



QFLEET ELECTRIC VEHICLE TRANSITION STRATEGY 2023–2026



For the Queensland Government
motor vehicle fleet



Minister's foreword



In 2017, the Queensland Government released its first electric vehicle (EV) strategy – *The Future is Electric: Queensland's Electric Vehicle Strategy*, with a commitment to commence transitioning the government's fleet to electric vehicles.

This challenge was met with set targets outlined in the *QFleet Electric Vehicle Transition Strategy* for the Queensland Government Motor Vehicle Fleet over four-years, from 2018 to 2022. The transition was successfully led by the government's fleet manager, QFleet.

It is timely for the EV strategy to be updated. The Queensland Government has made a strong commitment towards the introduction of zero emission vehicles on Queensland roads. This is especially the case with the QFleet fleet, with an acceleration of the growth in zero emission vehicles to occur across the next four years and beyond.

QFleet will continue to help the government achieve a 30% reduction in emissions by 2030, and zero net emissions by 2050 by transitioning all eligible passenger vehicles to zero emission vehicles by 2026. This initiative is central to *Queensland's Zero Emission Vehicle Strategy 2022–2032*, the *Zero Net Emissions for Transport Roadmap and Action Plan* and this Strategy.

The government's fleet comprises of more than 10,000 vehicles located across the state. QFleet will work with agencies to help them achieve their yearly zero emission vehicle transition goals, making this Strategy's transition plan a reality.

To assist agencies further with their ZEV transition, they will be able to take advantage of electric vehicle charging procurement arrangements that lists a range of Queensland suppliers across the state as well as the government's growing Queensland Electric Super Highway.

The highway currently has 31 fast-charging sites, connecting Queenslanders and tourists travelling from Coolangatta to Port Douglas, and from Brisbane to Toowoomba. The latest expansion (Phase 3) will add a further 24 charging stations connecting travellers from Mount Isa (via the Dinosaur Trail locations), Goondiwindi to Emerald, Cunnamulla to Barcaldine and Longreach to Cairns.

Most importantly, *QFleet's Electric Vehicle Transition Strategy 2022-2026* will play a major role in reducing the fleet's greenhouse gas emissions, while contributing to the government's 2050 zero net emissions goal, supported by a 50% renewable energy target for Queensland by 2030.

This transition will focus on scaling up the number of zero emission vehicles on Queensland roads whilst putting downward pressure on vehicle prices for all Queenslanders and increasing the volume of quality used EVs for Queensland families to assist with their own transition plans.

A handwritten signature in black ink, appearing to read 'Mick de Brenni'. The signature is fluid and cursive, with a prominent flourish at the end.

The Honourable Mick de Brenni MP

Minister for Energy, Renewables and Hydrogen and Minister for Public Works and Procurement

Introduction

Motor vehicles are essential to delivering government programs to Queenslanders and supporting critical frontline services including Police, Community Health, Agriculture and Fisheries. QFleet (the Queensland Government’s fleet manager) manages over 10,000 vehicles.

The Queensland Government is committed to delivering frontline services at lowest costs and reducing Queensland’s emissions and aims to achieve:

- powering Queensland with 50% renewable energy by 2030
- a 30% reduction on 2005 emissions levels by 2030
- zero net emissions by 2050.

The energy and transport sectors are the two largest carbon dioxide emitters in Queensland. Focusing on these sectors will maximise the reduction of greenhouse gas emissions and will be a major contributor to achieving net zero emissions by 2050.

Queensland’s Zero Emission Vehicle Strategy 2022–2032 and Queensland’s Zero Emission Vehicle Action

Plan 2022–2024 sets out the government’s strategic direction, key initiatives and actions that will shift Queensland to Zero Emission Vehicles (ZEVs).

A ZEV produces no exhaust emissions from its onboard source of power. Over the next 10 years, we expect more zero emission technologies and vehicles to become available. This includes hydrogen-powered passenger vehicles, light commercial, heavy commercial and buses, and expansion of Battery Electric Vehicles (BEVs) in light commercial, marine and plant. Changes in technology will continue to enhance and increase the transport options available.

BEVs produce no tailpipe emissions. The emissions produced for recharging BEVs are potentially zero when using green or renewable power. An EV fully recharged by solar can save 2.9 to 3.4 tonnes of greenhouse gas emissions annually when compared to a fossil fuel vehicle (driven 13,400km per year).

More renewables (such as solar and wind) are being added to Queensland’s energy generation mix, which means the energy used to charge ZEVs will become greener and more sustainable.



