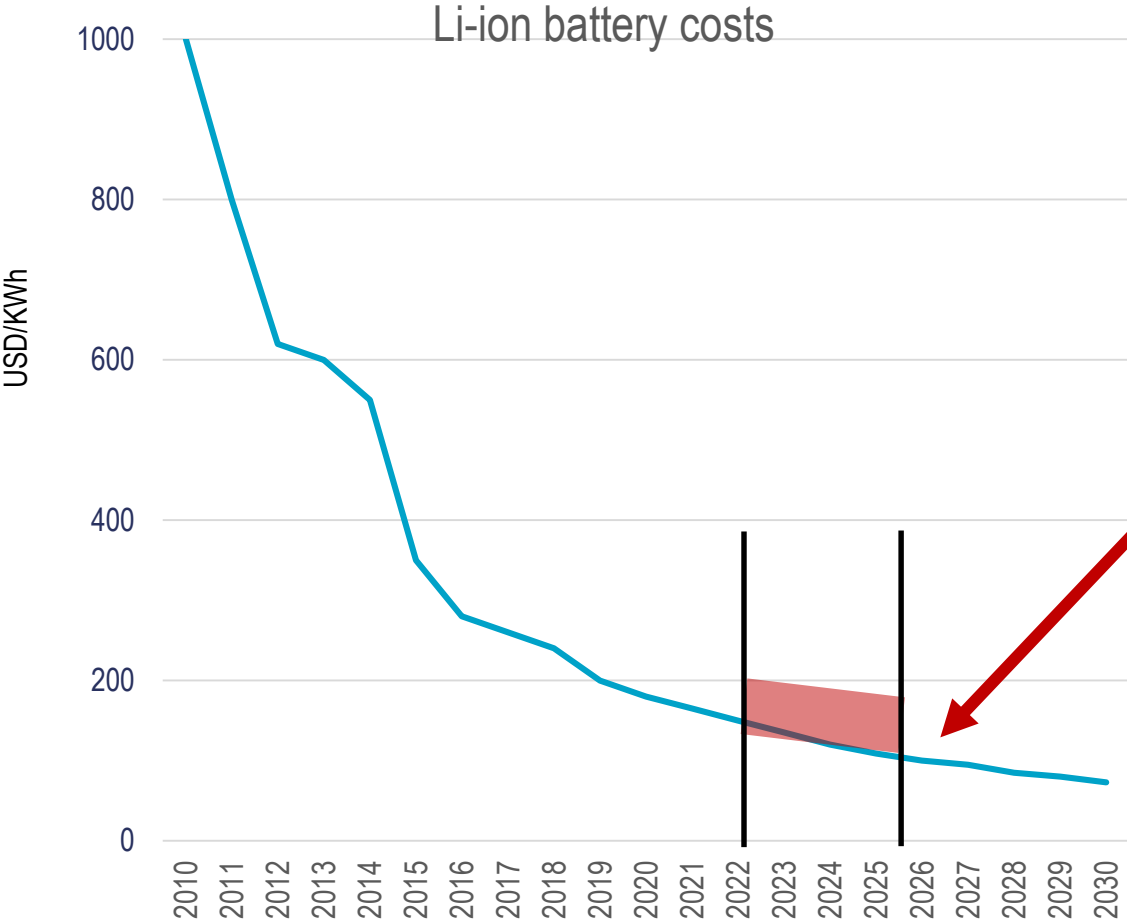


Figure 3: Influence of the carbon footprint of national electricity grid on the comparison of life-cycle GHG emissions of BEVs

# Are they just too expensive?



EVs cheaper upfront  
by **2024**  
(\$105-120/kWh)

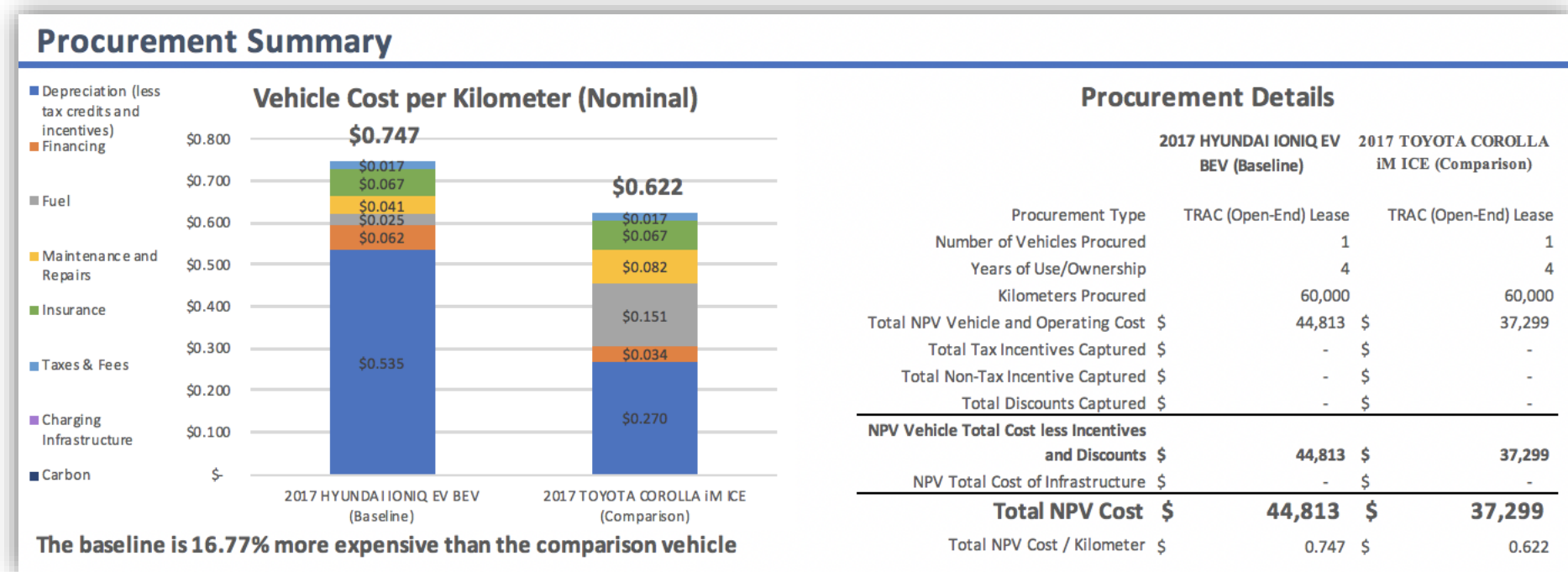
Battery currently accounts for 50% of total EV cost

