



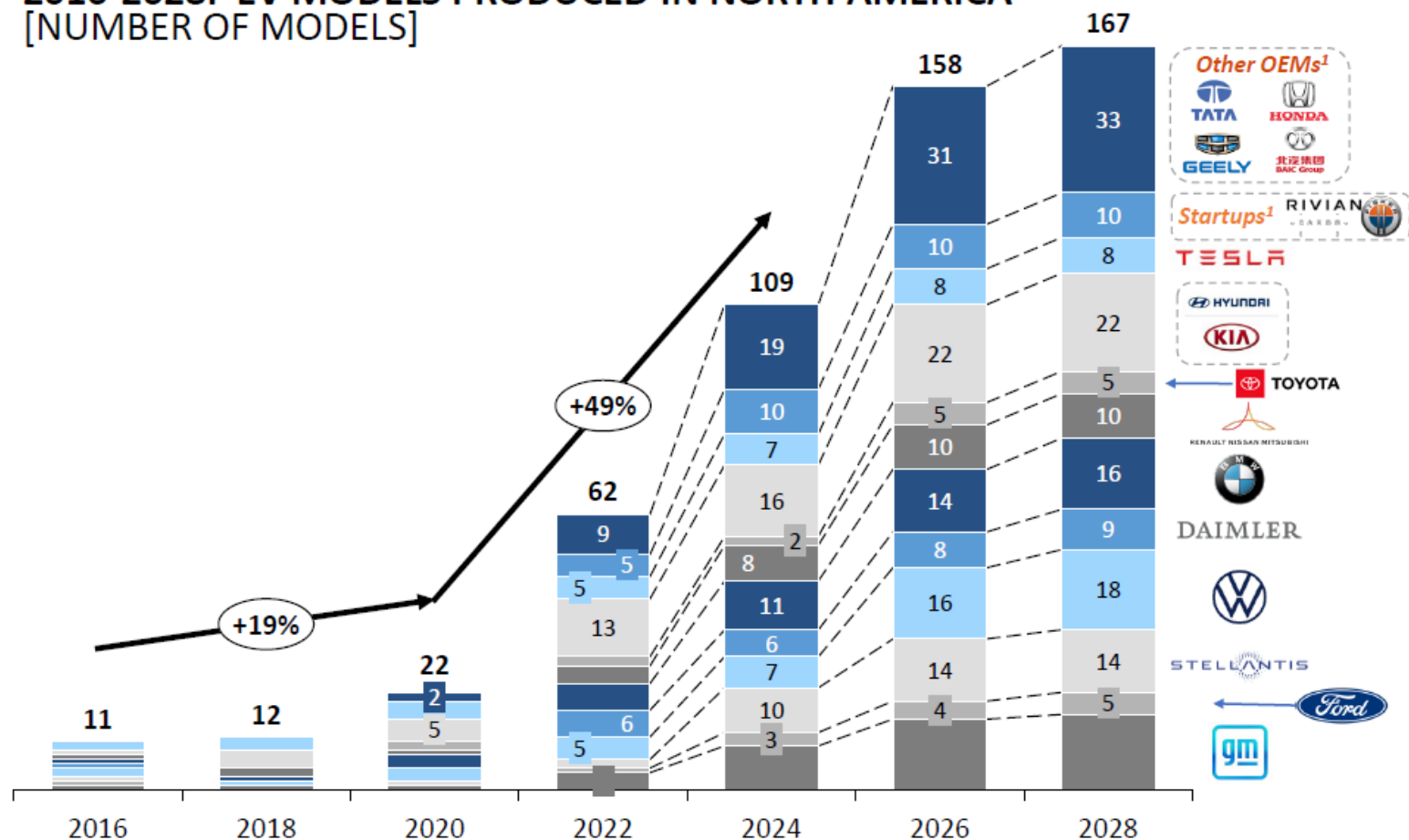
**AUSTRALIAN AUTOMOTIVE
AFTERMARKET ASSOCIATION**

Electric Vehicles - EV Ready

Lesley Yates & Adam Pay

The availability of EV models in NA is expected to increase significantly - driven mainly by traditional incumbent OEMs