The Strategy

Transitioning Queensland Government's fleet

QFleet has been proactively transitioning its fleet to EVs. Through the *2018 QFleet Electric Vehicle Transition Strategy* (EV Strategy), QFleet set and met its target to double the number of electric vehicles in the fleet each year. Since the introduction of the EV Strategy, QFleet broadened its range of available EVs, increased EVs in the car share pool, incentivised agencies with charging infrastructure and lease rates, reducing the cost gap with comparable internal engine (ICE) vehicles.

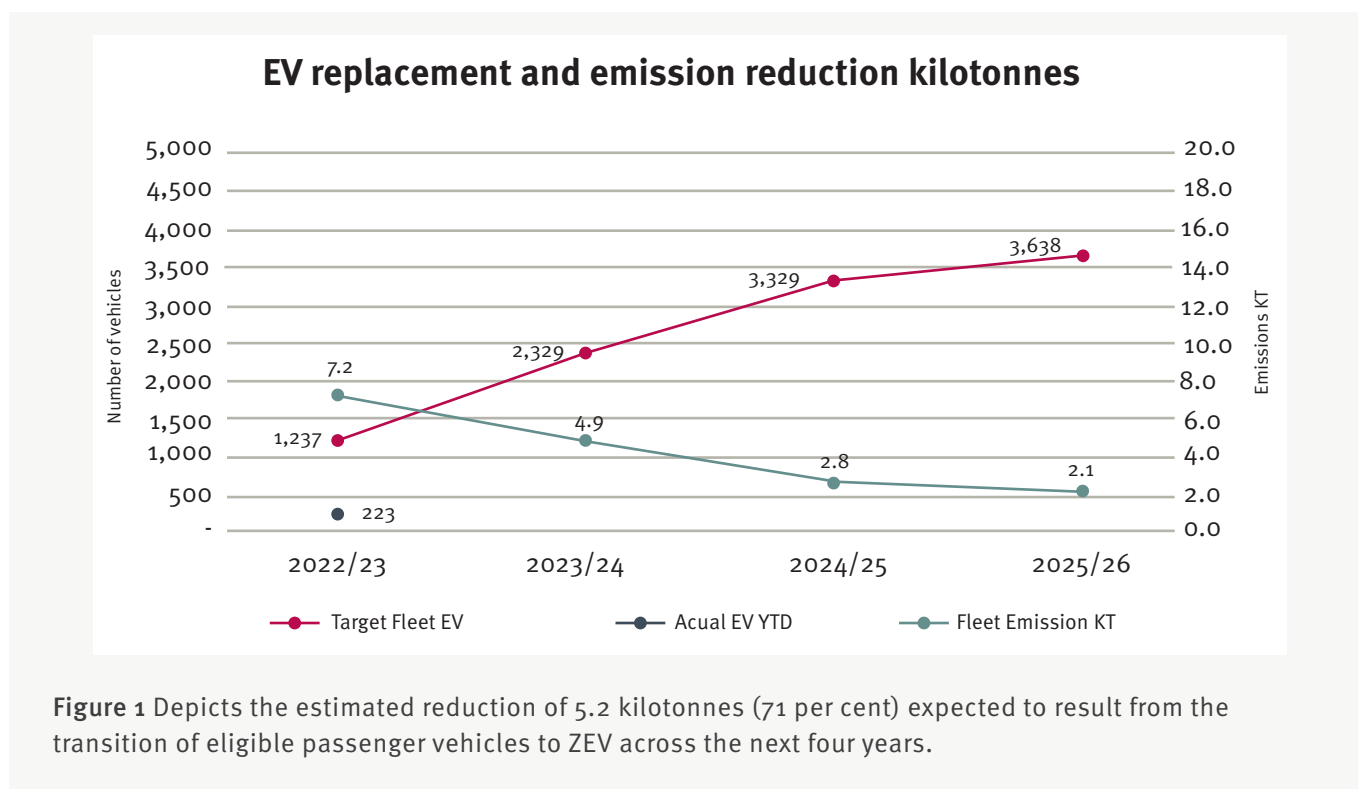
QFleet is supporting *Queensland's Zero Emission Vehicle Strategy 2022– 2032* and *Queensland's Zero Emission Vehicle Action Plan 2022– 2024* by accelerating QFleet's fleet transition to ZEVs.

The Queensland Government has mandated an approach across government whereby all eligible QFleet passenger vehicles transition to zero emission as leases expire, where there is a ZEV alternative and sufficient charging infrastructure is available.

This accelerated transition will help the broader community transition their own vehicles to ZEVs as QFleet will make them available to the public to purchase when they reach their end-of-lease.