Projected to fall to 10%

\*BNEF, US DoE, IEA

## But what about the cost?

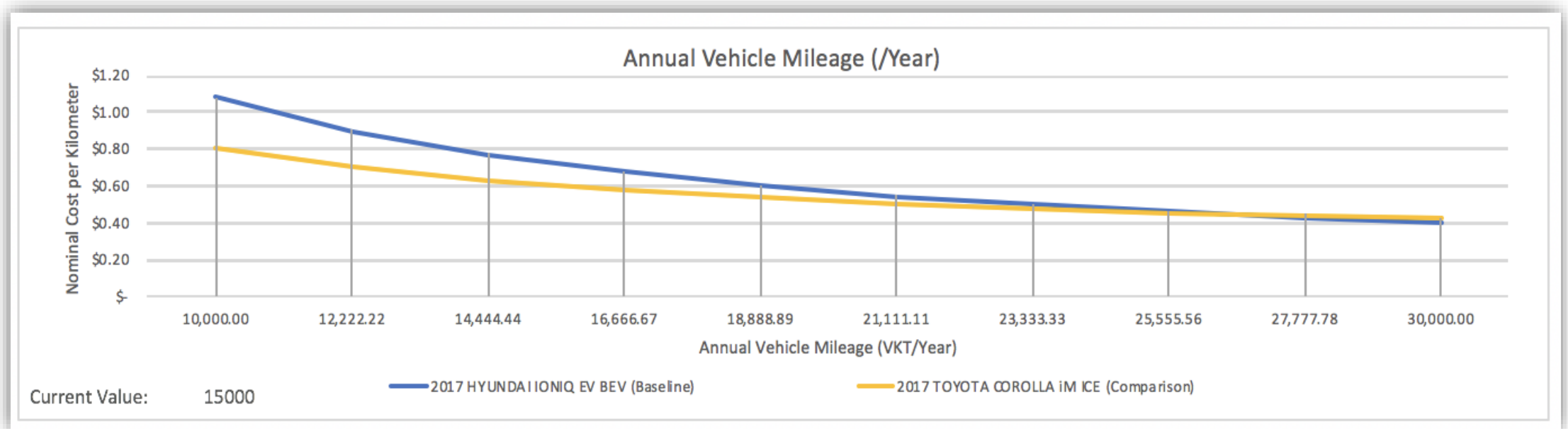
Comparing a fleet with average passenger vehicle cost of \$25,000, EV of \$45,000 over 4 years (open end lease), and 15,000 km per annum (57 km per working day)





## But what about the cost?

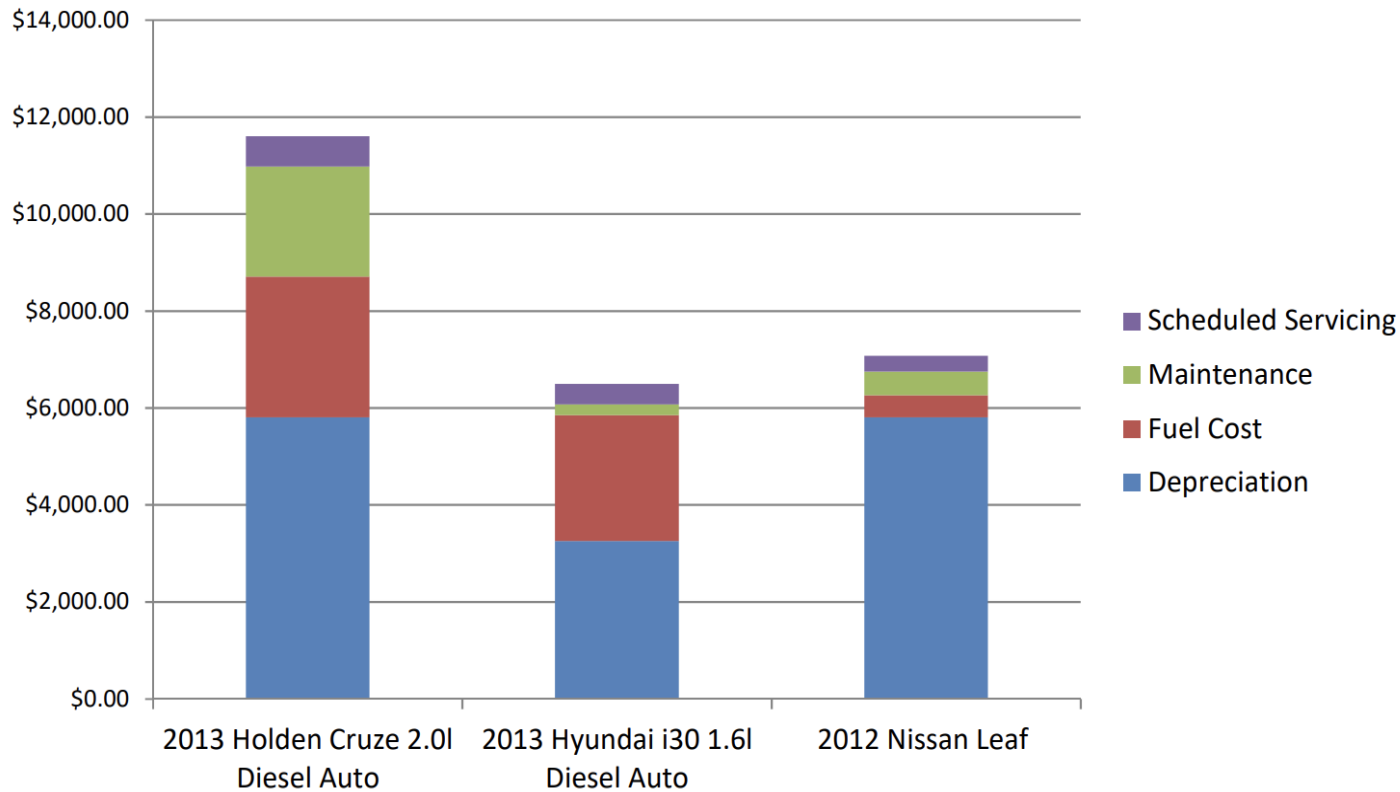
What happens if you change utilisation rates? What about fuel costs? What about lease terms?



