

Submission on the Future Fuels Discussion Paper

The federal government can improve Australia's low electric vehicle uptake through upfront purchase incentives, CO₂ emissions standards, a 100% gov fleet target and correcting its own misinformation and modelling.

Audrey Quicke April 2021

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Summary

Australia is a laggard when it comes to electric vehicle (EV) sales. A thriving EV market is necessary to decarbonise transport emissions which have risen steadily over the last three decades. EVs will also benefit household budgets, fuel security and our broader air quality.

The federal government is well placed to correct Australia's lagging EV take-up. It has the solutions, laid out by the tax-payer funded Australian Electric Vehicle Market Study. It is therefore disappointing that instead of implementing those solutions, the government has produced yet another paper.

The Future Fuels Discussion Paper is not a strategy to drive uptake (despite one a strategy being promised in 2019), contains no new funding commitments and disappointingly rules out policies that work like purchase incentives for EVs, fleet procurement targets and vehicle CO₂ standards.

To justify the absence of EV incentives and subsidies, the Discussion Paper relies on modelling that claims to show EV subsidies are not value-for-money. However, this modelling is misleading. Abatement costs are not calculated using like-for-like vehicle models, and do not reflect the fuel and maintenance savings over the lifetime of an EV. Emissions comparisons are averaged over five years rather than ten years (the average life of a vehicle) and do not even try and account for EV charging from rooftop solar, thus inflating the emissions profile associated with EVs.

The Government's rush job modelling is apparently for 'illustrative purposes only' and yet has been used by numerous federal ministers to claim that EV incentives do not represent value for money and justify this do-nothing approach to EVs.

What is worse is that the modelling contradicts the Government's own 2020 Emissions Projections, and specific comments made by the Treasurer when he was the Minister for Energy.

The Government needs to come up with an actual EV strategy and the Australia Institute has made a number of recommendations to assist in that regard.

Specifically, the modelling in Attachment A of the Future Fuels Discussion Paper should be scrapped and redone in a credible and transparent way. The Final Future Fuels Strategy should provide short-term financial incentives to reduce the purchase price of an electric vehicle, include light vehicle CO₂ emissions standards, and set a Government fleet target of 100% electric vehicles by 2030.

Introduction

Internationally, the electric vehicle (EV) transition is well underway. In countries across the world, motorists are moving away from fossil-fuelled vehicles, assisted by ambitious policies to stimulate electric vehicle roll-out and decarbonise the transport sector.

Australia lags behind the rest of the world in EV policy and uptake. With no strategy to decarbonise transportation, no CO₂ emissions standards, and no incentives to bridge the gap between the cost of an EV and an Internal Combustion Engine Vehicle (ICE) – Australian EV uptake has been slow compared to other OECD countries.¹ A robust plan to support EVs is needed to decarbonise the Australian transport sector and make EVs accessible for everyday Australians.

Achieving the goals of the Paris Agreement requires steep reductions in emissions across all sectors. Transport is one of the fastest growing sources of emissions in Australia, increasing by 62.4% in March 2020 from 1990 levels (note Australia signed up to the UN Framework Convention on Climate Change in 1992).² For the year to September 2020, transport emissions accounted for 18% of Australia's greenhouse gas (GHG) emissions, making transport the third largest emitting sector.³ The majority of Australia's transport emissions are from light duty vehicles (cars and light commercial vehicles).⁴

The Paris Agreement aims to limit global temperature rise to well below 2 degrees Celsius and fully decarbonise economies by 2050. The Australian Academy of Science suggests that developed economies should decarbonise sooner than 2050- in the next 10 to 20 years.⁵ Given the average age of motor vehicles in Australia is ten years (with many lasting 15 years),⁶ the vast majority of new car sales should be zero emissions by 2035 to reach net-

¹ Electric Vehicle Council (2021) *New electric car sales figures show Australia stalled with hazards flashing.* https://electricvehiclecouncil.com.au/new-electric-car-sales-figures-show-australia-stalled-with-hazards-flashing/

² Department of Industry, Science, Energy and Resource (2021) *Quarterly Update of Australia's National Greenhouse Gas Inventory: March* 2020, p 9. https://www.industry.gov.au/sites/default/files/2020-08/nggi-quarterly-update-march-2020.pdf

³ Ibid, p 9.

https://www.industry.gov.au/sites/default/files/2021-02/nggi-quarterly-update-september-2020.pdf

⁴ Department of Industry, Science, Energy and Resources (2020) *Australia's emissions projections 2020*, p 29. https://www.industry.gov.au/sites/default/files/2020-12/australias-emissions-projections-2020.pdf