QFleet targets:

- QFleet will transition 100 per cent of its eligible fleet passenger vehicles including SUVs to be zero emission vehicles by 2026. Eligibility will be reviewed once zero emission 4WD and heavy vehicles become available.
- Encourage local governments, industry and other organisations to promote ZEV technology and adoption, including QFleet showcases.
- QFleet will increase the availability of quality second-hand ZEVs to the used car market each year.
- QFleet is actively reducing vehicle emissions in line with the governments 2030 target.
- The transition of eligible passenger vehicles will result in a significant savings for Queensland taxpayers on running costs including fuel and maintenance.
- The following graphs and tables highlight the positive impact the transition to ZEVs will have on QFleet fleet vehicle emissions and running costs.



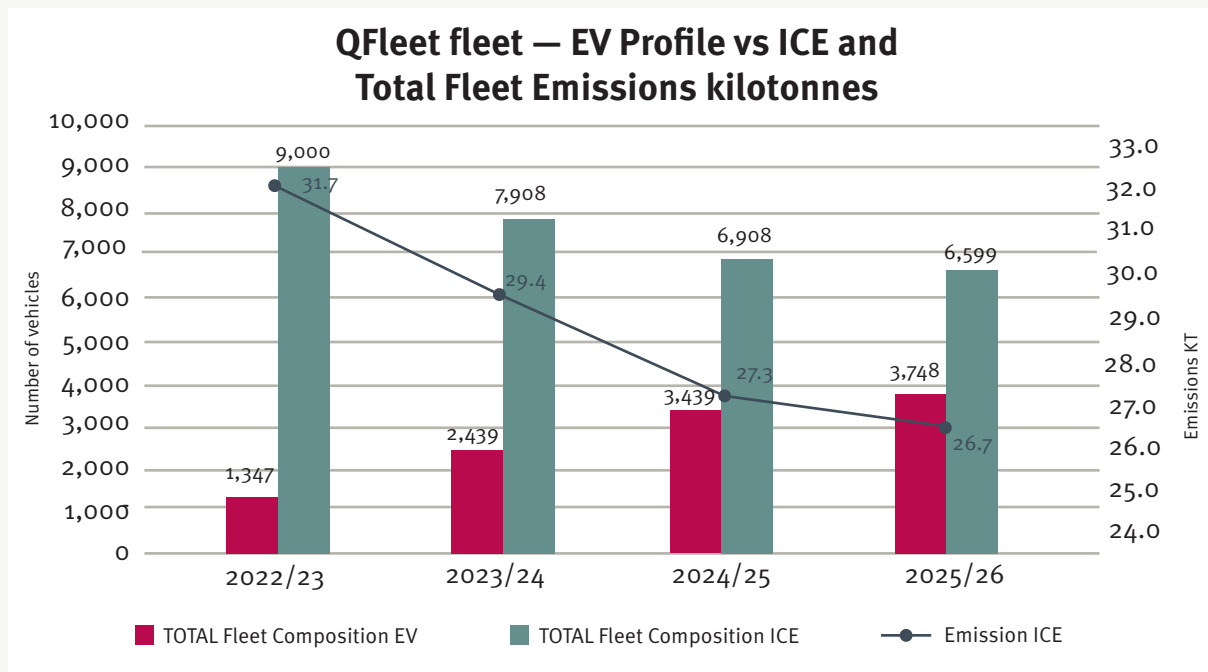


Figure 2 Highlights the impact of this transition on vehicle emissions for the entire QFleet fleet by 2026. The transition is expected to reduce overall emissions by a further 16 per cent.

Fuel savings and emissions reduction

VARIANT	CO ₂ EMISSIONS (G/KM)	FUEL CONSUMPTION (L/100KM)	TOTAL ANNUAL CO ₂ (TONNES)	TOTAL ANNUAL CO ₂ SAVINGS (%)	ANNUAL FUEL COST (\$)	ANNUAL FUEL COST SAVINGS (\$)	ANNUAL FUEL COST SAVINGS (%)
BEV (Sedan)	0	0	1.5	69%	\$563	\$1,552	73%
BEV (SUV)	0	0	1.5	69%	\$550	\$1,565	74%
Petrol (Sedan)	203	8.3	4.9	NA	\$2,115	NA	0%

Source: Green Vehicle Guide 13 July 2022 – 2022 Tesla Model 3 (BEV Sedan), 2022 Hyundai Kona EV (BEV SUV) and 2019 Camry Petrol Sedan, 14,000km per year, Combined Use.