## But what about the cost?

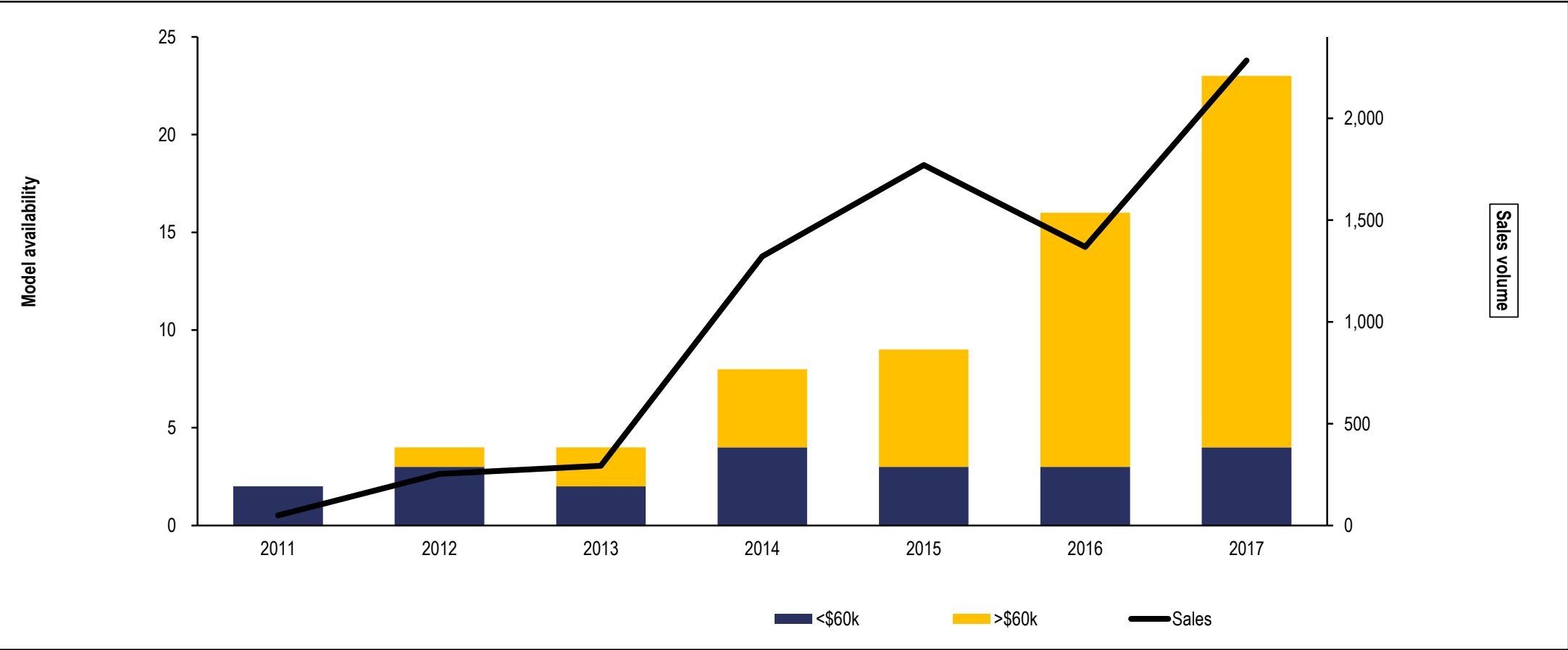
Example from City of Melbourne presentation

### ACTUAL AVERAGE 12 MONTH WHOLE OF LIFE COST (Base on 15,000km per year) FOR THREE VEHICLES OF SIMILAR SIZE, AGE AND USAGE

