ELECTRIC VEHICLE COUNCIL

Securing affordable electric vehicles of all shapes and sizes for Australian households and businesses

The number one barrier to transport electrification in Australia today is the low supply of electric vehicle (EV) models. There are hundreds of EV models available overseas, and yet only are fraction of these are being supplied to Australia. This barrier is primarily due to Australia's lack of mandatory fuel efficiency targets, combined with a lack of national purchase incentives.

To get on track to achieve net zero, Australia needs to significantly increase EV uptake. This will only be achieved through increased supply of EVs enabled by the introduction of a mandatory fuel efficiency standard which is aligned with Australia's commitment to net zero by 2050.

How can Australia secure more fuel-efficient vehicles, including electric vehicles?

Stage 1: Establish a process to investigate a Mandatory Fuel Efficiency Standard for Australia

1. The Electric Vehicle Council recommends that the Australian Government commit to the development and implementation of a mandatory fuel efficiency standard for light vehicles that would support Australia in achieving its target of net zero by 2050.
    a. International bodies, including the IEA[1] and Energy Transitions Commission[2], have highlighted that targeting 100% new zero emission car sales no later than 2035 as critical for achieving net zero by 2050. 25% of the current global car market has already committed to achieve this target[1].
    b. The development of a mandatory fuel efficiency standard for Australia should be conducted by an expert body, accounting for the need for these emission reduction targets. A possible trajectory for achieving these targets has been provided in this briefing document.
    c. The terms of reference for any consultations on the design of a fuel efficiency standard should be based on the ability to achieve net zero by 2050.
    d. The Australian Government may choose to adopt, or build on the regulatory process from December, 2016[3].
    e. The Australian Government should consult with industry in developing a mandatory fuel efficiency standard.
2. A fuel efficiency standard should be considered separately from a vehicle noxious emissions standard or a fuel quality standard, as these are independent regulations. The 2016 regulatory process to investigate fuel efficiency standards assumed there would be no change to existing vehicle noxious emission or fuel quality standards[3].

    The Australian Government's priority should be to develop a fuel efficiency standard to encourage greater supply of fuel-efficient vehicles to Australia, including electric vehicles, and ensure the light vehicle fleet decarbonisation aligns with net zero.

    A secondary priority should be to adopt Euro 6d (vehicle emissions standard) initially for diesel vehicles – given local diesel fuel quality does not differ significantly from international fuel; and from 2024 for petrol vehicles - once petroleum in Australia is produced at the quality levels required to meet Euro 6d (ultra-low sulphur content).
3. Investment decisions by car manufacturers today will affect the available supply of fuel-efficient vehicles, including electric vehicles, over the next 5 to 10 years. Most G20 countries already have fuel efficiency standards and are not facing the same magnitude of challenge as Australia in securing electric vehicles. It is critical Australia implement a strong fuel efficiency standard as soon as possible to ensure we can meet both our interim and long-term emission reduction commitments.

1 https://iea.blob.core.windows.net/assets/e0d2081d-487d-4818-8c59-69b638969f9e/GlobalElectricVehicleOutlook2022.pdf
2 https://www.energy-transitions.org/wp-content/uploads/2020/09/Making-Mission-Possible-Full-Report.pdf
3 https://www.infrastructure.gov.au/sites/default/files/migrated/vehicles/environment/forum/files/Vehicle_Fuel_Efficiency_RIS.pdf

Stage 2: Develop a Mandatory Fuel Efficiency Standard

A mandatory light vehicle fuel efficiency standard should meet the following objectives:

a. Be consistent with Australia's commitment to achieve net zero by 2050, and support a transition in the nation's light vehicle fleet that is consistent with this commitment i.e. aim for 100% zero emission car sales by 2035.

b. Adopt the use of the World harmonised Light vehicle Testing Procedure (WLTP) as a replacement of the older NEDC emissions test currently used in Australia, to align with New Zealand, Japan and the European Union.

c. Consider separate targets for cars (MA, MC) and light commercial vehicles (NA).

d. Considering Australia's current market position, develop fuel efficiency targets that put the country's new light vehicle market on a trajectory that broadly aligns with the targets set in the US, New Zealand and the European Union by 2030 – at the latest.

e. Provide an initial mechanism to allow manufacturers to gain so-called "super-credits" for selling more battery electric, plug-in hybrid electric vehicles and hydrogen fuel cell vehicles, to encourage greater supply of these vehicles in the initial years of the scheme. These super-credits should be phased out by 2028.

f. Conventional hybrid vehicles should not be eligible for any super-credits as they cannot operate at zero-emissions for any significant distance.

g. The use of excessive 'super credits' and 'off-cycle credits' are generally sought and rejected during the development of similar standards around the world. The Australian Government should be conscious to accepting standard design loopholes which undermine the integrity of the fuel efficiency targets.