⁵ Australian Academy of Science (2021) *The Risks to Australia of a 3°C Warmer World,* https://www.science.org.au/files/userfiles/support/reports-and-plans/2021/risks-australia-three-degwarmer-world-report.pdf

⁶ ABS (2020) *Motor Vehicle Census, Australia*. https://www.abs.gov.au/statistics/industry/tourism-and-transport/motor-vehicle-census-australia/31-jan-2020

zero emissions by 2050.⁷ According to the UNFCCC, progress is underway in many leading vehicle markets to achieve 100% new vehicle sales by 2035.⁸ Jurisdictions around the world have introduced targets to phase out internal combustion engine (ICE) vehicle sales, including 19 countries (See the Annex for list of countries with ICE phase out goals). Australia Institute research also shows the majority of Australians support a similar ban on new petrol and diesel vehicles from 2035 in Australia.⁹





Source: Department of Industry, Science, Energy and Resources

Source: Department of Industry, Science, Energy and Resources – GHG quarterly update September 2020

Australia has no nationally coordinated plan for the transition to clean vehicles. In 2019, the Senate Select Committee on Electric Vehicles put forward 17 recommendations, including the development of "a national EV strategy to facilitate and accelerate EV uptake and ensure Australia takes advantage of the opportunities, and manages the risks and

⁷ AVERE, BEUC, et al. (2020) Call on the European Commission President to set an EU-wide end date for sales of internal combustion engine cars and vans by 2035. https://www.politico.eu/wpcontent/uploads/2020/09/2020_09_loint_letter_EU-

wide_end_date_sales_cars_vans_2035.pdf?utm_source=POLITICO.EU&utm_campaign=363f00401a-EMAIL_CAMPAIGN_2020_09_14_05_00&utm_medium=email&utm_term=0_10959edeb5-363f00401a-189774485

⁸ United Nations Global Climate Action (2020) *Climate Action pathway- Transport Executive Summary*, p 4. https://unfccc.int/news/un-climate-action-pathways-map-route-from-covid-19-recovery-to-resilient-net-zero-economy

⁹ Australia Institute (2020) *Majority of Australians Support EV Policies, Including Subsidies for New Car Purchases* https://australiainstitute.org.au/post/majority-of-australians-support-ev-policies-including-subsidies-for-new-car-purchases/

challenges, of the transition to EVs".¹⁰ While the majority of the Senate Committee's recommendations were ignored, the Australian Government promised to deliver an EV strategy. The promised strategy was then consistently delayed - postponed from 2019 to mid-2020,¹¹ to late-2020¹² - and finally taking the form of a 'consultation paper' rather than a strategy and from EVs to 'future fuels'.¹³

Vehicle manufacturers have demonstrated a reluctance to bring vehicles to markets with no clear commitment to EVs, including in Australia. Recently, Managing director of Volkswagen Australia Michael Bartsch commented on the effect of Australian EV policy on Volkswagen's decisions on where to market its EV models:

"Hardly a day goes by when we don't get an inquiry from someone who would dearly love to buy a Volkswagen electric vehicle, and we have to tell them we don't know when we can introduce them. It seems to get more and more uncertain... I guess the way I would put it is that it is embarrassing"¹⁴

Australia is trailing other nations in EV adoption. For the year 2020, EVs (battery and plug-in electric vehicles) accounted for 0.7% of new vehicle sales, compared to the global average of 4.2%.¹⁵ In Norway, where ambitious public policies promote EV uptake, 75% of new car sales are EVs.¹⁶

In February 2021 the Government delivered the Future Fuels Discussion Paper (FFDP) – the consultation paper that is the Morrison government's central plan to reducing carbon emissions from Australia's road transport sector. It contains no new funding commitments, no EV uptake targets, and no vehicle emissions standards.¹⁷ Critically, the FFDP rules out

¹⁰ Senate Select Committee on Electric Vehicles (2019) *Recommendations*. https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Electric_Vehicles/ElectricVehicles/Rep ort/b02

¹¹ Schmidt (2020) *Coalition says no plans for electric vehicle strategy until mid-2020.* https://thedriven.io/2019/03/26/coalition-says-no-plans-for-electric-vehicle-strategy-until-mid-2020/

¹² Angus Taylor MP (2020) Supporting new technology to drive uptake of electric vehicles. https://www.minister.industry.gov.au/ministers/taylor/media-releases/supporting-new-technologydriveuptake-electric-vehicles