2016-2028F EV MODELS PRODUCED IN NORTH AMERICA
[NUMBER OF MODELS]



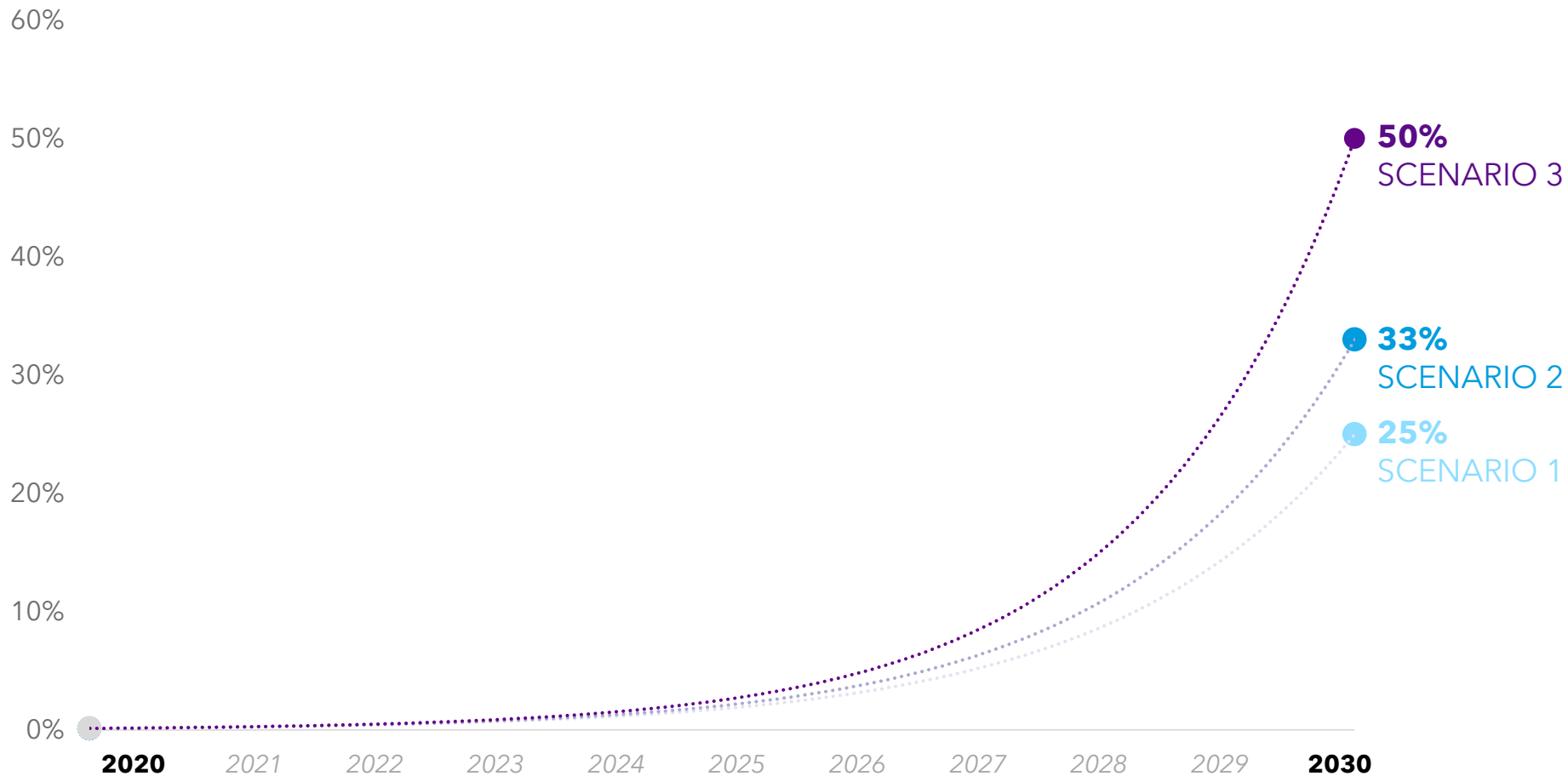
Discussion

- Nearly 90 new EV models are expected between 2020 and 2024
- Various EV startups intend to release 10 new models between 2020 and 2024
- Major OEMs such as GM, Stellantis, and VW intend to introduce the **bulk of their EV models in 2024+**
- Other OEMs intend to introduce BEV models later in the decade