How we will do this

QFleet is working with customer agencies on specific ZEV transition strategies to satisfy budget and operational requirements, while comparing and monitoring agencies individual plans to ensure any competing priorities are managed.

QFleet is liaising directly with motor vehicle manufacturers to identify supply. This will include strategic procurement initiatives such as bulk purchasing and a commitment to volume to provide manufacturers with certainty and increase ZEV supply to the market.

The current Queensland Government definition of an EV includes full electric (battery and hydrogen) and plug-in hybrid electric vehicles (PHEVs). PHEVs have reduced emissions but are not zero emission vehicles. QFleet will progressively move away from low emission vehicles like PHEVs and towards zero emission vehicles in line with *Queensland's Zero Emission Vehicle Strategy 2022–2032*.

Where market supply of ZEVs cannot meet demand to support the transition strategy, QFleet will manage the fleet and lower fleet emissions with alternate options, for example by:

- not replacing an ICE vehicle at lease end where its utilisation or need does not support replacement.
- extending leases of any EVs to meet supply timeframes for replacement. An EV must be replaced with a ZEV.
- replacing ICE vehicles with lower emission PHEVs (shortest term appropriate).
- replacing ICE vehicles with lower emission hybrid vehicles (shortest term appropriate).
- only extending an ICE vehicle lease after exploring fleet optimisation and utilisation review suitability (shortest term appropriate), or;
- where all other options are exhausted, replace with an ICE vehicle with the shortest term appropriate for that order to be placed.
- working with other jurisdictions to aggregate demand and provide a more certain forward pipeline for suppliers.

Vehicle types

Battery electric vehicles (BEVs) are a mature technology and use stored energy from the electricity grid to drive an electric motor supplied from an onboard battery. BEVs produce no direct tailpipe greenhouse gas emissions. A BEV is a full zero emission vehicle when powered by renewable energy.

Hydrogen vehicles or fuel cell electric vehicles (FCEVs) are an emerging market technology that convert hydrogen to electricity to power an electric motor. FCEVs produce no direct tailpipe greenhouse gas emissions. A FCEV is a full zero emission vehicle when powered by renewable energy.

Plug-in hybrid electric vehicles (PHEVs) are not zero emission vehicles. They are a mature technology and can use electricity and/or another fuel source (like petrol). Unlike other hybrid vehicles, PHEVs can be plugged in and charged from the electricity grid.

PHEVs produce more tailpipe emissions than BEVs, however, they are able to produce fewer emissions than ICE vehicles, though only when used mainly on battery power. If driven mainly on the petrol cycle, they are likely to produce higher emissions than similar size ICE vehicles, as the battery pack makes PHEVs heavier and requires greater acceleration.

QFleet's hydrogen fleet

In 2021, QFleet leased five Hyundai hydrogen FCEVs as part of a three-year trial, the first deployment of FCEVs for the state.

The vehicles emit only oxygen, water vapour and heat, and remove particulate matter from the air they use in the process. They can be refuelled in three to five minutes and have a range of about 650 kilometres on a single tank.

The FCEV trial project enabled BOC Gas to develop the \$4.2 million end-to-end renewable hydrogen project, which will see the first publicly available hydrogen refueller at a service station in Australia.

Increased awareness of how hydrogen vehicles can help decarbonise the transport sector is encouraging other fleet operators to consider hydrogen vehicles for their fleets.

Growing hydrogen fleets and investing in this industry will have wide-ranging benefits for Queensland.

QFleet's car share service

In 2019, QFleet established the Brisbane CBD-based car share service to help agencies better manage their transport needs and reduce the number of underutilised vehicles in their fleet.

The service enables agency drivers to book cars online conveniently and quickly from multiple locations in and around Brisbane's CBD. The car share fleet contains several EVs of different makes and models to enable agencies to 'try before they buy', to experience the benefits of an EV and their applicability for their own fleet.