¹³ Environment and Communications Legislation Committee (2021) *Proof Committee Hansard- Monday 22 March 2021.* https://www.aph.gov.au/Parliamentary_Business/Hansard/Estimates_Transcript_Schedule

¹⁴ O'Malley (2021) VW boss says 'embarrassing' rules stop cheap electric car imports. https://www.smh.com.au/business/consumer-affairs/vw-boss-says-embarrassing-rules-stop-cheap-electriccar-imports-20210322-p57d85.html

¹⁵ Harris (2021) Maker of world's most popular electric car blasts Australia's lack of ambition. https://www.smh.com.au/politics/federal/maker-of-world-s-most-popular-electric-car-blasts-australia-s-lackof-ambition-20210302-p5772f.html

¹⁶ Fraser (2021) *EV sales figures show Australian uptake in the slow lane.* https://www.whichcar.com.au/car-news/australian-ev-uptake-stuck-in-the-slow-lane

¹⁷ DISER (2021) *Future Fuels Strategy: Discussion Paper*. https://consult.industry.gov.au/climatechange/future-fuels-strategy/

financial incentives for EV uptake, despite most G20 countries offering incentives that are shown to successfully drive early-stage adoption of electric vehicles.¹⁸

This submission addresses the priority initiatives of the FFDP, highlights successful EV policies that have been excluded from the FFDP, and identifies the misleading modelling included in the FFSD.

¹⁸ BloombergNEF (2021) G20 Zero-Carbon Policy Scoreboard. https://assets.bbhub.io/professional/sites/24/BNEF-G20-Zero-Carbon-Policy-Scoreboard-EXEC-SUM.pdf

Priority Initiatives

The FFDP lists five priority initiatives:¹⁹

- 1. Electric vehicle charging infrastructure and hydrogen refuelling infrastructure where it is needed,
- 2. early focus on commercial fleets,
- 3. improve information for motorists and fleets,
- 4. integrating battery electric vehicles into the grid,
- 5. and supporting Australian innovation and manufacturing.

While these initiatives are welcome, the FFDP does not detail how they will be achieved, or the policy mechanisms that will support them. Furthermore, any policies to support these initiatives will be restricted by the limited investment underpinning them.

The FFDP contains no new funding commitments. The funding commitments listed in the FFSD (see figure 2, below) come from pre-existing sources: The Australian Renewable Energy Agency (ARENA), the Clean Energy Finance Corporation (CEFC), and the \$72 million Future Fuels Fund (the Fund) under ARENA, as announced in the October 2020 budget.

Figure 2. Future Fuels Strategy - Investment



Source: Future Fuels Strategy Discussion Paper, page 6.

It is unclear how much funding is available for each initiative. For example, priority one acknowledges that EV charging infrastructure is needed, but does not stipulate how much of the Fund will be co-invested in EV charging stations or used to support commercial fleets undertake EV charging station installation projects. According to ARENA, the First Round of the Fund will make \$16.5 million available to fund EV charging infrastructure, while future

¹⁹ DISER (2021) Future Fuels Strategy: Discussion Paper, p 6.

rounds will support 'other future fuels including hydrogen and biofuels, as well as reducing barriers for other road transport users such as commercial fleets, trucks and buses.'²⁰ This suggests that only a limited amount of the Fund will be available for EV charging infrastructure.

FLEETS FIRST APPROACH

The FFDP takes a 'fleets first' approach, acknowledging the effective role that bulk fleet purchases play in EV adoption. Businesses accounted for 40% of new light vehicle sales in 2020, making fleet purchasing decisions a major potential driver of EV uptake.²¹ The relatively fast turnover rate of fleet vehicles means electrification of fleets will drive the expansion of a second-hand EV market in Australia.

However, despite purporting to focus on transitioning fleets, the FFDP offers little in the way of policies to encourage fleet electrification. Action 2.1 states '[t]he Future Fuels Fund will support businesses to trial new vehicle technologies and fuel options across the spectrum of fleet vehicles used in Australia, and help with infrastructure needs.' It is not clear how much of the Fund will be allocated to this action, how the funding will be allocated, or which vehicle technologies will be funded.

The FFDP does not include government fleet targets or incentives/tax exemptions to accelerate fleet uptake. A government fleet target for new light passenger vehicles would demonstrate leadership and send a strong signal to vehicle manufacturers. The Australian EV Market Study conducted interviews with Original Equipment Manufacturers (OEMs) to understand the impact of fleet targets on EV purchases and model availability. It found:

"if government or private fleet operators see an overseas model that will suit their fleet requirements, and they can promise 200 sales per year, OEMs may be willing to introduce that model into Australia."²²

Thus, Government fleet targets not only increase EV sales, but could also lead to the introduction of new EV models in Australia.

