Australian Parents for Climate Action
Submission to the Department of Industry, Science, Energy and Resources re:

Future Fuels Strategy

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Australian Parents for Climate Action represents over 14,000 parents, grandparents and carers from across Australia. We are Australia's leading organisation for parents advocating for a safe climate. Our supporters are from across the political spectrum, across all Australian electorates, and from varied socio-economic positions. We seek non-partisan responses to climate change and its impacts.

We advocate for Australian governments and businesses to take urgent action to cut Australia's carbon emissions to net zero as quickly as possible. We encourage Australia to take a leadership role on the world stage, leading by example and calling for other nations to take the necessary action to protect our children's futures.

For more information, visit www.ap4ca.org

This submission was prepared by Sydney-based volunteer David McEwen, an independent climate risk consultant, with support from additional members, and approved by Suzie Brown, National Director of Australian Parents for Climate Action.

Submission

While we welcome the Government's acknowledgement that Australia needs to adopt low-emission road transport at scale, Australian Parents for Climate Action representing its 14,000 national supporters submits that the Future Fuels Strategy: Discussion Paper is **deeply flawed,** for the following reasons:

1. It **does not account for how quickly Australia will need to reduce transport emissions this decade** if we are to meet international obligations to help limit global heating to 1.5ºC, which is critical for the safety, security and future prosperity of Australians. This is addressed in detail in later sections of our submission.

2. The discussion paper passively accepts that transportation emissions are projected to *increase* from 94 Mt CO_2-e to 100 Mt CO_2-e the coming decade,[1] while offering nothing to improve on this appalling outcome. This is an **unacceptable abdication of leadership given the extreme urgency with which deep emissions cuts must be made,** considering the repeated failure of Australian and some global governments to address the climate crisis with the focus and force required.

   Australia's transport emissions have risen by 64% since the 1990s and now contribute almost a fifth of our total greenhouse gas (GHG) emissions.[2] It is essential that substantial and sustained annual reductions apply to *all* emissions categories during the 2020s and beyond until net negative emissions are achieved, as later sections of our submission detail. It is unconscionable to ignore the decarbonisation task – if we do ignore it, "people living in the 2030s and 2040s could be forced to reduce emissions by ten times as much as people this decade" to keep global heating below 2ºC.[3] Even more effort will be required to remain at 1.5ºC (if indeed that is still possible by then).

3. Its **methodology for the calculation of abatement potential of various vehicle types is flawed**. First, it assumes that vehicles are to be fully financed within 5 years, which is inconsistent with other government studies that assume a typical vehicle life of 17 years.[4] Vehicles that are being purchased today will still be in the national fleet until the late 2030s. Moreover, electric vehicle battery life is generally warranted for at least 8 years / 160,000km, while the electric motors and cars themselves have a life of 15-20 years.[5] Many companies, including Tesla and General Motors, are releasing so-called million-mile batteries.[6] There is strong demand for second hand electric vehicle batteries for stationary energy storage. Comparing lifecycle emissions and costs of different vehicle types over such a short time frame is methodologically obtuse, particularly given one of the stated (though far from

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[1] Department of Industry, Science, Energy and Resources (2020), *Australia's emissions projections 2020.*
[2] Department of Industry, Science, Energy and Resources (2020), 'Quarterly Update of Australia's National Greenhouse Gas Inventory'. Transport accounted for 18.9% of Australia's national inventory in the year to September 2019.
[3] The Conversation (2021), 'Australia's slack climate effort leaves our children 10 times more work to do'.
[4] Department of Infrastructure and Regional Development (2016), 'Section 4.2.2: What are the main assumptions?', *Vehicle emissions standards for cleaner air*.
[5] MYEV.com (2019), 'How long should an electric car's battery last?' and Vehicle Suggest (2020), 'Electric Motor Life Expectancy: How Long do Electric Car Motor Last'.
[6] Electrek (2020), 'Tesla battery researcher shows new test results pointing to batteries lasting over 2 million miles' and The Driven (2020), 'General Motors says it is "almost there" on its own million mile battery'.

achieved) aims of the paper is to reduce emissions.