Projected Growth of EV New Vehicle Sales

The transition to electric vehicles will accelerate in coming years, but the precise trajectory will depend on a range of external factors

EVs as a proportion of New Vehicle Sales



While the rise of EVs has been anticipated for quite some time, we are still recording low rates of take-up, with EVs making up less than 1% of new vehicles sales.

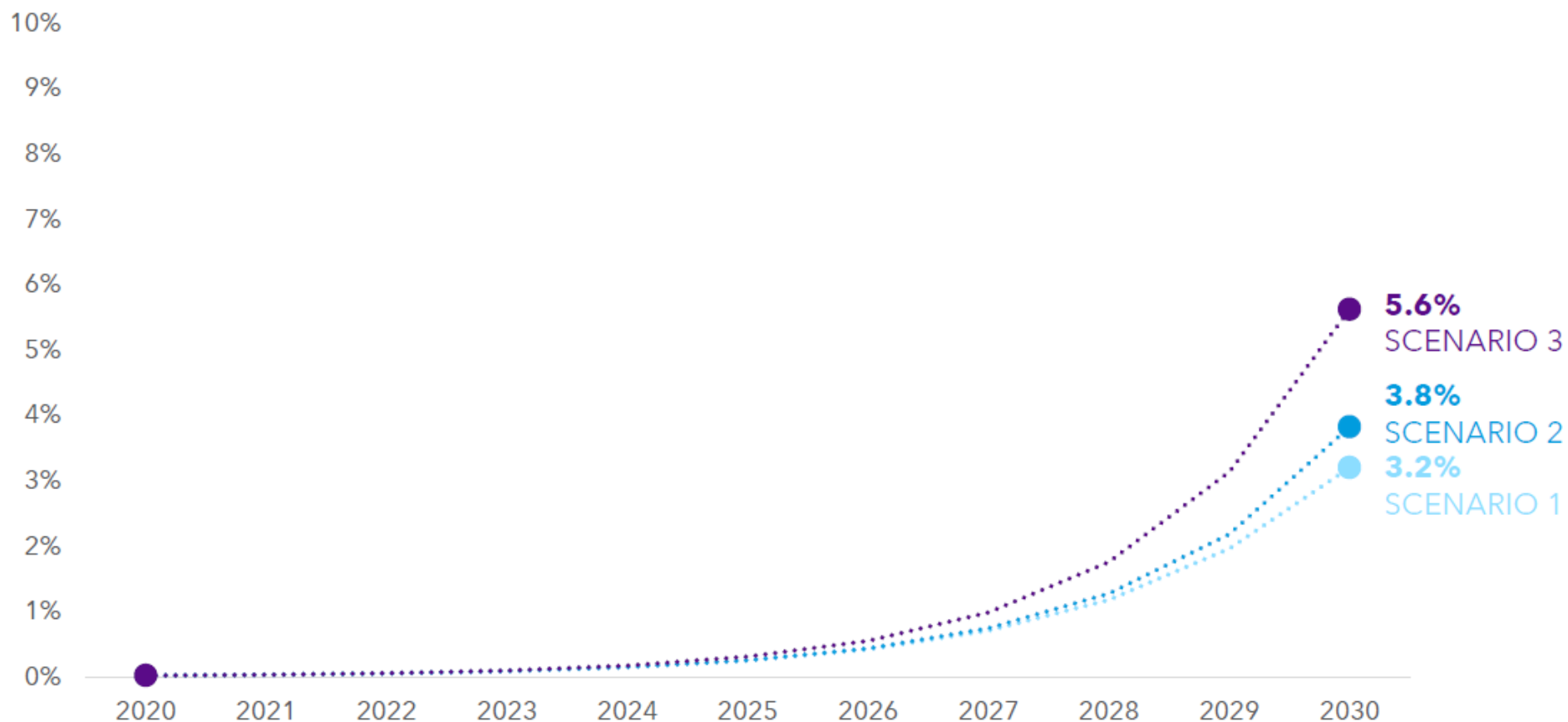
Given the more mature nature of global automotive markets, and the growing prominence of the conversation locally, this will change in coming years.