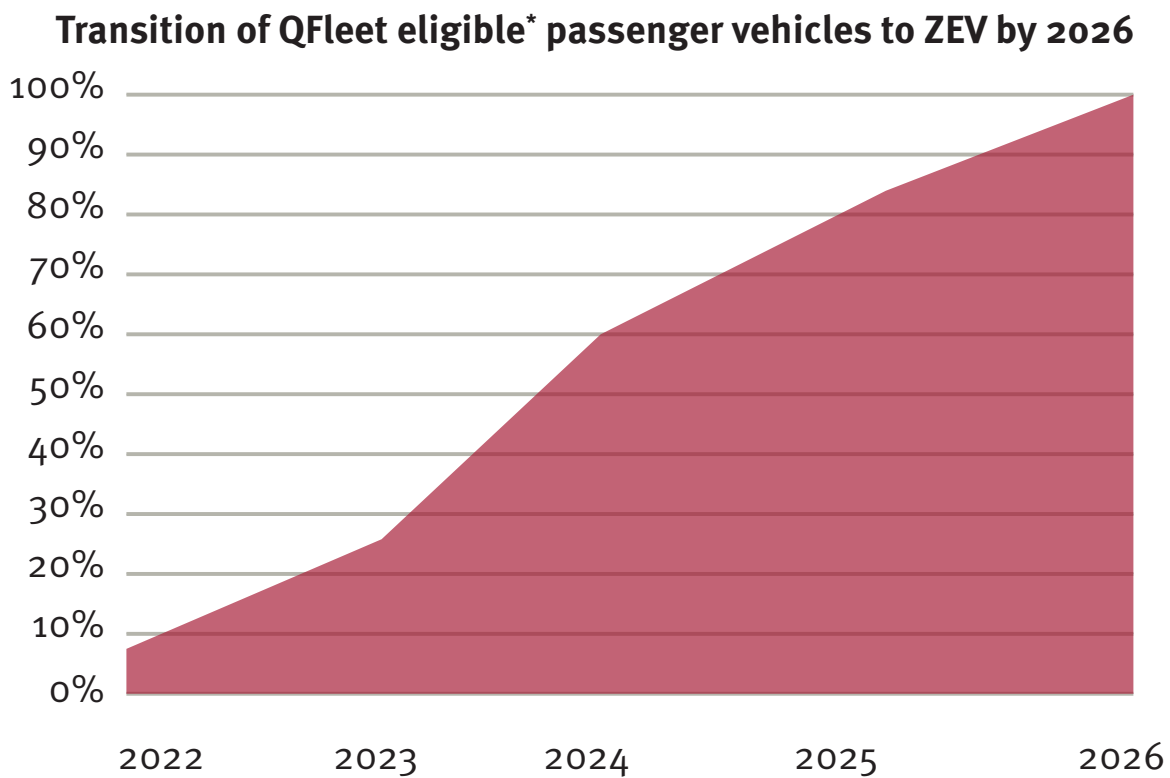
As part of the ZEV strategy, QFleet is accelerating the transition of the car share fleet to make it 100 per cent ZEV by the end of 2023/early 2024.

Monitoring and reporting

QFleet will monitor and provide quarterly reporting for each agency on:

- percentage of eligible passenger vehicles transitioned to ZEV
- number of second hand EVs presented for auction
- emission reductions achieved by the strategy.

The graph below demonstrates the expected rate of the transition to ZEVs across the fleet until 2026.



*Eligibility will be reviewed once suitable 4x4, ute and light truck options become available in Australia.

The electric vehicle market and global supply challenges

The automotive industry has significant global supply chain impacts following the COVID-19 pandemic. QFleet’s ZEV transition faces several challenges due to these impacts, including:

- The Australian motor vehicle market makes up a very small portion of the overall world market, and the Queensland Government’s volumes are a very small slice of that segment. During 2021, there were approximately 59 million global sales of motor vehicles (of all types) worldwide, with just over one million, or 1.7 per cent, of those being sold here in Australia. Manufacturers are subsequently prioritising supply to much larger and more profitable markets like Europe, Asia and America (Figure 4).
- Approximately 20,000 new EVs were registered on Australian roads in 2021. Globally, approximately 6.6 million EVs were sold in 2021, with the Australian market representing 0.3 per cent of total EV sales world-wide. Given the very small size of the Australian vehicle market relative to the rest of the world, influencing the production schedules of motor vehicle manufacturers will be difficult.
- A significant portion of vehicle componentry is produced in China and to a lesser extent in the

Ukraine. Widespread factory closures in China to the COVID outbreak and the conflict in the Ukraine, vehicle manufacturers are expecting further interruptions to their production schedule for at least 2022-2023.