Fringe benefits tax (FBT) exemptions are another mechanism to drive fleet uptake that is not addressed in the FFDP. FBT exemptions for EVs have been recommended by the

²⁰ ARENA (2021) Future Fuels Fund Round 1: Public Battery Electric Vehicle Fast Charging Infrastructure Guidelines, p 2. https://arena.gov.au/assets/2020/04/future-fuels-fund-round-1-ev-guidelines.pdf

²¹ DISER (2021) Future Fuels Strategy: Discussion Paper, p 4.

²² Energeia for ARENA (2018) Australian EV Market Study Report, p 23. https://arena.gov.au/knowledge-bank/australian-electric-vehicle-market-study/

NRMA,²³ the Chair of the Senate Select Committee on EVs,²⁴ and others.²⁵ Providing an FBT exemption for electric vehicles (including through novated leases) until they reach price parity with ICE vehicles would counteract their higher capital costs, making them a more attractive option for fleet operators. The FBT exemption could also be extended to novated leases.²⁶ In the last week of March, the Federal Labor Party supported a form of FBT exemption, raising further questions as to why this is not included in the FFDP process.

Priority Three of the FFDP (Improving information for motorists and fleets) would be more effective at driving EV uptake if coupled with policies to make EVs more affordable. Australian fleet operators would prefer the Government provide subsidies to reduce the cost of EVs than provide knowledge about EVs and infrastructure.

The Australasian Fleet Management Association (AFMA) surveyed 177 fleet operators about government policies to encourage EV transition. Just under half (45%) rank 'subsidies to reduce the cost of EVs' as a top 3 policy, while a quarter (24%) rank 'provide knowledge about EVs and infrastructure' as a top 3 policy.²⁷

If the federal government is serious though about pursing the provision of knowledge to drive uptake, the easiest place to start is correcting the false information on EVs it provided during the 2019 election campaign.²⁸

²³ NRMA (2020) *EVs: Accelerating Adoption in Australia.*

https://www.mynrma.com.au/-/media/documents/evs/evs-accelerating-adoption-in-australia.pdf? ²⁴ Senate Select Committee on Electric Vehicles (2019) *Chairs Additional Comments.*

https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Electric_Vehicles/ElectricVehicles/Rep ort

²⁵ ClimateWorks (2016) *The path forward for electric vehicles in Australia*.

https://www.climateworksaustralia.org/wpcontent/uploads/2019/11/the_path_forward_for_electric_vehicl es_in_australia_-_submission_to_the_federal_government_vehicle_emissions_discussion_paper_1.pdf ²⁶ lbid.

²⁷ AFMA (2020) Electric Vehicles in Business Fleets.

https://afma.org.au/electric-vehicles-in-business-fleetsreport/#download

²⁸ ABC (2019) Prime Minister Scott Morrison says an electric vehicle can't tow a boat or trailer. Is he correct?, https://www.abc.net.au/news/2019-05-10/federal-election-fact-check-electric-vehicle-towboat/11078464?nw=0

Policies excluded

The FFDP omits some of the most effective policies for increasing EV uptake. The Australian Electric Vehicle Market study, prepared by ENERGEIA for government-funded bodies ARENA and CEFC conducted a market review of electric vehicle sales, stock and infrastructure, to determine which policies and regulations impact most strongly on EV purchase decisions. It found:

- An increase in direct purchase incentives would drive EV model availability and demand,
- fleet procurement targets increase model availability and overall uptake,
- and vehicle CO₂ standards (set at 105g/km) would increase EV availability and uptake in Australia.

As discussed above, fleet procurement targets are not included in the FFDP despite it apparently taking a 'fleets first approach'. Vehicle emissions standards and direct purchase incentives are also excluded from the FFDP.