h. To maximise the integrity of the fuel efficiency standard no other credits should be included in the scheme that would allow car manufacturers to artificially reduce the gap between their new vehicle sales emissions, and the annual fuel efficiency target. This includes no credits for special paint, aerodynamics, heating/air-conditioning systems, safety systems, etc.

i. Car manufacturers should be provided a one-year grace period during the first 3 years of the standard operating in which they can avoid penalties.

j. Credits should be available to car manufacturers that do not exceed the fuel efficiency target, and these credits can be traded with car manufacturers that do exceed the target. These trades can be facilitated through the pooling of multiple manufacturers to meet that year's fuel efficiency target. These pooling arrangements are to be negotiated between car manufacturers and can vary from year to year.

k. Credits can be carried over to subsequent years.

l. A penalty should be imposed on car manufacturers (or pools of car manufacturers) that exceed the fuel efficiency target in terms of the average emissions rate of new vehicles sold. This penalty should increase over time and be based on the exceedance of the target in grams of CO_2 per kilometre multiplied by the total number of vehicles sold.

m. The mandatory fuel efficiency targets can also be amended over time to respond to market conditions but must remain consistent with achieving net zero by 2050, or future amendments to Australia's net zero commitment.

What are fuel efficiency targets?

Fuel efficiency targets – also referred to as a fuel efficiency standard - have been introduced around the world, including in similar markets, such as: the US[4], New Zealand[5] and the EU[6]. Fuel efficiency targets involve manufacturers paying a penalty for exceedance of carbon emissions targets set for the average of new vehicles they sell. Manufacturers also receive credits to trade with other manufacturers in the instance of beating these carbon emissions targets. These targets are adjusted over time to align an increase in the efficiency of the new vehicle fleet with the necessary reduction in emissions to achieve climate change targets.

Under the EU fuel efficiency standard, each zero-emission vehicle (0 g/km CO_2) sold today is worth approximately $18,000 in credits to be used to offset penalties associated with selling ICE vehicles [7]. This example highlights the significant signal being sent to vehicle manufacturers to decarbonise their new vehicle portfolio, and it is therefore no surprise that markets with such strong signals are being prioritised for the supply of fuel-efficient and electric vehicle models.

What is the current situation in Australia?

A voluntary target scheme has been introduced by the Federal Chamber of Automotive Industries (FCAI)[8] for its car manufacturer members. While discussion of different options is a welcome approach, unfortunately this voluntary scheme puts Australia on pathway that is 5 to 10 years behind comparable markets, meaning Australia would continue to miss out on securing a greater number of affordable fuel-efficient and electric vehicle models.

For example, this voluntary scheme would see the average new car with CO_2 emissions of around 113 g/km by 2030 (based on WLTP emissions test[9]). The EU's target is already 95 g/km today, the US is targeting 108 g/km by 2025[10], and New Zealand is targeting 113 g/km by 2025. By 2030, these markets are expected to be closer to 60 g/km (maximum) – in other words, almost half the FCAI's 2030 target.

It should be noted that there are also a number of credits built into the FCAI's voluntary fuel efficiency scheme which provide manufacturers with the opportunity to artificially meet fuel efficiency targets for selling vehicles with certain features e.g. solar reflective paint, even if average tailpipe emissions are above the target. These kinds of off-cycle credits undermine the integrity of the fuel efficiency standard.

Fuel efficiency targets should be designed to support Australia in achieving net zero by 2050.

4 https://www.nhtsa.gov/laws-regulations/corporate-average-fuel-economy
5 https://www.transport.govt.nz/area-of-interest/environment-and-climate-change/clean-cars/
6 https://ec.europa.eu/clima/eu-action/european-green-deal/delivering-european-green-deal/co2-emission-performance-standards-cars-and-vans_en
7 One EV @ 0 g / km equates to a 95 g / km saving under the 2022 fuel efficiency target. EVs also currently attract a super-credit of 1.33, which equates to an equivalent carbon emission saving of 126.35 g / km. Multiplying this saving by the EU penalty of 95 euro per gram exceedance equates to a credit of 12,003 Euro, which converts to approximately $18,000. In other words, every one EV sold can reduce a vehicle manufacturers potential penalty under the EU's fuel efficiency standard by approximately $18,000.
8 https://www.fcai.com.au/library/publication/fcai_rules_for_calculating_co2_compliance.pdf
9 Note that the FCAI's scheme uses NEDC emissions rates which are less reflective of real-world conditions compared to the WLTP emissions rates used in the EU, NZ, and in other markets.
10 Note this target has been converted from the US's EPA test cycle to the WLTP test cycle for consistency in comparing targets.

What are the potential economic benefits and costs of introducing fuel efficiency targets in Australia?