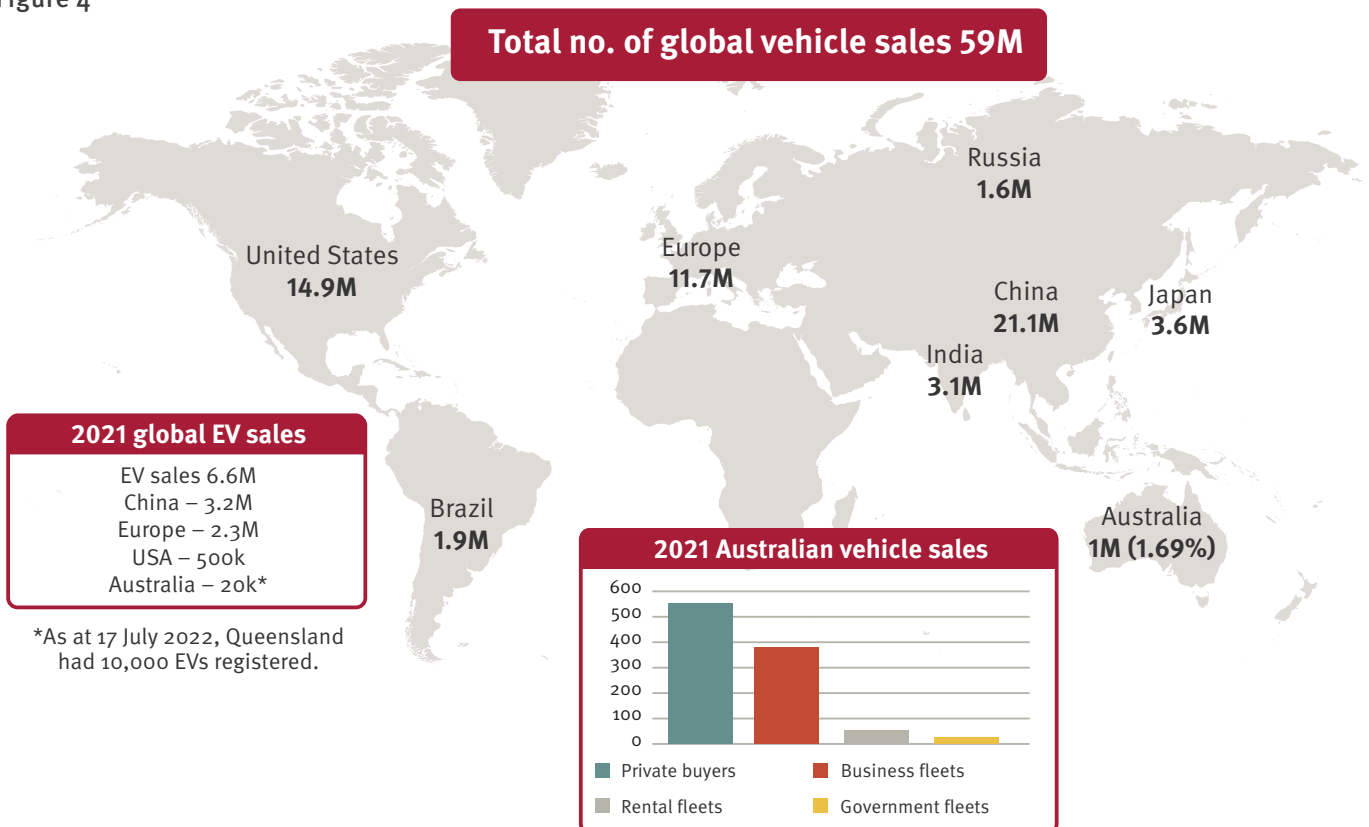
- All modern vehicles use a range of micro-processors (semi-conductor chips) to operate their various electronic systems. The supply of these chips has been severely interrupted for close to two years, with the situation unlikely to improve until 2023-24.
- Post pandemic, supply to meet demand of all customers has become competitive and has resulted in increased delivery times to QFleet.
- Vehicle pricing has increased multiple times since 2020, reducing value for money options available to QFleet.

In response to these issues Queensland is working with other states and territories to aggregate demand to better secure an increased pipeline of supply for EVs for all Australian State and Territory Governments.

Over the next three years, Queensland, like all Australian jurisdictions, will invest to make ZEVs more affordable, boost access to public EV charging infrastructure, and transition its government fleet to ZEVs.

Global vehicle sales 2021

Figure 4



Source: IEA (2022), *Electric cars fend off supply challenges to more than double global sales*, IEA, Paris www.iea.org/commentaries/electric-cars-fend-off-supply-challenges-to-more-than-double-global-sales

Suitable electric vehicles currently available in the Australian market for QFleet

Vehicles currently available – BEV

MANUFACTURER	MODEL	SUITABILITY
BMW	iX3	Limited
Hyundai	IONIQ Fastback	Yes
Hyundai	IONIQ 5	Yes
Hyundai	Kona - standard range	Yes
Hyundai	Kona - extended range	Yes
KIA	EV6	Yes
KIA	EV6 - GT Line	Yes
KIA	Niro	Yes
MG	ZS	Yes
MINI	Cooper SE	Limited
Nissan	Leaf - standard range	Yes
Nissan	Leaf e+ - extended range	Yes
Polestar	2 - standard range	Yes
Polestar	2 - long range	Yes
Tesla	Model 3	Yes
Tesla	Model Y	Yes
Volvo	XC40 Recharge	Yes
Joylong	EA6 12 Seat Bus	Yes
Joylong	EA6 14 Seat Bus	Yes
SEA Electric	EV4 Mini Bus	Yes
SEA Electric	EV4 Van	Yes