CO2 EMISSIONS STANDARDS

Australia is one of the only OECD countries with no fuel efficiency standards. Mandatory fuel efficiency standards have been adopted in approximately 80% of the global light vehicle market, including in the US, EU, Canada, Japan, China, South Korea and India.²⁹

Figures released by the Federal Chamber of Automotive Industries (FCAI) show Australian light passenger vehicles emit 23% more CO₂ than their European counterparts, and Australian heavy SUVs, utes and vans emit 38% more than their European counterparts.³⁰

Fuel efficiency (CO_2) standards are key policy levers for driving EV uptake and increasing EV model availability. Research by Transport and Environment shows that when European emissions standards (set at 95g CO₂/km) came into effect, EV market share grew from 3% in 2019 to 10.5% in 2020. Following the new vehicle emissions standards, Europe saw the largest decrease in new car CO₂ emissions since data has been available.³¹

²⁹ Australian Government (2016) *Improving the efficiency of new light vehicles*.

https://www.infrastructure.gov.au/vehicles/environment/forum/files/Vehicle_Fuel_Efficiency_RIS.pdf ³⁰ The Driven (2021) *Australian cars, utes and vans are up to 40 pct dirtier than in Europe,*

https://thedriven.io/2021/03/25/australian-cars-utes-and-vans-are-up-to-40-dirtier-than-in-europe/ ³¹ Transport and Environment (2021) *Mission (almost) accomplished, p 22.*

https://www.transportenvironment.org/sites/te/files/publications/2020_10_TE_Car_CO2_report_final.pdf

A ministerial Forum on vehicle emissions was established by the Turnbull government in 2015, but has gone nowhere.³² This major policy failure is not addressed by the FFDP.

DIRECT FINANCIAL INCENTIVES

Direct financial incentives or subsidies are one of the most effective policies to drive EV uptake. Neither are included in the FFDP.

The Bloomberg G20 Zero-Carbon Policy Scoreboard report assesses the decarbonisation policies implemented by G20 countries. For road transport policies, Australia ranks third last, ahead of only Saudi Arabia and Russia – two of the world's largest oil exporters. Australia's score of 27% is well below the top score of 80% for France, Germany, and China – countries that have implemented robust policies to drive EV sales.³³

According to the Bloomberg Policy Scorecard, "Policies lowering the upfront costs have been the most effective tool for driving early-stage adoption of passenger EVs and are offered in most G20 countries."



Figure 3. Bloomberg G20 Zero-Carbon Policy Scorecard – road transport

Source: BloombergNEF (2021) p 24.

The Australian EV market study report also concludes that direct financial incentives have the biggest impact on EV purchase decisions. It finds that in Norway, the leading country in EV uptake, financial incentives impact most strongly on EV purchase decisions, with non-financial incentives playing a supporting role.³⁴ Reviewing 'leading international

³² DITRDC (2021) Ministerial Forum on Vehicle Emissions.

https://www.infrastructure.gov.au/vehicles/environment/forum/index.aspx

³³ Bloomberg New Energy Finance (2021) G20 Zero-Carbon Policy Scoreboard, p 24.

https://assets.bbhub.io/professional/sites/24/BNEF-G20-Zero-Carbon-Policy-Scoreboard-EXEC-SUM.pdf

³⁴ Energeia for ARENA (2018) Australian EV Market Study Report, p 2.

https://www.arena.gov.au/assets/2018/06/australian-ev-market-study-report.pdf

jurisdictions', it concludes that "up-front financial incentives, that reduce the purchase cost of the PEV [plug-in], were identified as the most impactful on PEV uptake."³⁵

The FFDP defends the lack of financial incentives through modelling that purportedly shows incentives are uneconomical. However, as discussed further in this submission, this modelling is misleading and was only added to the FFDP in the months before its release.

³⁵ Ibid, p 18.

Misleading modelling

The FFDP includes cost modelling that compares the total cost of ownership of EVs, ICE vehicles and hybrids, and emissions modelling that compares light vehicle emissions from EVs, ICE vehicles and hybrids.

A leaked copy of the FFDP was obtained by the media in December 2020.³⁶ There was no mention in media reporting of the cost modelling or the emissions modelling. The Department of Industry, Science, Energy and Resources was questioned about the modelling in the FFDP which was published on 5 February 2021. Department officials confirmed the modelling had been conducted 'through November and December'³⁷ – just months before the document was released. Recall this documents has been in the works since early 2019.

This suggests that the modelling used in the FFDP to justify the absence of EV incentives was conducted *after* the Government had decided on its approach and ruled out including incentives.

Department officials also confirmed that the decision to add the last-minute modelling came through engagement with the Minister's office.³⁸

Furthermore, figures from these models have been used by the Minister for Energy and Emissions Reduction, Angus Taylor, to claim that EV incentives do not represent value for money.³⁹ This is despite the FFDP clearly stating that the total cost of ownership comparison is for *'illustrative purposes only'*.⁴⁰

The modelling presents a misleading account of EV emissions and costs, as outlined briefly below.