The methodology also ignores the fact that Australia's electricity grid is rapidly being decarbonised, and in its comparison it fails to account for the scope 3 upstream emissions associated with fuels used by ICE vehicles.[7] Applying a more considered methodology shows **battery electric vehicles (BEVs) significantly reduce average life cycle GHG emissions rates for passenger vehicles compared to traditional, internal combustion engine (ICE) vehicles in all electricity generation scenarios**, with net emissions reductions of 70-80% possible given a 90% renewable electricity grid.[8]

The methodology also fails to highlight that despite their relatively high upfront cost, BEVs are already more financially cost-effective than comparable ICE vehicles on a total cost of ownership basis. This is because electric vehicles incur lower running costs, including lower fuel (electricity) costs — which could even have a marginal cost of zero for people charging from home solar systems during the day or via a home battery at night — and significantly lower maintenance and repair costs as they use far fewer moving parts.[9]

4. Due to its methodological flaws, the paper preferences hybrid vehicles and as such **does not recommend any incentives to make zero emissions vehicles more affordable**, as have been introduced in dozens of other countries.[10] AP4CA asserts that Australia needs a mix of federal and state incentives, which should include:

    - Measures that enable wider uptake of electric vehicles:
        - Provision of discounted public charging infrastructure including in all parking facilities attached to government buildings serving the public;
        - Provision of cable runs suitable for electric vehicle fast-charging to be available in all new residential dwellings with off-street parking;
        - New private commercial and industrial sites with vehicle parking to include provision for appropriate electric vehicle charging;

    - Measures that encourage uptake of zero emissions vehicles:
        - Waiving or discounting Luxury Car Tax and import duties for zero emissions vehicles (ZEVs);
        - Rebates or discounts on on-road and registration costs for ZEVs;
        - Resisting the urge to impose road user charges on ZEVs (see also point 6 below) at least until they comprise over 50% of the fleet and an ICE phaseout has come into effect (see point 5 below);

[7] The Driven (2021), 'EVs smash petrol cars on emissions, even with a coal-powered grid'.
[8] Transport Energy/Emission Research (2020), *Meeting our greenhouse gas emission targets: can electric vehicles meet the challenge?*
[9] Canstar Blue (2016), 'How much money can an electric car save you?'
[10] Caradvice (2020), 'Electric car subsidies: how Australia compares to the rest of the world'.

        - On-road preferencing of ZEVs (such as urban air pollution charges for drivers entering CBDs, or use of transit lanes, (though noting that increasing vehicle occupancy and reducing trips should be prioritised over single occupant trips);

    - Measures that discourage pollution:
        - Bring forward the introduction of fuel standard improvements currently planned for 2027;
        - Stringent fuel economy standards for all vehicle types;
        - Stringent noxious and greenhouse emissions standards for all vehicle types;
        - Removing all subsidies on fossil vehicle fuels;
        - Discouraging the construction of new petrol and diesel fuel service stations (for example through the imposition of pollution bonds related to the remediation of underground fuel storage tanks);
        - Preparing for the decommissioning of many existing suburban petrol and diesel fuel service stations (or their conversion, in dense suburbs with little off street parking, to charging facilities);
        - Imposing a carbon price on fossil vehicle fuels through higher on-road and registration costs; and
        - Imposing an economy-wide carbon price on fossil fuel products and other sources of greenhouse gas emissions.