In 2016, the Bureau of Infrastructure, Transport and Regional Economics (BITRE) undertook a benefit-cost analysis for three fuel efficiency targets as part of the Ministerial Forum on Vehicle Emissions, established by the Australian Government[11]. The three targets (based on the older NEDC emissions test) considered for the year 2025 were:

- Target A: 105 g CO_2/km
- Target B: 119 g CO_2/km
- Target C: 135 g CO_2/km

Across all three targets, the analysis found the main benefit of introducing these fuel efficiency targets would be a reduction in fuel costs of $10.8 to $27.5 billion. Additionally, greenhouse gas emissions would be reduced by 25 to 65 million tonnes by 2030. The main cost was the additional production cost of supplying vehicles incorporating technologies required to meet the proposed targets, however, these costs were more than offset by fuel savings, leading to a net benefit across all three targets of $5.8 to $13.9 billion, and a benefit-cost ratio of 1.86 to 1.97. A summary of BITRE's estimated benefits and costs is included below:

Estimated Benefits and Costs by 2040

Options	Target A 105gCO_2/km phased in from 2020 to 2025 (NEDC)	Target B 119gCO_2/km phased in from 2020 to 2025 (NEDC)	Target C 135gCO_2/km phased in from 2020 to 2025 (NEDC)
Fuel Savings[a]	$27.5 billion	$19.7 billion	$10.8 billion
Greenhouse gas reduction benefit	$2.7 billion (65Mt by 2030, 231Mt CO_2 by 2040)	$1.9 billion (46Mt by 2030, 164Mt CO_2 by 2040)	$1.0 billion (25Mt by 2030, 91Mt $CO_2$by 2040)
Total savings	$30.1 billion	$21.6 billion	$11.8 billion
Total costs	$16.2 billion	$11.2 billion	$6 billion
Net benefits	$13.9 billion	$10.4 billion	$5.8 billion
Benefit Cost Ratio	1.86	1.93	1.97
Cost of Abatement[b]	-$48.70/tonne	-$52.00/tonne	-$52.60/tonne

[a] Excludes taxes such as excise and GST which are considered transfers in a benefit-cost analysis.
[b] Additional production cost, minus fuel savings, divided by tonnes of CO_2 avoided by 2040.

BITRE's analysis found that at a retail fuel price of $1.30 per litre, the average motorist purchasing an average passenger vehicle in 2025 could save between $237 and $519 in fuel costs per year as a result of fuel efficiency targets. For an average light commercial vehicle, the fuel cost savings were estimated to be between $182 and $666 per year.

Vehicle manufacturers have adopted a range of different technologies to meet fuel efficiency targets overseas. As a result, it is difficult to definitively assess the impact on the upfront cost of vehicles. The BITRE study provided a range of estimates, ranging from a peak of $819 to $1,922 for passenger vehicles, and $754 to $3,121 for light commercial vehicles. Using the average of these figures, this would equate to net cost savings being delivered to consumers after around 3.5 years for passenger vehicles, and 4.5 years for light commercial vehicles.

11 https://www.infrastructure.gov.au/sites/default/files/migrated/vehicles/environment/forum/files/Vehicle_Emissions_Discussion_Paper.pdf

While it would be necessary to update this analysis based on a series of proposed new fuel efficiency targets, updated fuel prices, and recent car usage patterns, these figures provide useful insight into the approximate magnitude of costs and benefits associated with the introduction of fuel efficiency targets.

These figures do not, however, account for the impact of increased availability of electric vehicles as a result of the introduction of ambitious fuel efficiency targets. This is expected to lead to:

- Reduced upfront cost of electric vehicles due to increased competition
- Reduced operating costs of electric vehicles, relative to petrol/diesel vehicles, and
- Broader economic benefits of redirecting current spending on imported fossil fuels, to Australian-made electricity for powering electric vehicles.

What does Australia need to do to increase the supply of electric vehicles to align with net zero?

As shown in several international forecasts[12,13], achieving net zero by 2050 will require all light vehicles, and the vast majority of heavy vehicles, to be fully decarbonised. This effectively means a 100% zero emission vehicle fleet by 2050. With light vehicles generally having an average life of around 15 years, this means that the last new petrol/diesel light vehicles need to be sold by around 2035 to achieve a 100% zero emission vehicle fleet by 2050.

The EVC recommends that the Federal Government introduces fuel efficiency targets that recognise the unique profile of our market today, while aiming to align with the ambition of the US, New Zealand and EU schemes by 2030 (at the latest), and ultimately meet the primary objective of 0 grams of CO_2 per km by 2035 i.e. 100% zero emission vehicle sales by 2035.