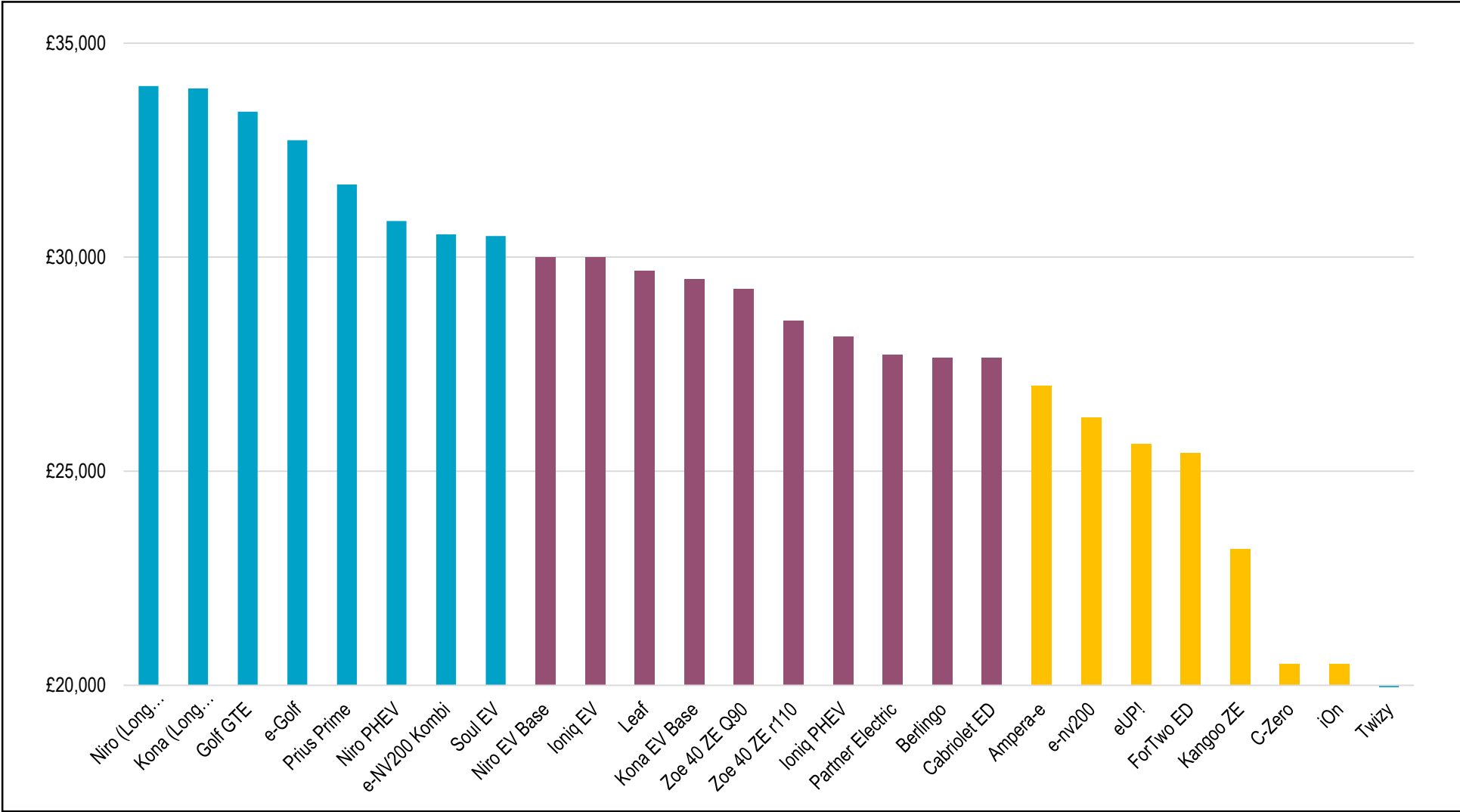


Since 2012, one Nissan Leaf has required warranty work to be completed due to a faulty battery cell

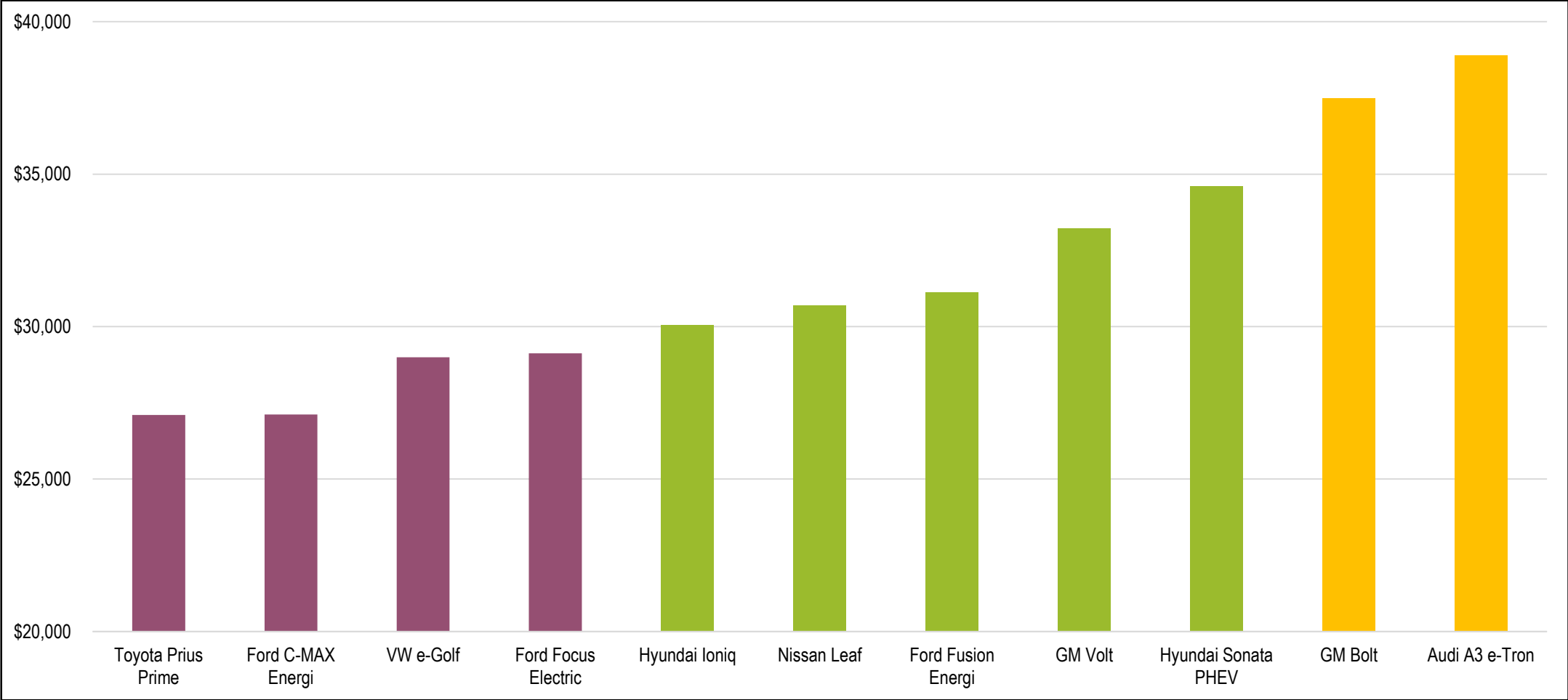
# But what about the cost?