5. Similarly and inexplicably, the Government's discussion paper provides no **plan to phase out polluting ICE vehicles**, despite Australia's commitment to the Paris Climate Agreement plainly implying the phase out of all fossil fuels in order to halt global heating. ICE bans have been introduced in many cities and states and close to two dozen countries, providing important signals to manufacturers and owners.[11]

6. The paper mentions (p26), but fails to address, **state government proposals to introduce road user charges for low and zero emission vehicles**. These charges are being considered by state authorities as a means to make up for lost fuel excise revenue from petrol and diesel fleets. However, the proposed taxes would be counterproductive to Australia's immediate need to reduce emissions — the FCAI and other commentators have warned that they would stunt the uptake of zero emission vehicles.[12] AP4CA calls for an open discussion on this issue, noting that interim cooperative arrangements may be required

[11] Jurisdictions that have introduced bans on fossil-fuelled cars include California, China, Norway, France, Germany, Belgium, Ireland, the Netherlands and the UK. World Economic Forum (2020), 'China joins list of nations banning the sale of old-style fossil-fuelled vehicles' and The Driven (2020), 'The countries and states leading the phase out of fossil fuel cars'.

[12] Federal Chamber of Automotive Industries (2021), 'Zero and Low Emission Vehicles Need Encouragement Rather Than New Charges'.

between the Commonwealth and states as zero emission vehicle penetration starts to adversely affect state revenues, ahead of a phased introduction of road user charges once sales of ICE vehicles are banned.

7. The paper fails to adequately discuss barriers to the import of modern, more efficient ICE vehicles to Australia. There are two such barriers: firstly petrol sold in Australia is allowed to have much higher sulphur content than in Europe, the United States, and Japan (the markets from which the majority of Australia's vehicles are imported).[13] As a result, manufacturers are reluctant to bring newer vehicle models with the best emissions standards to Australia, and have parts fail before the expected end-of-life due to poor quality fuel.[14] Improving the standards of fuel would also bring immediate health and emission reduction benefits.[15]

   Secondly, Australia has yet to align its noxious vehicle emissions standards with minimum European Union standards (currently Euro 6d-Temp ahead of Euro 6d, which will be mandated from January 2022).[16] Mandating these standards would **ensure that Australians get the benefit of the latest efficient and low-polluting ICE vehicles rather than becoming a dumping ground for old engines**.[17]

8. It is inexplicable that **the paper fails to note that the move towards zero emissions vehicles and tighter noxious emissions standards would also improve Australia's health outcomes** by reducing impacts and costs from the effects of noxious vehicle emissions pollution (such as nitrous oxides, carbon monoxide and particulates). For example, Australian Government research by the Bureau of Transport and Regional Economics found that "*in 2000 motor vehicle pollution accounted for between 900 and 4500 morbidity cases—cardio-vascular disease, respiratory disease, and bronchitis—and for between 900 and 2000 early deaths.*"[18] Clearly there are substantial cost benefits involved in moving Australia's urban vehicle fleets to zero tailpipe emissions, as Infrastructure Australia has also noted.[19] Yet the paper is utterly silent on measures that could save thousands of Australian lives!

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[13] The Guardian (2019), 'Among the worst in OCED: Australia's addiction to cheap, dirty petrol', TransportPolicy.net (2018), 'US: Fuels" Diesel and Gasoline', TransportPolicy.net (2018), 'Japan: Fuels: Diesel and Gasoline'.
[14] Department of the Environment and Energy (2018), *Better fuel for cleaner air - Regulation impact statement*
[15] The Guardian (2019), 'EU to push Australia to clean up petrol standards as part of free trade deal'.
[16] European Commission, *Emissions in the automotive sector*
[17] Drive.com.au (2018), 'Australia could become old car dumping ground'.
[18] Department of Transport and Regional Services (2005), *Health impacts of transport emissions in Australia: Economic costs*.
[19] Department of Infrastructure and Regional Development (2016), *Vehicle emissions standards for cleaner air*.