While detailed modelling and consultation will be required to inform interim targets, indicative figures are included below for initial guidance (based on WLTP emissions ratings):

- less than 115 g CO_2 per km by 2025 for cars (~30% reduction), and less than 60 g CO_2 per km by 2030 (~64% reduction);
- less than 170 g CO_2 per km by 2025 for light commercial vehicles (~28% reduction), and less than 85 g CO_2 per km by 2030 (~64% reduction).

These interim targets are based on an assumed linear reduction in emissions for cars and light commercial vehicles from today to 0 grams CO_2 per km by 2035. As compared to previous discussions in Australia which focused on NEDC emissions ratings, the figures above are based on WLTP emissions ratings to align with New Zealand, Japan and the EU. For reference purposes, approximate NEDC emissions ratings are included below:

- less than 105 g CO_2 per km by 2025 for cars, and less than 55 g CO_2 per km by 2030;
- less than 150 g CO_2 per km by 2025 for light commercial vehicles, and less than 75 g CO_2 per km by 2030.

Note, these targets largely align with those proposed by BITRE in 2016[14].

12 https://www.energy-transitions.org/wp-content/uploads/2020/09/Making-Mission-Possible-Full-Report.pdf
13 https://iea.blob.core.windows.net/assets/deebef5d-0c34-4539-9d0c-10b13d840027/NetZeroby2050-AroadmapfortheGlobalEnergySector_CORR.pdf
14 https://www.infrastructure.gov.au/sites/default/files/migrated/vehicles/environment/forum/files/Vehicle_Emissions_Discussion_Paper.pdf

On the following page, international fuel efficiency targets have been plotted against a linear reduction in emissions for Australia (in green) from our current emissions rates today to 0 g CO_2 per km by 2030 - for both passenger vehicles (cars/SUVs) and light commercial vehicles.

On the graphs, dashed lines represent the future fuel efficiency targets that would be required under each scheme to achieve the primary objective of 0 grams CO_2 per km by 2035 – to align with net zero by 2050.

The dashed pink line in the previous figures represents the EU's Fit-for-55 proposal, which is currently progressing through the EU parliament, and aims to legislate a formal target of 0 g CO_2 per km by 2035[15].

As shown, a linear reduction in fuel efficiency targets for Australia would be less aggressive than New Zealand's scheme but see our country align with the US and EU by around 2030, and ultimately plot a reasonable pathway to 0 grams CO_2 per km by 2035.

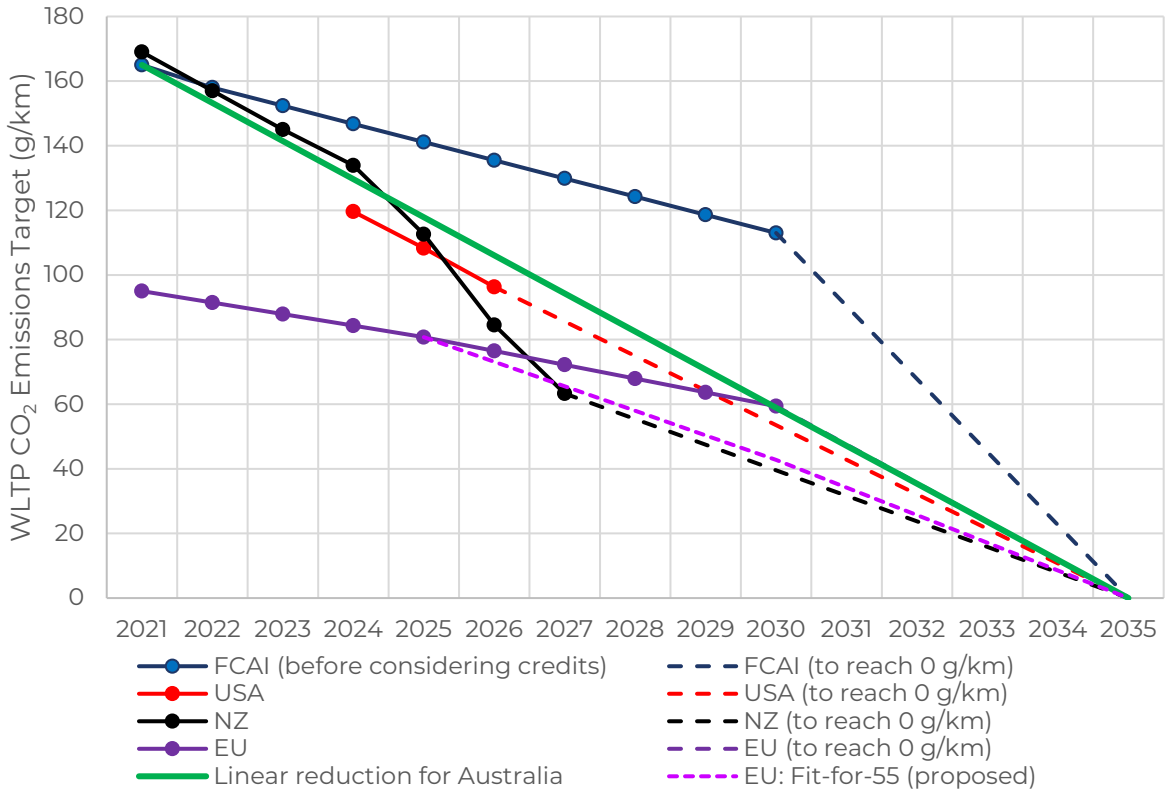
This should be considered as the minimum level of ambition for Australia to have a policy that is competitive with international markets and that enables the nation to secure greater supply of fuel-efficient and electric vehicle models.