# But what about the cost?

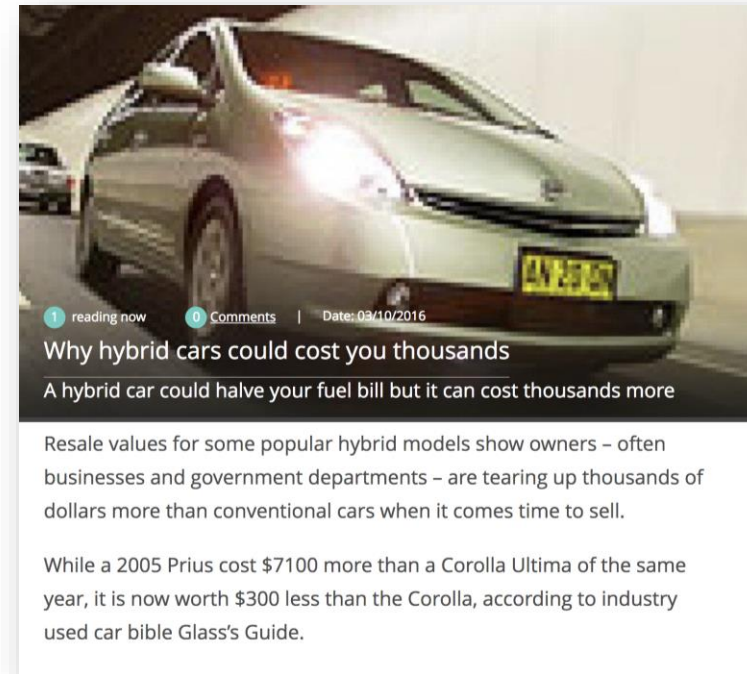


# But what about the cost?



## What about residual values?

- Floor on residual values due to:
  - Supply and demand
  - Inherent ROI on second hand EV
- Current experience in UK is that quality EVs (certain Leafs for example) have strong resale values



2011

2018



### Resale Value

- at 36 months: **46.1%**
- at 60 months: **30.1%**

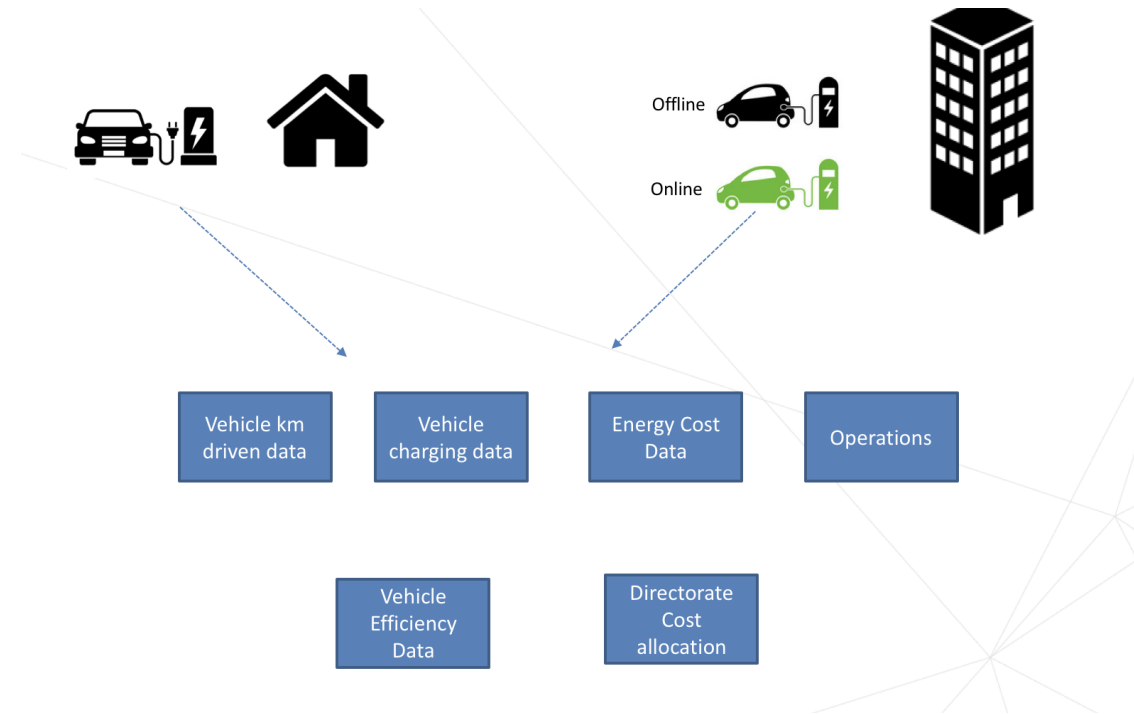
The elder statesman of hybrids, the **Toyota Prius** is synonymous with efficiency. The latest version carries that torch further while retaining exceptional resale value.

## What about range anxiety?

- Average Victorian commute 14.6 km
- Average journey 8 km (inner Melbourne and 11.9 outer Melbourne)
- Cognitive anchors in longest journeys – but how often do you take them?

## How will it integrate with our infrastructure and systems?

- Strategic roll-out of infrastructure over time – mix of home, on street, DV fast charging and workplace
- Systems generally measure:
  - Fuel efficiency (km/fuel)
  - Cost allocation (car->department)
- In-vehicle or in charger solutions
- Simplify by cost averaging
- Do not have to meter every point– tenant switch boards, meter points or vehicles







EV Readiness – National charging network

Scale, public charger/EV ratio:

25-30% with home charging

2-7% with no off-street parking available

QLD Super Highway

NRMA – 40 chargers

Charge Fox – Network of 350 kW chargers



### Australia's first 350kW EV charging stations confirmed

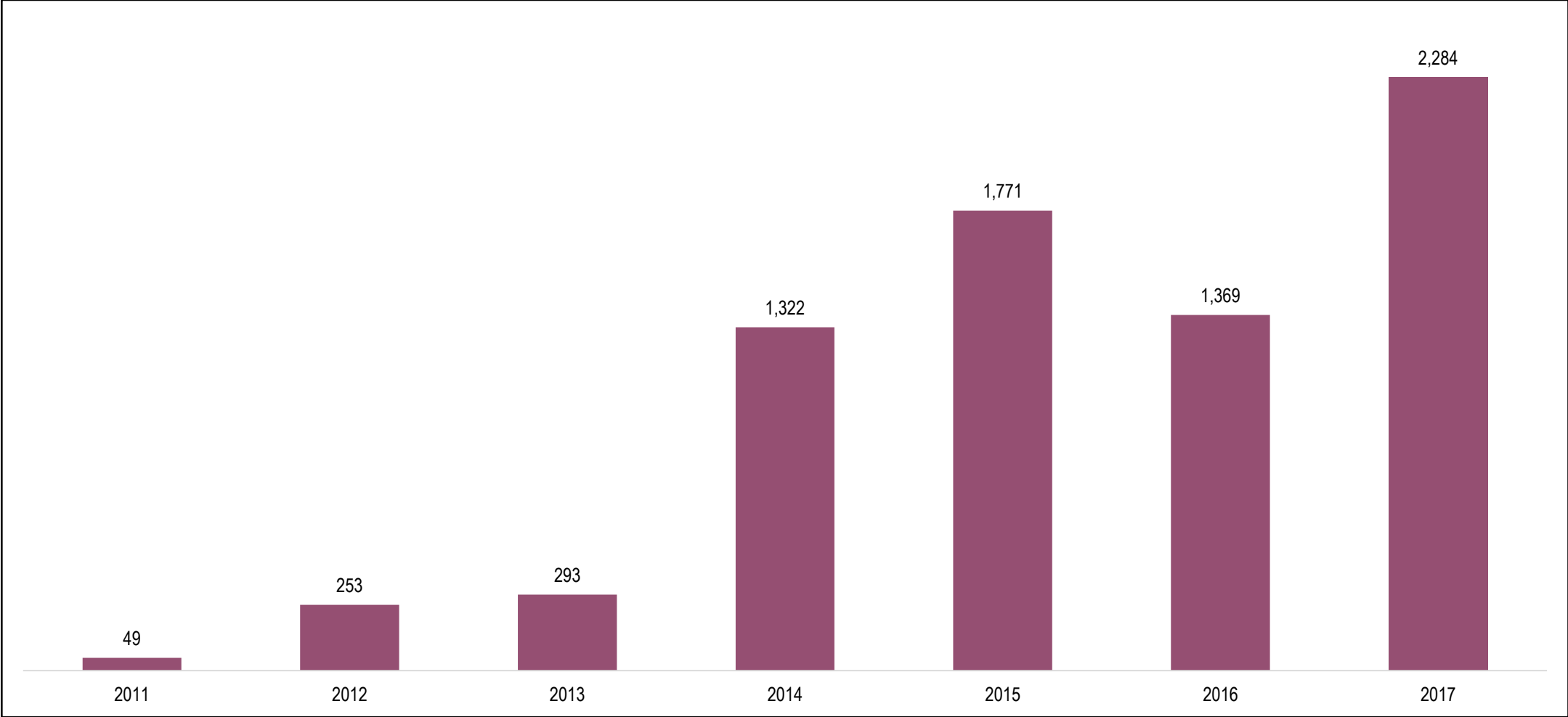
October 22, 2018



Chargefox start-up to draw on solar power for national



# Current Australian EV sales



## Current Australia Context

- Uptake most impacted by:

Policy settings – Most state governments supportive

Availability – Supply major issue, but strong commitments

Pricing – Price parity (sticker price) by 2024. TCO parity - much sooner.

(Infrastructure will come with demand)



## SHORT-TERM POLICY SUPPORT TO REACH CRITICAL MASS

### INCENTIVISE FLEET DEPLOYMENT

2017 annual sales shortfall

18,000

Fleet sales share of total market

45%

### POLICY INCENTIVES

Short-term exemptions to reduce total cost of ownership:

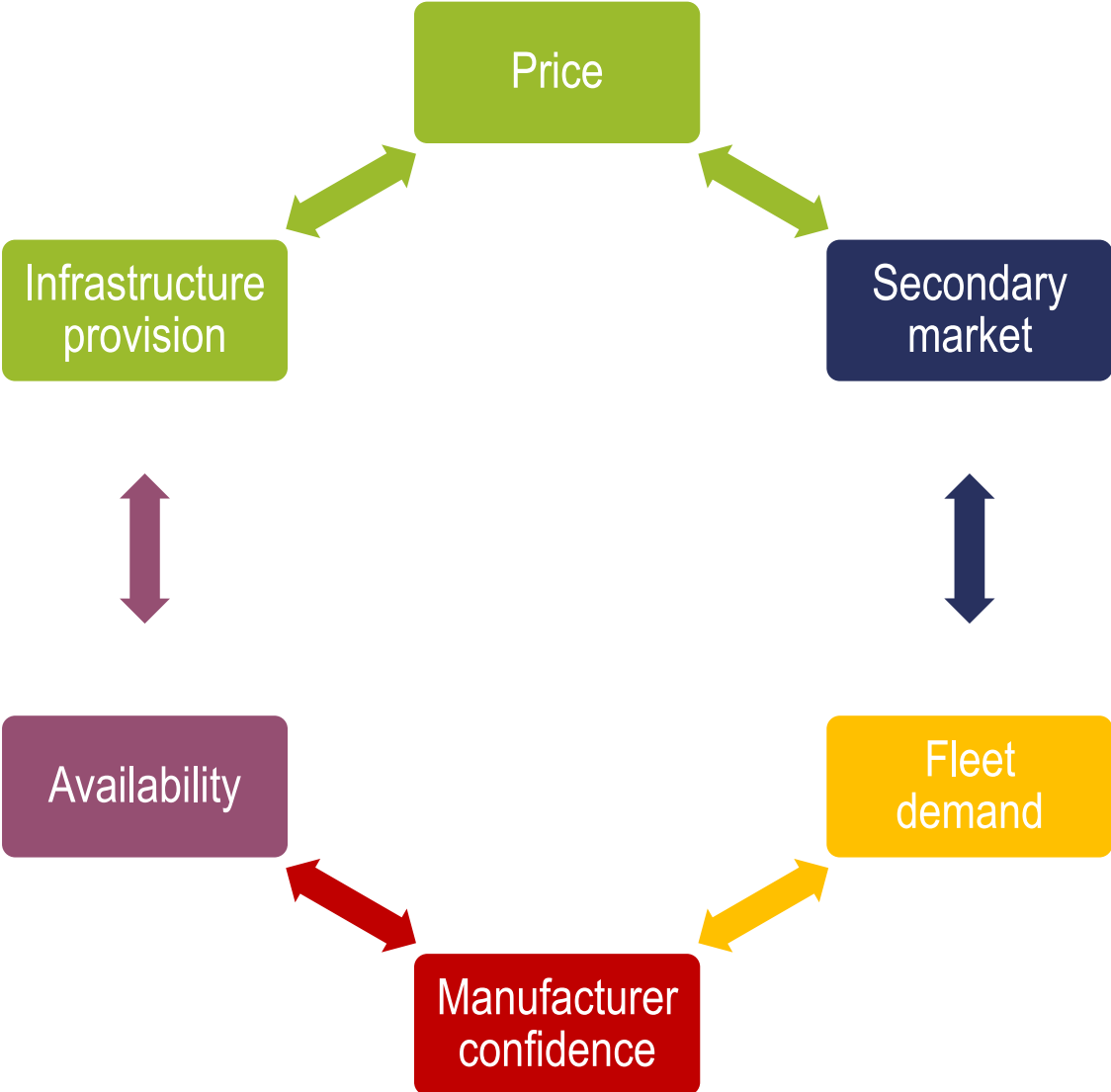
- Tax exemptions
- Fleet purchase
- Bonus-malus

### REGULATION

Vehicle Emissions Standards

Standards/Accreditation

So how do fleets help this strategic picture?