³⁶ Clarke (2020) Australia's electric car strategy only doing 'the bare minimum', expert says of leaked draft. https://www.abc.net.au/news/2020-12-15/federal-government-draft-paper-into-electric-vehicle-useslammed/12983416

³⁷ Environment and Communications Legislation Committee (2021) *Proof Committee Hansard- Monday 22 March 202*, p 115.

³⁸ Ibid.

³⁹ Angus Taylor MP (2021) Supporting future fuel technologies and consumer choice. https://www.minister.industry.gov.au/ministers/taylor/media-releases/supporting-future-fuel-technologiesand-consumer-choice

⁴⁰ DISER (2021) *Future Fuels Strategy: Discussion Paper*, p 31.

COMPARISON OF LIGHT VEHICLE EMISSIONS ACROSS JURISDICTIONS AND GRIDS

The comparison of light vehicle emissions across jurisdictions and grids is in Attachment A of the FFDP and shown below in Figure 4. The emissions comparison is calculated using the indirect Scope 2 and 3 combined emissions factors for Australia's electricity grids averaged over 2021-2025. These are sourced from the December 2020 Emissions Projections.⁴¹





The comparison inflates the emissions associated with an EV by restricting the analysis to five years. The projected emissions factors for all Australia's electricity grids decline out to 2030. By averaging the emissions factors over a five year period rather than the ten year life-span of a vehicle, the comparison does not fully account for the declining emissions intensity of the electricity supply system over the life of a vehicle.

The comparison does not consider renewable electricity charging options. Many EV owners charge their EVs using rooftop solar. A survey of Australian EV owners conducted in 2018 found that *almost three quarters* (73%) owned rooftop solar systems and that the vast majority of charging occurred in the home (80 per cent).⁴³ Public charging stations too, are

Source: Future Fuels Strategy: Discussion Paper⁴²

⁴¹ Department of Industry, Science, Energy and Resources (2020) *Australia's Emissions Projections 2020*. https://www.industry.gov.au/sites/default/files/2020-12/australias-emissions-projections-2020.pdf

⁴² DISER (2021) Future Fuels Strategy: Discussion Paper, p 34.

⁴³ Whitehead (2019) *Clean, green machines: The truth about electric vehicle emissions.*

https://theconversation.com/clean-green-machines-the-truth-about-electric-vehicle-emissions-122619

often powered exclusively by renewable energy. Australia's largest EV charging network – Chargefox – is powered by 100% renewable energy.⁴⁴

Figures 5 and 6 (below) illustrate what the FFDP's comparison of light vehicle emissions would look like if the emissions factors were averaged over the full life of the vehicle (Figure 5), and in a scenario where EVs are charged by off-grid renewable electricity 20% of the time (Figure 6). Figures 5 and 6 do not depict the actual emission impact of vehicles, but rather highlight what the FFDP modelling would look like under different assumptions and time frames.

When the emissions profile for the full life of the vehicle is included, the FFDP's claim that 'hybrids ... have immediate emissions reduction benefits, even over battery electric vehicles' no longer stands for the average Australian grid.

When 20% off-grid renewable electricity charging is included, the emissions intensity profile of EVs falls below that of the hybrid for every Australian grid, and well below the ICE vehicle.



Figure 5. comparison of light vehicle emissions, based on FFDP, average over 2021-30

Source: Future Fuels Discussion Paper and emissions factors from Australia's Emissions Projections 2020

⁴⁴ Chargefox (2021), https://www.chargefox.com/



Figure 6. comparison of light vehicle emissions, based on FFDP, averaged over 2021-30, assuming 20% off-grid renewable electricity

Source: Future Fuels Discussion Paper and emissions factors from Australia's Emissions Projections 2020

Additionally, by focusing on the average emissions intensity of electricity generation, the comparison does not account for the additional supply of renewable electricity that is likely needed to meet demand. Figure 7 (below), from the FFDP highlights the additional electricity demand from EVs at different levels of fleet penetration. The Australian electricity supply mix is moving away from fossil fuels, and new capacity is predominantly renewable. Thus, the marginal supply response to the increased electricity demand from EVs will be far lower than the average emissions intensity.⁴⁵

⁴⁵ For more detail, see: Richardson (2018) Submission to the Senate Inquiry into electric vehicles. https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Electric_Vehicles/ElectricVehicles/Sub missions