While the FCAI's design of voluntary fuel efficiency targets is a welcome step in the right direction, in reviewing those targets (in blue) it is clear there is a need for a significant increase in ambition to align with other markets. Importantly, it should be noted that this blue line represents a best-case scenario, with many of the off-cycle credits built into the FCAI's scheme meaning that actual emissions rates are expected to be even higher than the blue line. Without an increase in ambition, Australia is unlikely to secure a greater number of fuel-efficient and electric vehicle models. It should also be noted that the FCAI's voluntary scheme includes heavy SUVs (MC) under the Light Commercial Vehicle (NA) targets, separate from the car targets (MA)

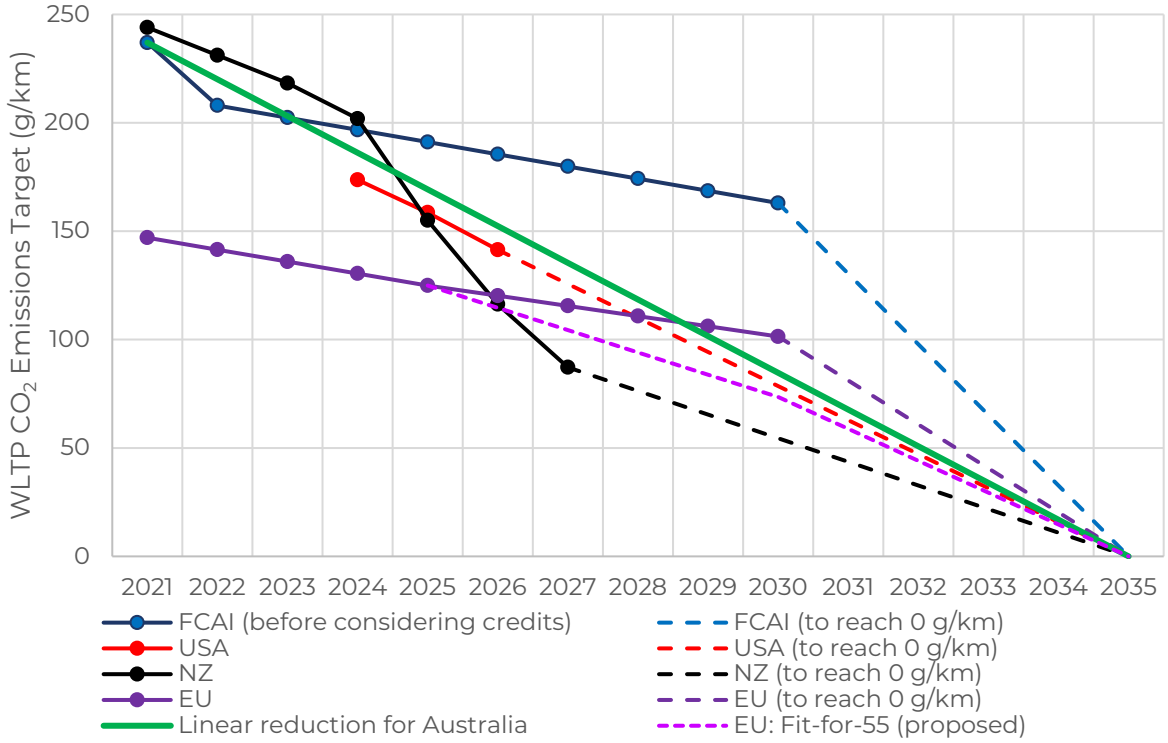
In addition to fuel efficiency targets, Australia should also introduce a strong package of national incentives, worth up to $10,000 (initially) to reduce the upfront cost of purchasing an EV, and stimulate demand until the market is self-sustaining i.e. once approximately 30% of new vehicles sales are electric. This incentive package could be made up of a combination of rebates, zero-interest loans and tax exemptions.