Looking at EV uptake in countries such as Norway, we know that uptake is likely to increase exponentially once certain thresholds have been reached. Three alternative scenarios have therefore been modelled, taking Australia forward to a future state in 2030 where electric vehicles make up 25%, 33%, or 50% of new vehicles sold.

Projected Share of EVs in Car Parc

Despite the most optimistic scenario seeing more than 500,000 EVs sold in 2030, ICE vehicles would continue to dominate the car parc

Projected EV Share of Car Parc in 2030



Sales of electric vehicles will grow significantly in the coming decade, but how will this impact the car parc more broadly?

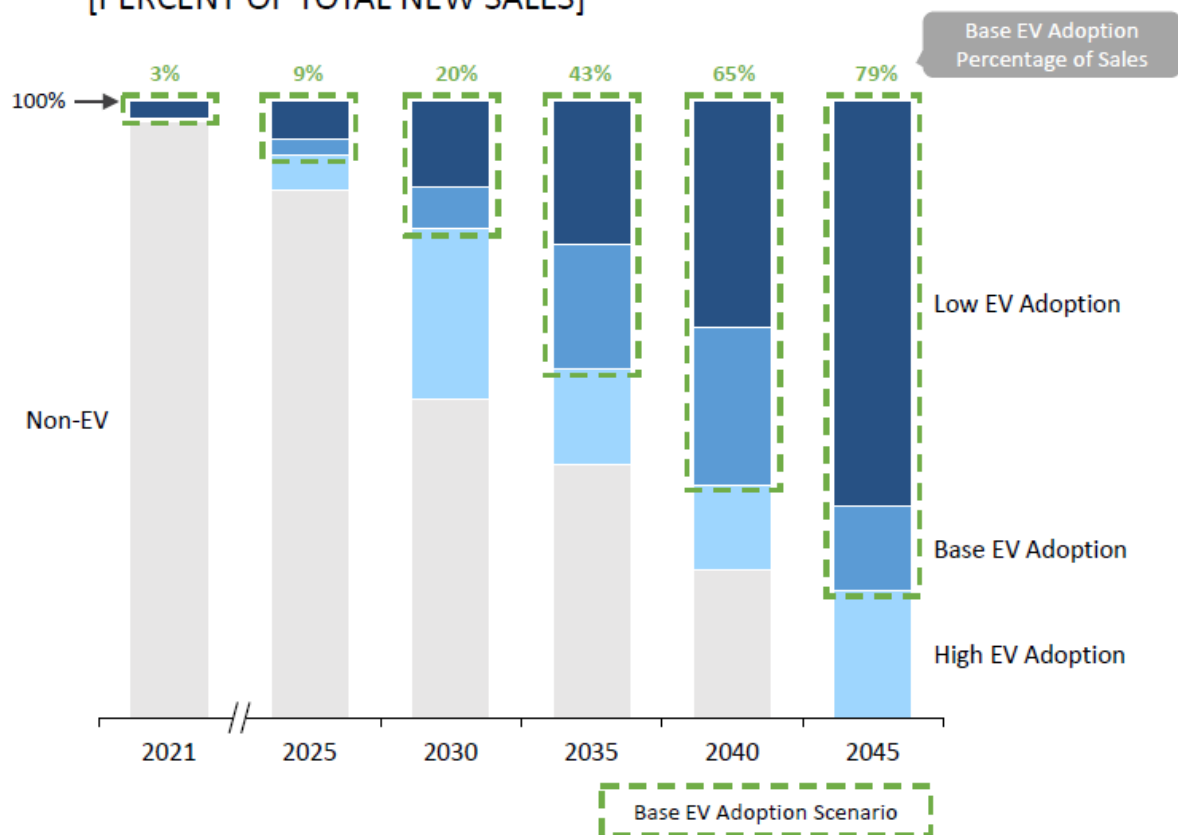
To get a sense of the position EVs will occupy in 2030, we use:

- Projected new vehicle sales (excluding the impact of the COVID-19 pandemic)
- EV share of new vehicle sales according to our three scenarios
- Projected growth in the overall car parc

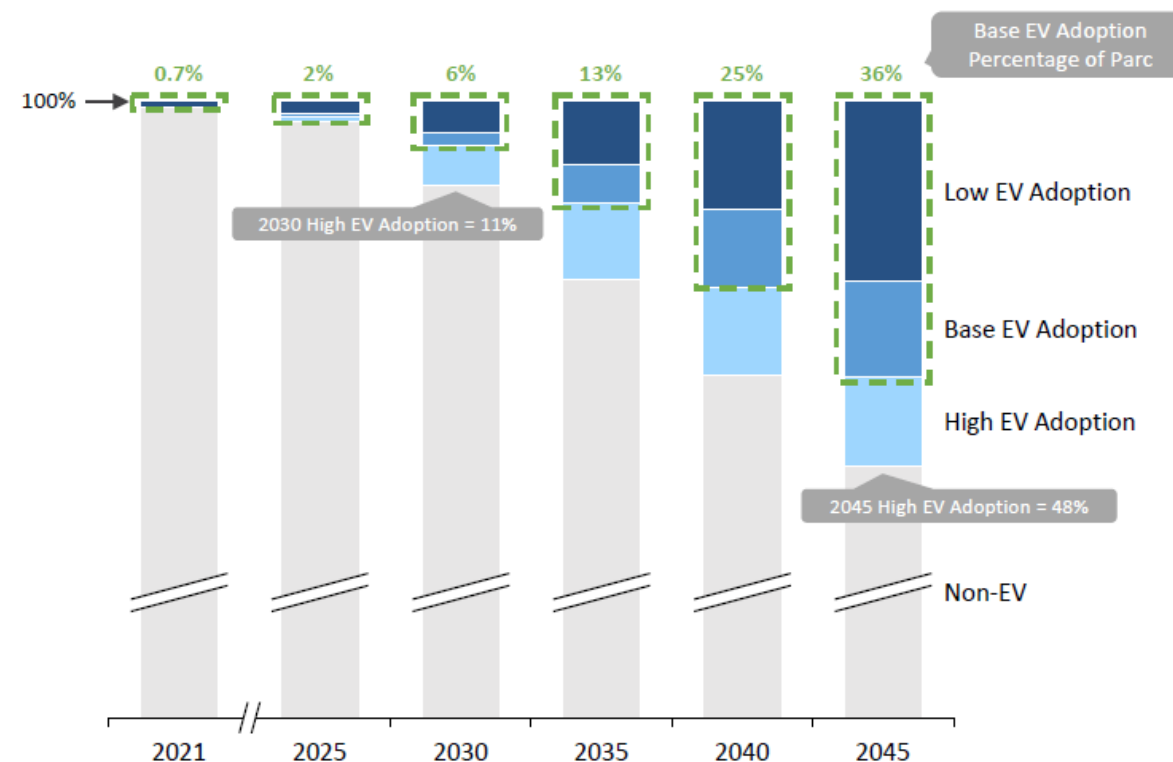
The key takeaway here is that even on the most optimistic scenario, EVs would make up just 5.6% of the car parc in 2030. While this equates to approximately 1.2m EVs, it is clear that combustion engines are here to stay for the foreseeable future.

Although car parc growth is slowing, the EV mix will become more prevalent by 2030 and grow rapidly by 2045

2021-2045F U.S. PERCENT OF NEW CAR SALES BY PROPULSION TYPE
[PERCENT OF TOTAL NEW SALES]



2021-2045F EV PARC PENETRATION IN THE U.S.
[PERCENT OF TOTAL CAR PARC]



EV Ready

Yes, I can service your EV

What are the steps/tools/programs that would support the industry or any individual workshop to state that they are comfortable to tell a consumer that they are **willing and able to service a clients' EV**.