Vehicles currently available – PHEV

MANUFACTURER	MODEL	SUITABILITY
BMW	3 Series 330e	Limited
BMW	X3 xDrive 30e	Limited
Ford	Escape ST-Line	Yes
Hyundai	IONIQ Fastback	Yes
KIA	Niro	Yes
KIA	Sorento	Yes
MG	HS	Yes
MINI	Countryman	Limited
Mitsubishi	508	Yes
Peugeot	3008	Limited
Peugeot	2 - standard range	Limited
Volvo	XC60 Recharge	Limited

Vehicles currently available – FCEV

MANUFACTURER	MODEL	SUITABILITY
Hyundai	NEXO	Yes
Toyota	Mirai	Limited

Suitable electric vehicles forecast – due in the Australian market within the next 18-24 months for QFleet

Vehicles expected to be available – BEV

MANUFACTURER	MODEL	SUITABILITY
BYD	ATTO 3 - standard range	Yes
BYD	ATTO 3 - extended range	Yes
Ford	e-Transit	Yes
Genesis	GV60	Yes
Mercedes-Benz	EQV	Limited
Mercedes-Benz	e-VITO Tourer	Limited
MG	ZS (updated model)	Yes
SKODA	Enyaq	Yes
Volvo	C40 Recharge	Yes

Vehicles expected to be available – PHEV

MANUFACTURER	MODEL	SUITABILITY
CUPRA	Formentor	Yes
CUPRA	Leon	Yes
Mitsubishi	Outlander	Yes

*July 2022

Recharging infrastructure

Queensland's Electric Super Highway

The Queensland Electric Super Highway currently provides 31 fast chargers, and is expanding fast-charging sites, connecting Queenslanders and tourists travelling from Coolangatta to Port Douglas, and from Brisbane to Toowoomba in a low or zero emission vehicle.

The fast chargers are installed in convenient, safe locations close to major highways where there are existing amenities, such as cafes, restaurants and shops. The sites allow easy charging of vehicles, and the opportunity for a short break, allowing a safe onward journey.

Phase 3 of the Queensland Electric Super Highway (Figure 5) will add an extra 24 locations to the network

to link more regional and rural locations. It will deliver further connections along the Queensland/New South Wales border with two charging stations planned at Goondiwindi and Stanthorpe.

Once complete, Phase 3 will connect electric vehicle drivers across a range of routes—from Brisbane to Mount Isa (via the Dinosaur Trail), Goondiwindi to Emerald, Cunnamulla to Barcaldine and Longreach to Cairns. Phase 3 will enable Queenslanders and tourists to travel across the state and use any of the 55 fast charging locations along the way.

One of the BEVs many benefits is the charging capability; a BEV can be recharged overnight and start the next day with a full battery. QFleet will assist the Queensland Government Accommodation Office (QGAO) facilitate charging infrastructure at government office premises, starting with government owned buildings. QGAO will also assist agencies gaining approval to install charging infrastructure in leased buildings and all new leased buildings with carparks will require EV charging infrastructure.

Queensland Electric Super Highway

Figure 5



East Coast Hydrogen Super Highway

In March 2022, the Queensland, New South Wales and Victorian state governments announced a tri-state collaboration on the renewable hydrogen refuelling network for heavy transport and logistics along Australia’s eastern seaboard.