15 https://www.europarl.europa.eu/news/en/press-room/20220509IPR29105/fit-for-55-meps-back-co2-emission-standards-for-cars-and-vans

Cars / SUVs



Light Commercial Vehicles



*Note: FCAI fuel efficiency targets are published based on the NEDC emissions test. Estimated conversions to WLTP, assuming petrol, have been included in the figures above. Similarly, US targets are published based on the EPA emissions test, and so estimated conversions to WLTP, assuming petrol, have been included in the figures above for consisitency in comparing targets. These conversion estimates are based on factors developed by the International Council on Clean Transportation for New Zealand. More detail on these conversion factors can be found here: https://www.transport.govt.nz/assets/Uploads/NZ-conversion-factor-report_20210302_final-1.pdf

Is there anything that state/territory governments can do to support increased EV supply?

In the absence of national leadership on introducing fuel efficiency targets, state/territory governments will need to explore alternative mechanisms for increasing EV supply. While fuel efficiency targets would need to be implemented nationally, individual states/territories could consider the introduction of sales mandate programs, similar to those in California[16], British Columbia[17], Quebec[18], China[19], etc.

EV or zero emission vehicle (ZEV) sales mandates are similar to fuel efficiency targets, except the mandate target is specific to the number of EVs sold per year per manufacturer. Manufacturers need to achieve a target each year, which increases over time, and pay a penalty when they fall short. Alternatively, manufacturers receive tradeable credits if they exceed the target.

Detailed consultation and modelling would be required to establish such a scheme, but some general guidance on potential targets has been provided below:

Year	Sales target that mandate target should be linked to
2025	10%
2027	30%
2030	55%
2035	100%

Sales mandate targets do not necessary translate 1:1 to the number of EVs sold, as generally these schemes control for the driving range of EVs, providing higher credits to longer-range EVs. This also enables credits for plug-in hybrid electric vehicles (PHEVs), but at a lower rate compared to battery electric vehicles – given the lower electric driving range of PHEVs.

It should be noted that this type of scheme could also be introduced nationally as an alternative to fuel efficiency targets if it proved to be a more feasible option. The primary disadvantage is that it doesn't directly encourage a reduction in general fuel consumption for all vehicles. Conversely, a sales mandate does directly strengthen the motivation for vehicle manufacturers to supply and sell increasing numbers of EVs. State/territory government advocacy for national fuel efficiency targets or a ZEV sales mandate will be important for securing support for an ambitious scheme.

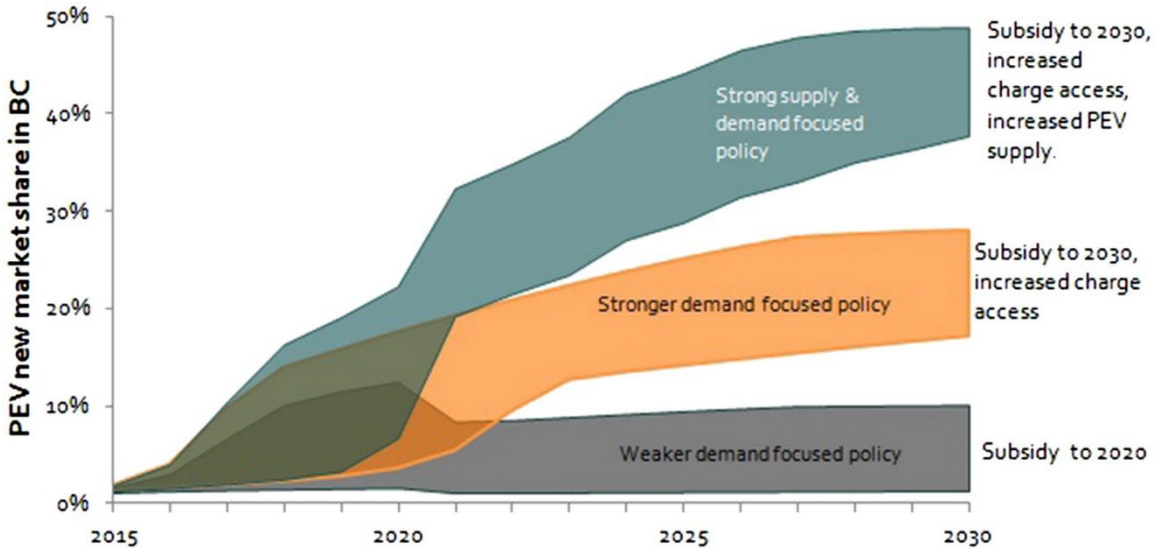
Finally, while establishing fuel efficiency targets for heavy vehicles would be an even more complex approach given the diversity of vehicle classes; a ZEV sales mandate scheme could be more appropriate. California has already legislated a ZEV sales mandate for heavy vehicles, starting from 2024[20]. Such an approach could start at a modest rate, and gradually ramp over time to align with net zero by 2050.