## How can fleets get there?

- 1 Integrated long term strategy** – strategic planning as part of a future mobility mix
- 2 Build internal cross – functional teams**
- 3 Provide long term visibility to OEM's**
- 4 Create coalitions - partnerships & knowledge sharing**

# Collaborate

*One recommendation is to create an internal cross-functional task force across procurement, fleet operations, maintenance, engineering, facilities and ideally include senior leadership, sustainability and finance.*

*“Collaborate and join coalitions – Do not approach this alone. Collaborate with manufacturers, suppliers, utilities and government agencies. Consider joining a coalition that can help make a public commitment and share resources.”*



## COLLABORATION PARTNERS



Suppliers



State or local government



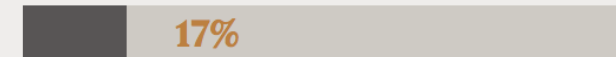
Utilities



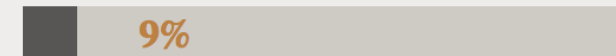
Customers



Non-profit environmental organizations



Academic organizations



Community groups

# Join the fleet decarbonisation challenge!

Major ARENA grant to help accelerate adoption of low carbon Vehicles in fleets :

This program aims to bring together fleet managers, sustainability managers and senior executives to build the capacity around low emission vehicle strategies. By signing up your organisation, or as an individual you will receive :

1. Invitation to free educational workshops which will include local and international speakers
2. Invitation to drive days where you can meet manufacturers and drive vehicles
3. Access to core data around key items such as residual value, vehicle availability, average duty cycles
4. Access to a free cost of ownership tool which includes all vehicles and EV charging infrastructure analysis
5. Access to online community message boards
6. Access to free telemetry tools that can be used to create clear data for your business cases
7. Access to knowledge bases
8. Understand and set realistic targets and work with your peers to achieve them



## Core sponsors:





THANK YOU – WE ARE HERE TO HELP!

[www.evenergi.com](http://www.evenergi.com)

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[www.electricvehiclecouncil.com.au](http://www.electricvehiclecouncil.com.au)

Behyad Jafari

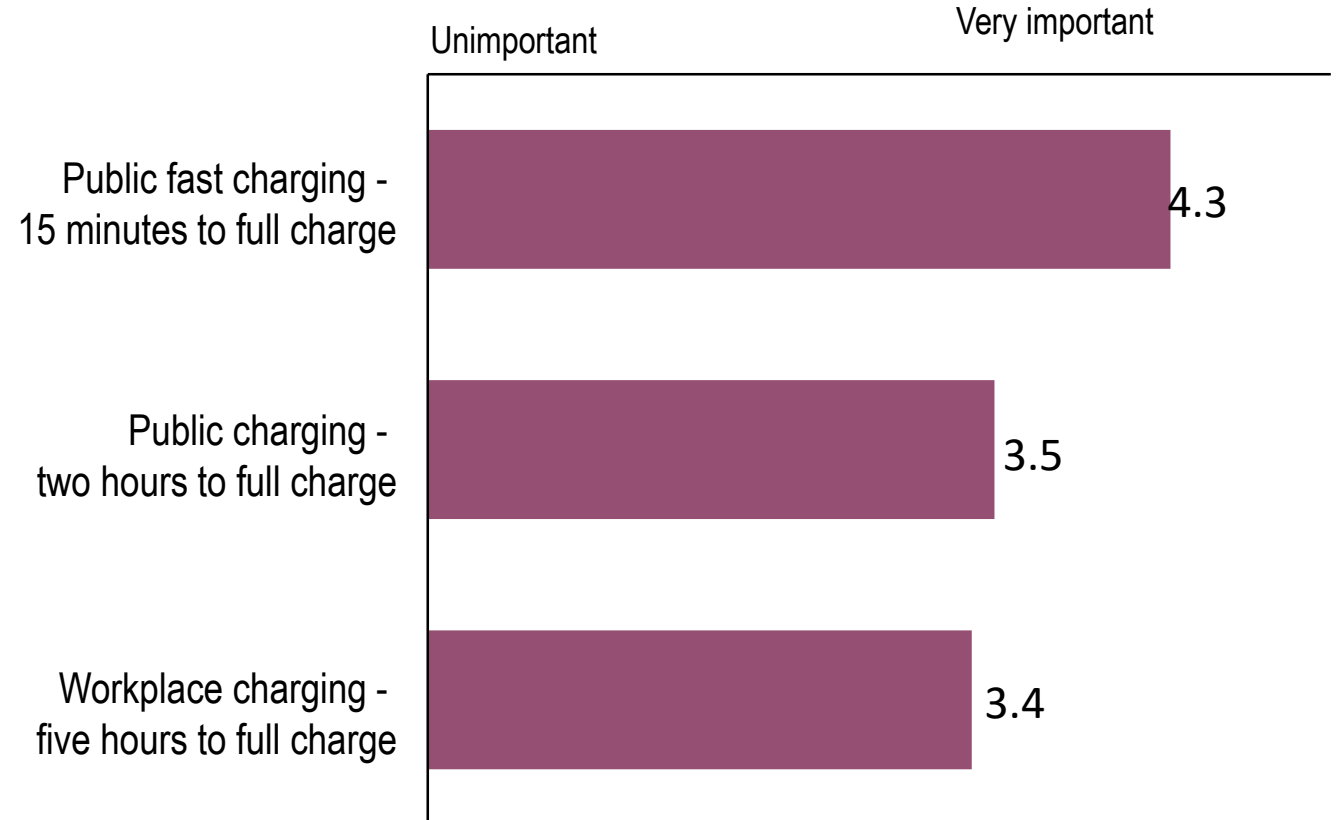
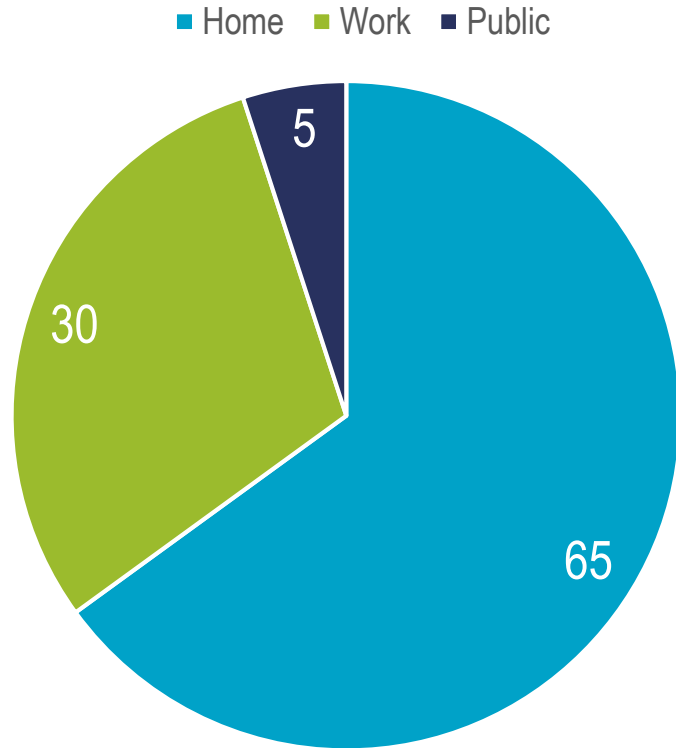
0431 549 220