9. The discussion paper **does not distinguish the emissions implications of vehicles using green hydrogen produced via electrolysis powered by renewable generation, versus blue or brown hydrogen produced via methane or coal**. It is critical to recognise that only vehicles powered by green hydrogen are emissions-free. Even if carbon capture and storage (CCS) is used in the production of hydrogen from fossil fuels (which adds significantly to its cost), there are still significant residual greenhouse emissions due to losses during fossil gas extraction, transportation and production of the hydrogen.[20] Green hydrogen is the only viable means of producing climate neutral hydrogen, and the Future Fuels Strategy must acknowledge this.

   It's also important to point out that, unlike hydrogen from coal or gas, green hydrogen can be produced anywhere there is an environmentally suitable water source and a connection to a renewable generation source. This may obviate some of the transportation issues associated with hydrogen by allowing localised, reasonably small-scale production in regional centres. From a refuelling perspective for long-haul freight trucking, reduced scale economies associated with localised production may be trivial compared with hydrogen transportation costs to key locations such as, for example, Tennant Creek or Broken Hill. It is important that policy makers and transport planners don't apply the same thinking used for the fossil-gas network to green hydrogen.

10. In this critical decade, where the science is clear that emissions must be halved globally by 2030 to have *any hope* of limiting temperature rise to 1.5ºC,[21] the discussion paper's **focus on consumer choice is misplaced**. **The strategy must clearly preference zero emissions vehicles and incentivise consumer and business decisions that will halve transport emissions this decade**.

11. The paper **makes no mention of changing vehicle ownership** patterns (for example, through car-sharing schemes) or the potential for zero-emissions autonomous vehicles to revolutionise urban transportation (which could dramatically reduce or increase vehicle mileage depending on ownership models and government policy). Nor does it cover public transport or extremely cost-effective alternatives such as cycling and walking.

    These are significant oversights given **Australian new vehicle sales peaked in 2017 and have been declining since**, due to factors including reduced ownership by younger drivers given the proliferation of new mobility services.[22] **Decreasing vehicle ownership, reducing occupant miles and maximising vehicle occupancy are key planks in reducing**

[20] Australian National University Crawford School of Public Policy, Centre for Climate & Energy Policy (2021), 'Clean' hydrogen? An analysis of the emissions and costs of fossil fuel based versus renewable electricity based hydrogen.
[21] Intergovernmental Panel on Climate Change (2018), Special Report: Global Warming of 1.5°C, Chapter 2, Executive Summary. IPCC modelling estimates that global net emissions must decline by 40-60% (interquartile range) and reach net zero by 2045-2055.
[22] Trading Economics (2021), 'Australia New Vehicles Sales' and Automotive Dealer Magazine, 'Automotive technology and disruption'.

passenger transport emissions.

12. The Strategy should take the United States' recent example and outline concrete plans to **replace the entire Australian government fleet with zero emissions vehicles**.[23] Such a move would convey many co-benefits, including setting clear signals for manufacturers of fleet vehicles and associated secondary markets, stimulating local industry, and reducing government spend on ground-based mobility. The strategy should also explore opportunities to reduce the size of the government fleet (cf point 11 above).

13. The paper makes a single passing mention of recycling, without acknowledging the need to ensure that zero emissions vehicles do not perpetuate the end-of-life pollution associated with ICE vehicles. Government should be **supporting the development of vehicle battery refurbishment, recycling, materials recovery and other end of life industries, and ensuring that take-back obligations are introduced for all new vehicle sellers** (ICE and zero emissions) in line with the EU's end-of-life vehicle directive.[24]

14. With regard to principle 5 (supporting Australian innovation and manufacturing), the paper fails to acknowledge that, without strong emissions reduction targets, **the export potential of local manufacturers will be stunted due to the high likelihood that their products will be hit in future with carbon border adjustment tariffs or other emissions intensity pricing mechanisms**, such as are currently being evaluated by the European Union.[25]

15. Finally, the paper **fails to discuss Australia's current woeful liquid fuel security**. We are almost completely reliant on oil imports and have progressively closed almost all our refineries.[26] Supply disruptions are likely to become more common as the physical impacts of climate change increase.[27] Future proliferation of carbon pricing mechanisms could adversely affect the costs of imported fuels. And as food and water insecurity begins to bite, regional conflicts (for example, over flows of rivers that cross borders) may further disrupt supplies.[28]

The remainder of our submission explains in more detail why it is imperative that the Future Fuels Strategy prioritises immediate, deep, science-based emissions reduction in the transport sector.