16 https://theicct.org/wp-content/uploads/2021/06/Zero-Emission-Vehicle-Mandate-Briefing-v2.pdf
17 https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/transportation/bc_zev_actregulation_guidancedoc_version1_20210621.pdf
18 https://www.environnement.gouv.qc.ca/changementsclimatiques/vze/index-en.htm
19 https://theicct.org/publication/chinas-new-energy-vehicle-mandate-policy-final-rule/
20 https://afdc.energy.gov/laws/12473

What evidence is there that regulation can increase model availability / vehicle supply?

While it is difficult to disentangle the effects of supply-focussed policy from other policy measures, there is evidence of the need for a combination of supply- and demand-focussed policies to significantly increase the adoption of electric vehicles. One Canadian study from 2017 [21] provides an indicative overview of the impacts of supply- and demand-focussed policies. This study highlighted that supply-focussed policies were critical for achieving greater than 30% EV sales in that market by 2030 – see below.

Projected EV market share in British Columbia, Canada under supply- and demand-focussed policies



Source: https://www.sciencedirect.com/science/article/pii/S0040162516307570

For state-based supply-focussed policies, where it is easier to measure the effects of different policies within a single national market, there is also evidence of the supportive role of regulation, like sales mandates and fuel efficiency standards, on EV model availability.

The International Electric Vehicle Policy Council at University of California, Davis, notes that supply-focussed policies, like sales mandates, encourage vehicle manufacturers to make more EVs available and to market them more heavily[22]. They also note that US states that have a supply-focussed policy, like a sales mandate, tend to have a greater number of EV models available, and as result, higher EV sales than other regions[23].

The International Council on Clean Transportation (ICCT) has also noted that supply-focussed policies can be a powerful tool in overcoming critical barriers to electrification, including insufficient model availability[24]. ICCT analysis has demonstrated a statistical correlation between EV model availability and sales[25]. For example, California, which has a sales mandate, has more than 3 times the average number of zero emission models available in the US, and accounted for nearly half of all US sales, as at the time of the ICCT's analysis in 2019[24].

21 https://www.sciencedirect.com/science/article/pii/S0040162516307570
22 https://phev.ucdavis.edu/wp-content/uploads/zev-mandates-policy-guide.pdf
23 https://pubs.acs.org/doi/pdf/10.1021/acs.est.1c08581
24 https://theicct.org/wp-content/uploads/2021/06/ICCT_zev_mandates_India_20190703.pdf
25 https://www.theicct.org/sites/default/files/publications/Transition_EV_US_Cities_20180724.pdf

Another example comes from the Quebec in Canada, where the State Government noted that when it first introduced a supply-focussed policy (a sales mandate) in 2016, only 66% of the models available in California were also marketed in Quebec. By 2021, that had increased to 85%, with vehicle manufacturers stating that they were prioritising the Quebec market as a result of the supply-focussed policy[26]. The inclusion of credits in their supply-focussed policy was also noted as an important feature for creating a business opportunity for marketing and selling more electric vehicle models in the state.

What role will incentives play in improving the supply of EVs?

As highlighted, a combination of supply- and demand-focussed policies are critical for achieving significant EV market share. As such, incentives will remain a critical requirement for EV policy in Australia until around 30% of new vehicle sales are electric – this being the point at which the market is expected to be self-sustaining. If Australia was to achieve this target by 2027, this would equate to a fleet of approximately 1 million vehicles – which is the EVC's official target for 2027, and would place Australia on a trajectory towards 50%+ EV sales by 2030, in line with many state/territory EV sales targets.

Incentives provide two primary benefits. First, the cost of EVs is reduced, helping to stimulate demand. Secondly, this stronger demand helps to build the business case for vehicle manufacturers to introduce more EV models to the local market.

A strong, sustained, national incentive package will also help to build industry support for ambitious fuel efficiency targets, demonstrating that Australia is committed to supporting the transition to EVs, and is actively stimulating demand to enable vehicle manufacturers to meet falling fuel efficiency targets over time.

Are fuel efficiency targets the same as a vehicle emissions standard?

Fuel efficiency targets and a vehicle emissions standard are often mistakenly used interchangeably. It is important to understand that fuel efficiency targets are focused on carbon emissions, with the objective of reducing fuel consumption over time. A vehicle emissions standard focuses on noxious emissions, such as particulate matter, carbon monoxide and nitrogen oxides. These emissions have clear, established health impacts, and so the primary objective for a vehicle emissions standard is to reduce air pollution, and improve public health over time. Australia already has vehicle emissions standards for light and heavy vehicles – albeit outdated, and weak; but we do not yet have fuel efficiency targets.

While there is a relationship between the two, it is important to recognise that fuel efficiency targets are the primary mechanism required to increase EV supply.