Board Members:

Adam Pay, Craig Baills, Craig Magill, Peter Rogers

What's it going to take?

- Know when they are coming (accurate information)
- Knowledge – how do they work? How do I service them? Training courses, industry information sessions.
- Workshop Layout – health and safety, signage, EV tools and equipment, fire safety plan.
- Consumer information – what do you say to a customer “I’m thinking about buying an EV”.

EV Ready

EV Opportunities & Challenges driven by:

- Evidence
- Data that actually matters/ more demand and less supply emphasis
- International Experience – servicing profiles



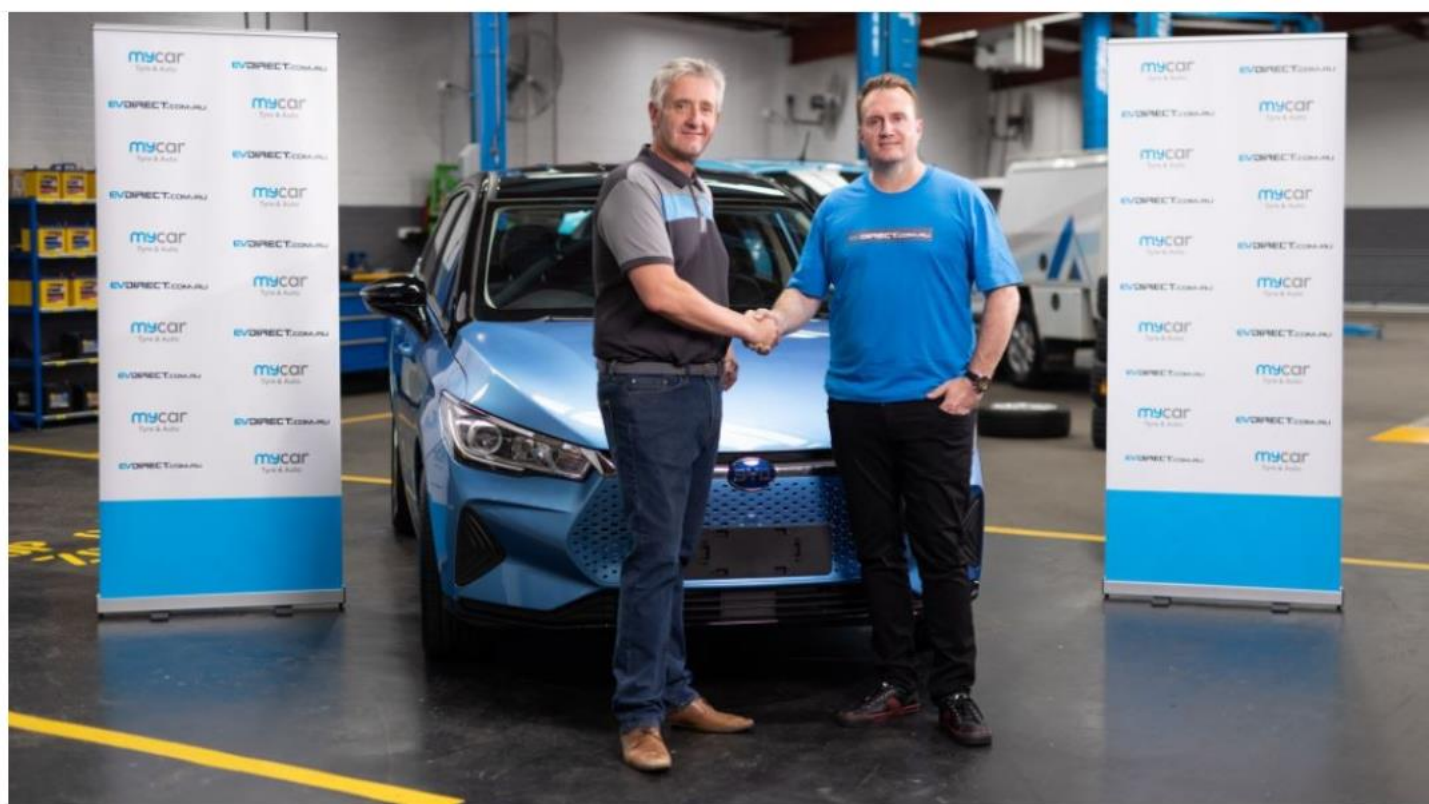
HOME / CAR NEWS

Local BYD importer appoints mycar to be delivery, service partner

BYD's Australian importer, which intends to sell online, has found a service and delivery partner – the company once known as Kmart Tyre & Auto.

3 MINUTES AGO

9 COMMENTS



mycar has agreed to manage all customer delivery and servicing activities of vehicles sold through EVDirect.com.au to Australian customers

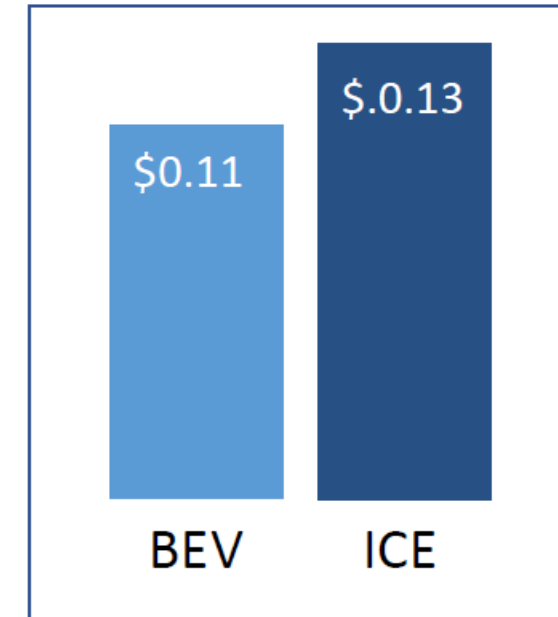
On the service front, there is an est. 15-20% lower cost per mile for BEV when comparing maintenance costs over a vehicle's life

ANY MAJOR BEV COMPONENT FAILURE QUICKLY NARROWS THE GAP IN LONG-TERM MAINTENANCE COSTS

Assumes 12+ Year Old Vehicle
with 150k miles

ICE vs BEV Maintenance Cost Per Mile Estimate		
	BEV	ICE
Battery Maintenance (BM)	\$0.06	\$0.10
BM + Battery Swap (BS)	\$0.11	
BM + BS + Electronics Failure (EF)	\$0.16	
BM + BS + EF + Motor Replacement (MR)	\$0.21	
BM + Engine Replacement (ER)		\$0.13