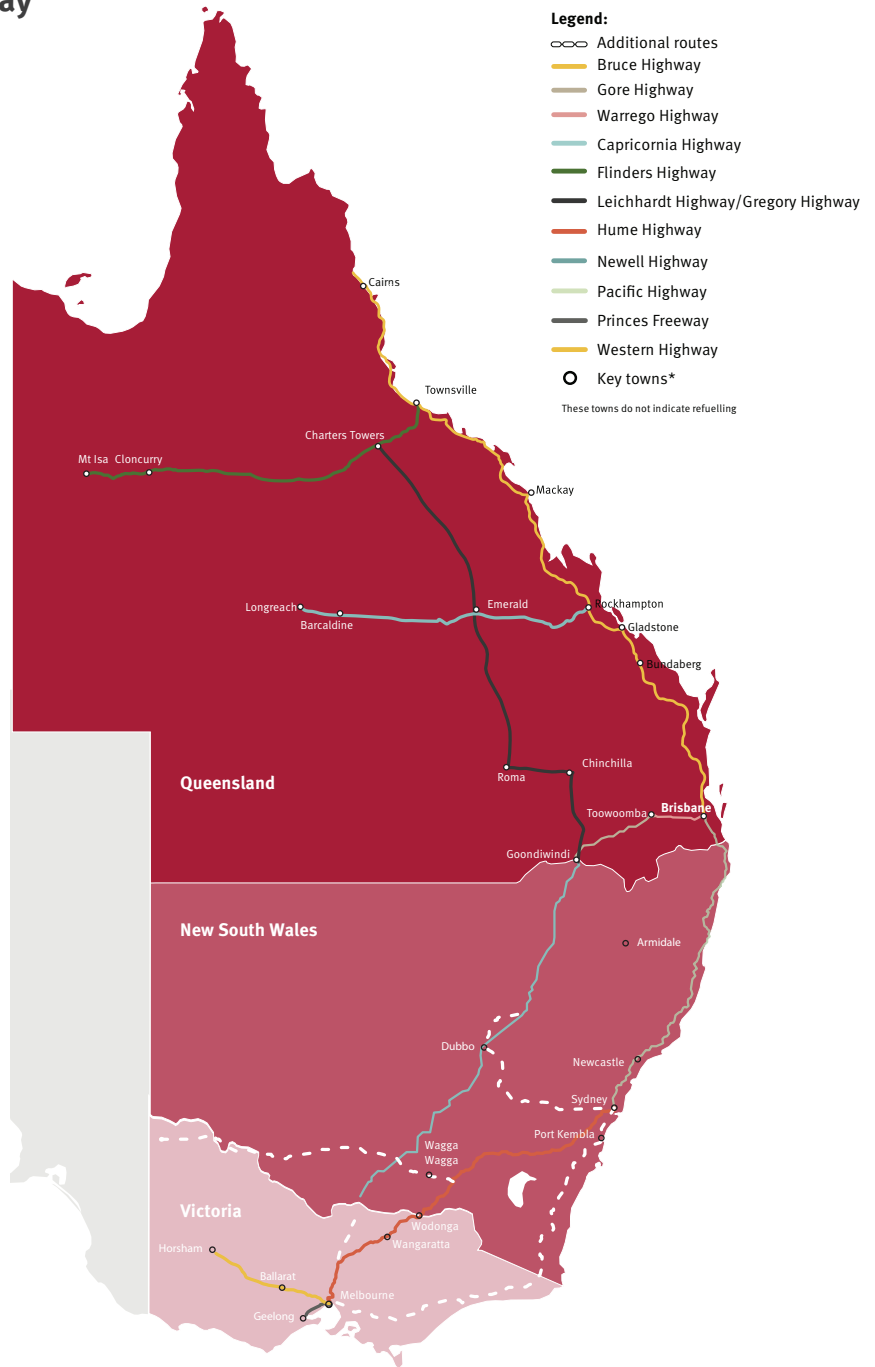
The governments have signed Memorandums of Understanding (MoU) for the refuelling corridors of the nation’s most critical roads and highways, starting with the Hume Highway, the Pacific Highway and the Newell Highway.

The agreement will be key to reducing emissions in transport and logistics, one of the country’s most important sectors of the economy.

Making renewable hydrogen available offers enormous potential for transport sector innovation in Queensland. Providing a reliable source of renewable hydrogen will give industry certainty that hydrogen is a viable alternative to diesel. The development of refuelling stations will also support transport companies in transitioning to hydrogen vehicles.

East Coast Hydrogen Super Highway

Figure 6



Referenced documents

The Future is Electric: Queensland’s Electric Vehicle Strategy
<https://publications.qld.gov.au/dataset/the-future-is-electric-queensland-s-electric-vehicle-strategy/resource/7e352dc9-9afa-47ed-acce-2052cecfec8a>

Queensland’s Zero Emission Vehicle Strategy 2022-2032
<https://www.publications.qld.gov.au/dataset/zeroemissionvehiclestrategy>

Queensland’s Zero Emission Vehicle Strategy - Action Plan (2022-2024)
 Queensland’s Zero Emissions Vehicle Strategy - Action plan 2022-2024 (publications.qld.gov.au)

Queensland’s Electric Super Highway
www.qld.gov.au/__data/assets/pdf_file/0021/251427/Queensland-Electric-Super-Highway-Map-phases-1,2-and-3.pdf



For more information



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