Figure 7. FFDP- The impact of EVs charging on annual electricity demand

Source: Future Fuels Discussion Paper, p 20

Other factors influencing the outcome of the emissions comparison are not acknowledged in the text of the FFDP. The comparison uses fuel consumption values reported under test conditions without acknowledging the well-documented gap between real-world measurements and test-condition measurements.⁴⁶ It also includes 'scope 3' emissions, not normally included in grid intensity calculations.⁴⁷

The emissions comparison included in the FFDP is out of step with other, more comprehensive, lifecycle emissions analyses. A recent study of lifecycle CO₂ emissions by European research outfit Transport and Environment found that the average EU electric car emits almost a third the CO₂ of an equivalent conventional car. EVs emit less CO₂ than ICEs, even in the worst-case scenario where the battery is produced in China and the vehicle is driven on Poland's coal-heavy electricity grid.⁴⁸ A lifecycle assessment of greenhouse gas emissions from Australian passenger vehicles by Transport Energy Emissions Research finds

⁴⁶ Australian Automobile Association (2021) *The Real-world driving emissions test.* https://www.aaa.asn.au/get-involved/realworld/

⁴⁷ Joshi (2021) Taylor rehashes old climate delay tactics with new hybrid vehicle plan.

https://reneweconomy.com.au/taylor-rehashes-old-climate-delay-tactics-with-new-hybrid-vehicle-plan/ ⁴⁸ Transport and Environment (2020) *How Clean Are Electric Cars*.

https://www.transportenvironment.org/sites/te/files/T%26E%E2%80%99s%20EV%20life%20cycle%20analysi s%20LCA.pdf

that EVs significantly reduce lifecycle emissions rates for passenger vehicles compared to fossil-fuelled vehicles.⁴⁹

In fact, the FFDP emissions modelling contradicts the Government's own analysis, located in the same emissions projections document referenced by the FFDP. Page 30 of the 2020 Emissions Projections includes an estimate of emissions intensity of electric vehicles compared to ICE vehicles in 2020, 2025 and 2030. For the year 2020, the Emissions Projections estimate EV emissions intensity at 111g CO₂-e/km, dropping to 83g CO₂-e/km in 2025 and 68g CO₂-e/km by 2030. By 2025, battery electric vehicles have a lower emissions intensity profile than the hybrid vehicle example used in the FFDP.

Figure 8. Projected emissions intensity of light duty vehicles, DISER

Table 13: Projected emissions intensity of new light duty vehicles, g CO2-e per km

	2020	2025	2030
Internal combustion engines (g CO ₂ -e per km)	222	208	196
Battery electric, excl. plug-in hybrids (g CO ₂ -e per km)	111	83	68

DISER Emissions Projections 2020, p 33.

When asked in 2018 about the emissions associated with EVs compared to ICEs, then Energy Minister Josh Frydenberg said the Nissan Leaf had a smaller carbon footprint than the Toyota Corolla;

"It depends on the vehicle, but by and large electric vehicles will be much more lower in emissions intensity than conventional cars, particularly over time, as the grid goes down in its own emissions intensity,"

ABATEMENT COST WALK THROUGH

The total cost of ownership comparison included in the FFDP was used by the Minister for Energy and Emissions Reductions Angus Taylor, to claim that EV subsidies do not represent value-for-money. In a joint media release from Deputy Prime Minister Michael McCormack, Christian Porter MP, Keith Pitt MP, Stuart Robert MP, Michelle Landry MP and Senator Jonathon Duniam, it is stated:

⁴⁹ Smit (2020) Meeting our greenhouse gas emission targets: can electric vehicles meet the challenge? – A probabilistic Life Cycle Assessment (LCA) for GHG emissions from Australian passenger vehicles. https://51431d88-662c-4884-b7bc-

b5b93a225b7d.filesusr.com/ugd/d0bd25_bbeb4c905a2b4121b0ef3870648f78cf.pdf

"Importantly, this discussion paper shows that closing this gap through subsidies for new technology vehicles is not value-for-money for taxpayers and is an expensive form of abatement. Depending on the vehicle type and use, this would cost up to \$747 per tonne of carbon dioxide equivalent or up to around \$8,000 over the life of a vehicle.⁵⁰

The abatement figure used to claim that EV subsidies do not provide value-for-money is misleading. The \$747/tonne abatement figure comes from the 'cost walk through examples' detailed on page 31 of the FFDP. It is the high figure from a \$195-747 range.

To calculate the \$747/tonne abatement figure, the FFDP compares a Renault Kangoo MAXI (electric) with the Renault Kangoo Compact (petrol). This inflates abatement costs, due to the larger size and price of the MAXI version. Additionally, the cost analysis only looks at a five year financing period, further inflating abatement costs by ignoring the full fuel and maintenance savings of an EV over a ten year lifetime.