BM + Transmission Replacement (TR)		\$0.16
BM + ER + TR		\$0.19
Most Likely Scenario	\$0.11	\$0.13

Cost per Mile [USD]



For new service, shops will have opportunities with BEVs in these four categories

Not Exhaustive

Range Optimization

A “range maintenance” or “range optimization” service category could start with a diagnosis of wheel alignment, tire wear, cooling system effectiveness, motor alignment, regenerative power and other factors that may affect battery range.

Torque Protection

Electric drive motors can provide high torque at starting speeds which may affect the life of half shafts, CV joints, tires and other undercar components. While we anticipate vehicle designers to compensate for these high-torque characteristics, we have seen multiple reports of extremely high tire wear on BEVs.

State of Health Reports

Diagnosing the various factors that comprise a battery’s state of health and providing comparisons to other like vehicles can inform vehicle owners about maximizing both vehicle performance and battery longevity. Recurrent has created an innovative crowd sourcing site that uses the SmartCar API to inform BEV owners about their BEVs.

Cooling Protection Checks

A BEV’s cooling system protects high dollar items like the battery, motors, electronics modules and inverters. The HVAC system is also more complicated with many BEVs now employing heat pumps to supply both cooling and heating to the cabin interior. Look for fluid connectors, intelligent valves and heat pumps to become new service categories.



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