Updating vehicle emissions standards to Euro 6d remains important, however, should be considered a secondary priority, and kept distinct from the introduction of fuel efficiency targets. Further information on the differences between a fuel efficiency standard and a vehicle emissions standard are included in the infographic on the final page of this briefing.

26 https://www.environnement.gouv.qc.ca/changementsclimatiques/vze/rapport-mise-oeuvre-2018-2020-en.pdf

Further Reading:

https://www.climatechangeauthority.gov.au/sites/default/files/2020-06/Light%20Vehicle%20Report/Lightvehiclesreport.pdf

https://www.iea.org/reports/global-ev-outlook-2021/policies-to-promote-electric-vehicle-deployment

https://www.sciencedirect.com/science/article/pii/S0301421517304391

https://theicct.org/sites/default/files/publications/Integrating-EVs-US-EU_ICCT_Working-Paper_22062017_vF.pdf

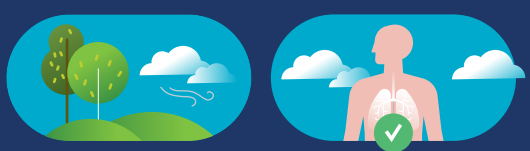
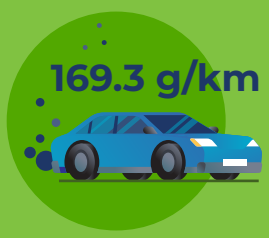
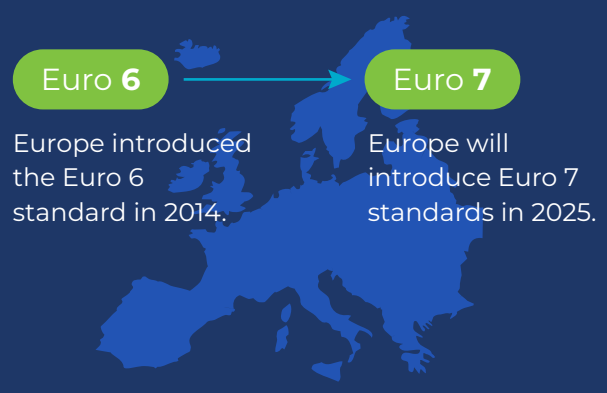
https://www.globalfueleconomy.org/media/460864/electric-vehicles-summary.pdf

https://iea.blob.core.windows.net/assets/79a0ee25-9122-4048-84fe-c6b8823f77f8/GlobalFuelEconomyInitiative2021.pdf

https://www.globalfueleconomy.org/media/792020/gfei-zero-pathway-report-2021-final-spreads.pdf

https://www.globalfueleconomy.org/media/791539/gfei-map-2020-status.pdf

ELECTRIC VEHICLE COUNCIL

	Fuel efficiency targets/CO2 emission standard (environment)	Vehicle emissions standards (health)
Why do we need them?	 Supply of electric vehicles Net-zero by 2050	 Cleaner air Reduced health impacts
What?	 Fuel efficiency targets measure the amount of carbon that is emitted on average from an exhaust pipe in grams per km. Fuel efficiency targets are measured against the average of a vehicle manufacturer's total sales. Fuel efficiency targets involve manufacturers paying a penalty for exceedance of the target set for the average of new vehicles sold. Manufacturers also receive credits to trade with other manufacturers in the instance of beating the fuel efficiency target. The aim of fuel efficiency targets is to encourage the sale of more efficient and zero emissions vehicles.	 Vehicle emissions standards measure the noxious fumes and particulate matter emitted from an exhaust pipe. The aim of Euro 6 emissions standards is to reduce the levels of harmful exhaust emissions, chiefly: **NOx** Nitrogen oxides **CO** Carbon monoxide **HC** Hydrocarbons **PM** Particulate matter
Australian context	Australia currently does not have mandatory fuel efficiency targets. The average emissions intensity of cars in 2019 was 169.3 g/km.  A voluntary target scheme has been introduced by the FCAI for its OEM members in Australia. Unfortunately, this voluntary scheme puts Australia on pathway that is 5 to 10 years behind comparable markets.	 Australia's minimum emission standard for new light vehicles is ADR 79/04, which is based on the Euro 5 standards and is codified under the Australian Design Rules. The current plan is for Australia to move to Euro 6 standards in 2027 (or by 2025 if fuel quality improvements are introduced by 2024 - as foreshadowed in 2021).
Global context	Australia, Indonesia, Turkey, and Russia are the only G20 countries that do not have fuel efficiency targets. Fuel efficiency targets have been introduced around the world, including (converted to WLTP): **EU** 95g/km for 2020-2024 **US** 108g/km by 2025 **New Zealand** 113g/km by 2025	 Europe introduced the Euro 6 standard in 2014. Europe will introduce Euro 7 standards in 2025.

1 ← Priority for vehicle supply 2