When questioned about the cost analysis during Senate Estimates, Ms Maguire from the Department of Industry, Science, Energy and Resources concluded by saying – "I think you could change all the assumptions that we made and get a different outcome"⁵¹.

While this is true for most modelling exercises, the assumptions made in the FFDP are not clearly outlined or explained. Despite clearly stating that the modelling is for "illustrative purposes only", the upper number of the cost comparison range is being used by Ministers to justify the Government's reluctance to introduce EV subsidies.

⁵⁰ Angus Taylor MP (2021) Supporting future fuel technologies and consumer choice, https://www.minister.industry.gov.au/ministers/taylor/media-releases/supporting-future-fuel-technologiesand-consumer-choice

⁵¹Environment and Communications Legislation Committee (2021) *Proof Committee Hansard- Monday 22 March 2021*, p115.

Conclusion

Australia is a laggard in EV uptake and policy development. To remedy this, the Government promised an EV strategy in early 2019. The recently released Future Fuels Discussion Paper is a do-nothing document. It is not focused purely on EVs, it is not a strategy, it contains no new funding commitments, rules out purchase incentives for EVs, and fails to include fleet procurement targets or vehicle CO₂ emissions standards.

The Australian Electric Vehicle Market Study, commissioned by tax-payers through ARENA, clearly concluded that purchase incentives, fleet procurement targets and CO₂ standards would drive EV uptake and model availability in Australia. It is unclear why the Government has chosen to ignore a publically funded study on Australia's EV market for the purposes of informing policy makers. It is even more galling that the government has ignored its own EV emissions intensity projections – instead relying on misleading modelling.

The FFDP will limit consumer choice, not power choice, as its subtitle suggests. By ruling out many of the EV incentives that have been shown to work in other jurisdictions and are recommended by the Government's own commissioned research, the FFDP stifles consumer choice and ability to purchase an affordable EV. It prevents access to the range of EVs available in other jurisdictions, and denies many Australians the opportunity to own a vehicle that is cleaner, quieter, and cheaper to run.

RECOMMENDATIONS

The Australia Institute recommends the federal government:

- Remove the misleading modelling in Attachment A of the Future Fuels Discussion Paper, and redo the modelling with proper stakeholder consultations and full transparency of assumptions and objectives.
- Provide short-term financial incentives to reduce the purchase price of an electric vehicle. These could include upfront incentives or tax incentives.
- Introduce light vehicle CO₂ emissions standards, in line with European standards.
- Set a Government fleet target of 100% electric vehicles by 2030.

Appendix

Table 1: National targets to phase out ICE vehicles

Country	Target	Year
Canada	All new cars sold 100% electric vehicles	2040
Colombia ⁵²	All new cars sold 100% electric vehicles	2035
Costa Rica	All new cars sold 100% electric vehicles	2050
Denmark	No new gasoline, diesel and PHEV vehicles	2035
France	No new fossil-fuelled passenger vehicles	2040
Germany	All new cars sold 100% electric vehicles	2050
Japan ⁵³	No new fossil-fuelled passenger vehicles	2035
Iceland	No new gasoline and diesel passenger vehicles	2030
Ireland	No new fossil-fuelled passenger vehicles	2030
Israel	No new gasoline or diesel vehicles	2030
Netherlands	All new cars sold 100% electric vehicles	2030
Norway	All new passenger cars and light-duty vans sold 100% Zero Emissions	2025
Portugal	No new ICE vehicles	2040
Scotland	No new gasoline or diesel vehicles	2032
Singapore	No new internal combustion engine vehicles	2040
Sri Lanka	All new cars sold 100% electric or hybrid vehicles	2040
Spain	All new cars sold 100% electric vehicles	2040
Sweden	No new gasoline and diesel vehicles	2030
United Kingdom	No new petrol, diesel, hybrid or PHEV vehicles and vans	2030

⁵² International Council on Clean Transportation (2020) *Growing momentum: Global overview of government targets for phasing out sales of new internal combustion engine vehicles*, <u>https://theicct.org/blog/staff/global-ice-phaseout-nov2020</u>

⁵³ Schmidt (2020) Japan to ban fossil fuel car sales by 2035. Will Australia follow or become a Cuba?, <u>https://thedriven.io/2020/12/04/japan-to-ban-fossil-fuel-car-sales-by-2035-will-australia-follow-or-become-a-cuba/</u>