



Electric vehicles and clean energy



The transition to electric vehicles is a critical pathway to the decarbonisation of the Australia economy.

Transport produces nearly 100 million tonnes of emissions in Australia each year, representing 19 per cent of national greenhouse gas emissions. Cars and light commercial vehicles together represent more than half of these emissions, which are projected to increase as the population grows and economic activity increases.

Along with decarbonising the electricity sector, electrifying Australia's light vehicle fleet is an important step in meeting Australia's emissions reduction targets.

Australians have traditionally been early adopters of new technology, but we are lagging when it comes to EVs. Our research shows that we can increase the uptake of EVs in a way that benefits drivers as well as the environment. It's about lowering prices, bringing more models to market and creating a charging network.

Keeping pace with the EV transition

50%

new car purchases are electric vehicles by 2030

5min

supercharging capability

EQkm

matched driving range with diesel, petrol vehicles

Source: Australian Electric Vehicle Market Study, 2018

Australian Electric Vehicle Market Study

The *Australian Electric Vehicle Market Study*, developed by the CEFC with the support of ARENA, examined the barriers to EV uptake. These include the purchase price premium, low EV model availability and limited access to charge points.

The report, prepared by Energeia, forecasts a surge in electric vehicle sales from as early as 2021, based on the right combination of incentives, models and infrastructure. It also found that, on current trends, EVs could have the same driving range capabilities as diesel or petrol-fuelled cars by 2024, addressing one of the biggest consumer concerns about EVs.

This CEFC industry snapshot brings together key elements from the study. To download a full copy of *Australian Electric Vehicle Market Study*, please visit cefc.com.au



What drives EV uptake?

High impact policy incentives: upfront financial incentives, government fleet purchases, and changes to the regulation of vehicle emissions, fuel efficiency and vehicle import regulations.

Increasing model availability: allows consumers to find vehicles within their budget that offer features they want; offshore trends indicate that policy incentives drive higher model availability as manufacturers anticipate higher vehicle sales.

Public-access charging infrastructure: drivers with home charging need public access charging for long-haul trips and occasional top-ups, while drivers with no access to home charging rely entirely on public access charging.

Source: *Australian Electric Vehicle Market Study, 2018*

A question of choice

A wide range of models allows consumers to find vehicles that meet their needs. International evidence suggests that manufacturers' model import decisions are affected by policy incentives for EV purchases.

Recent cost declines in batteries have been significant, and supportive policies in many countries are seeing manufacturers increase their focus on EVs. Several manufacturers have announced that they will no longer develop pure petrol drivetrains for internal combustion engines after the current model cycle.

A question of confidence

Range anxiety and long recharge times have been barriers to EV purchases. However, EV driving range and recharge times are expected to reach parity with internal combustion engine vehicles by 2024, suggesting those concerns will fall away as impediments to EV uptake:

Range: More than 99 per cent of car trips are under 50 kilometres, making a round trip well within the charging range of current EV models.

Recharge times: By 2024 EV owners can expect to pay around \$11 to charge their 100 kWh battery at a direct current fast charging point, requiring about five minutes or less to fully recharge. The same charge at a dedicated charger at home or work would take four hours and cost \$17-19.



New investment and new opportunities

The transition to EVs will create new opportunities for the operation of public access charging infrastructure.

Petrol station operators, automotive associations, regulated electricity networks and energy retailers are likely to be in the strongest position to deploy a charging network in Australia.

EV charging network providers will require capabilities in software and hardware, infrastructure development and asset management. They would also need access to suitable sites.

Electric vehicles and the Australian market

Australia has very low EV penetration among advanced countries. Only 0.1 per cent of new car sales in Australia are EVs, behind the United States at 0.9 per cent, the United Kingdom at 1.4 per cent and well behind global leaders such as California at 3 per cent, the Netherlands at 6.4 per cent and Norway at 29 per cent.

Increasing the share of electric vehicles on the road will translate directly into lower emissions from fuel combustion. While EV charging will add to the demand for electricity, the emissions associated with charging are forecast to decline over time as electricity generation switches to renewables.

With vehicle makers confirming they will stop producing pure internal combustion engines over the coming years, the transition to EVs is inevitable.

Right across the clean energy economy, costs are declining as the use of new technologies becomes more widespread and as the private sector responds to new investment opportunities. The same trends can be expected in the EV market, with increased sales driving down vehicle purchase costs and private investors financing new charging infrastructure to capitalise on this new market opportunity.

Charging infrastructure

The *Australian Electric Vehicle Market Study* estimated Australia would require \$1.7 billion in private sector investment to support the creation of new electric vehicle charging infrastructure.

This investment would support a public access charging network featuring:

1

A local access network: with around 27,000 charge points in cities and towns to provide the vast majority of day-to-day charging for EV owners without a dedicated charge point at home

2

A range extension network: with around 1,500 charge points along regional and rural roads to provide for the small number of trips that are over 150 kilometres.

While 70 per cent of EV owners are expected to have access to dedicated charging at home, they would also depend on public charging for long-distance trips, which represent around one per cent of total distance travelled.

The remaining 30 per cent of EV owners without access to dedicated home charging would require public access charging for all of their charging needs.



Investing in greener vehicles

The pathway to lower emissions requires sustained investment and action across all areas of economic activity. Australia's National Greenhouse Accounts show that transport-related emissions are continuing to grow, influenced by economic output, growing freight volumes and higher diesel use.

The CEFC is investing in a number of projects to help address these transport-related emissions. This includes encouraging the take-up of electric vehicles through the provision of discounted finance options to eligible vehicle buyers.

We have a particular focus on fleet buyers, who purchase as many as one in five new vehicles in Australia. Our aim is to work with these buyers to help them make EVs their fleet vehicle of choice. Through the Clean Energy Innovation Fund, we are also financing start-up companies targeting the EV market.

About the CEFC

The CEFC has a unique role to increase investment in Australia's transition to lower emissions. With the backing of the Australian Government, we invest to lead the market, operating with commercial rigour to address some of Australia's toughest emissions challenges – in agriculture, energy generation and storage, infrastructure, property, transport and waste. We're also proud to back Australia's cleantech entrepreneurs through the Clean Energy Innovation Fund, and invest in the development of Australia's hydrogen potential through the Advancing Hydrogen Fund. With \$10 billion to invest on behalf of the Australian Government, we work to deliver a positive return for taxpayers across our portfolio.

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