[Behyad.Jafari@electricvehiclecouncil.com.au](mailto:Behyad.Jafari@electricvehiclecouncil.com.au)



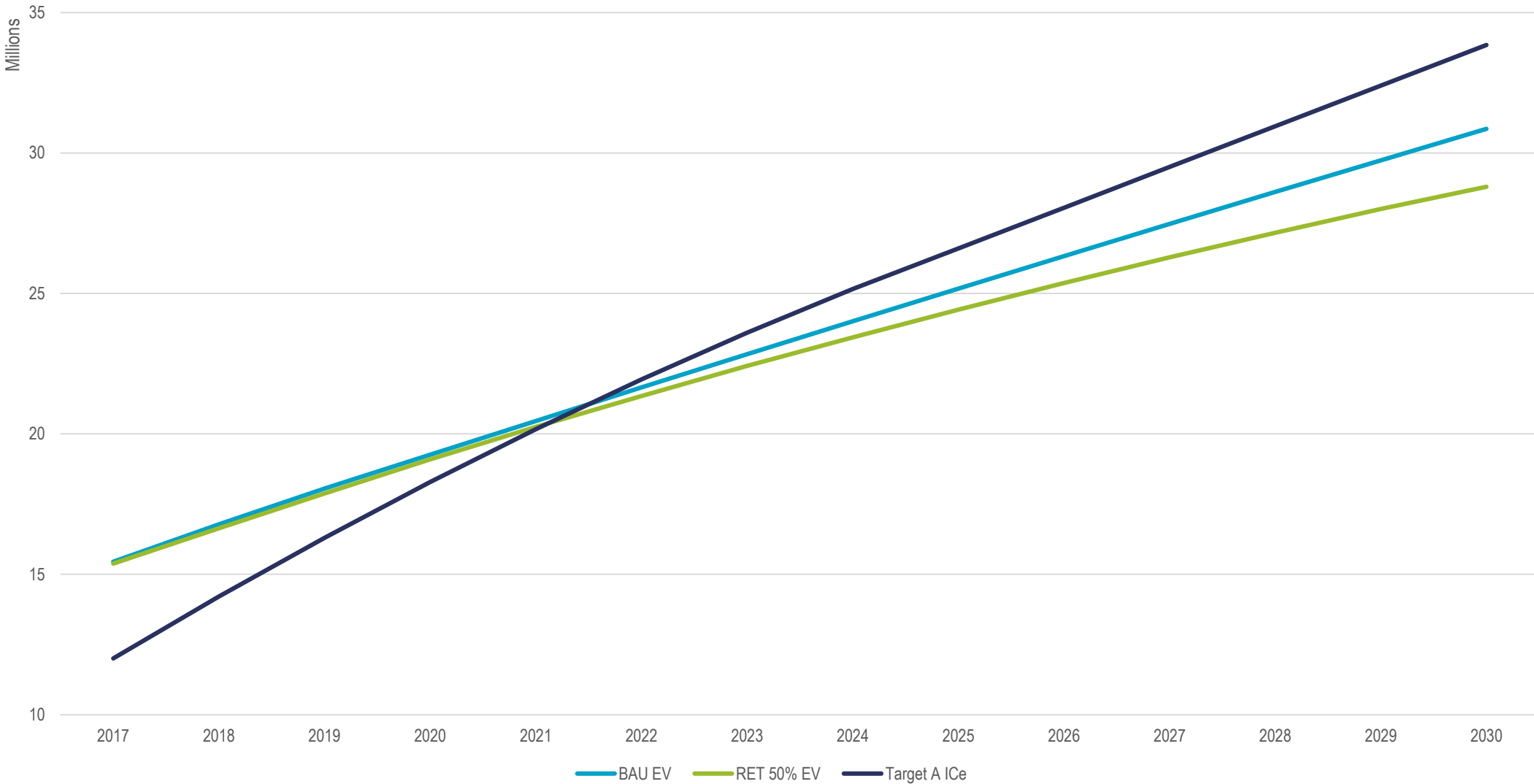


# APPENDIX



# CHARGING INFRASTRUCTURE

# Lifecycle emissions comparison



## LIFECYCLE EMISSIONS COMPARISON