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[23] Reuters (2021), 'Biden vows to replace U.S. government fleet with electric vehicles'
[24] European Commission, *End-of-Life Vehicles*
[25] Australian Financial Review (2021), 'European Parliament backs carbon border tax'
[26] Independent Australia (2021), 'Angus Taylor's Future Fuels Strategy underachieves on climate aims'
[27] McKinsey Global Institute (2020), 'Could climate become the weak link in your supply chain?'
[28] IPCC (2019), 'Chapter 5 : Food Security', *Special Report on Climate Change and Land*.

All Fossil Fuel Use is Now Incompatible with a Safe Climate

The extraction and consumption of fossil fuels including the oil used to produce liquid transport fuels (principally petrol and diesel) is the principal source of anthropogenic greenhouse gas (GHG) emissions that are causing rapid increases in average global temperatures (a trend referred to as global heating). In turn, that heating is causing climate change. Average global temperatures have already risen to about 1°C above pre-industrial levels, causing a substantial shift in climatic conditions, which is highly unfavourable to biodiversity, food and water security, human health and safety, and the longevity/value of many property assets and infrastructure.[29]

Australia's overriding obligation under the Paris Climate Agreement is to hold "the increase in the global average temperature to well below 2ºC… and pursuing efforts to limit the temperature increase to 1.5ºC… recognising that this would significantly *reduce the risks and impacts* of climate change."[30] Scientists warn that there is a dramatic difference in outcomes between 1.5ºC and 2ºC of warming, and any rational person would conclude that we must do everything in our power to stay below 1.5°C of warming and avoid overshoot.[31] According to the International Panel on Climate Change, **net anthropogenic CO_2 emissions must decline by about 45% from 2010 levels by 2030 (equivalent to about 50% off pre-Covid levels), and reach net zero around 2050, if we are to succeed.**[32]

Any government strategy that fails to align with this emissions reduction trajectory is entirely incompatible with the Paris goal of limiting warming to 1.5°C.

Australian Parents for Climate Action and our supporters assert that the Australian Government *cannot* justify or approve *any* initiative that allows emissions in any sector to increase or remain stable.

Cumulative Emissions Are Critical: Net Zero by 2050 is Meaningless Without Deep Cuts Today

Even if, despite the dire implications of the Discussion Paper, Australia is successful in delivering net zero emissions by 2050, **the speed at which we reduce emissions is critical**. As Figure 1 illustrates, delays in climate action severely impact the effectiveness of these efforts.

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[29] NSW Department of Planning, Industry and Environment, 'Impacts of Climate Change'.
[30] United Nations (2015), *Paris Agreement*.
[31] Intergovernmental Panel on Climate Change (2018), Special Report: Global Warming of 1.5°C, Chapter 2, Executive Summary. IPCC modelling estimates that global net emissions must decline by 40-60% (interquartile range) and reach net zero by 2045-2055.
[32] Ibid.

This is because most **GHGs, once emitted, remain in the atmosphere for tens to hundreds of years, continuing to contribute to global heating**. It is not a case of flicking off an emissions switch and returning the climate to normal. Even under the deepest plausible emissions reduction scenarios **we will need to "drawdown" and sequester atmospheric GHGs to return concentrations to safe levels**. Unfortunately there are currently no commercially viable sequestration methods that can be scaled to the gargantuan levels necessary to reverse the heating impact of the *50 billion tonnes* of global emissions released annually.[33] As such, any policies that perpetuate fossil fuel use in transportation or other sectors are grossly irresponsible.

Consequently, **emissions must be thought of in terms of a cumulative "budget"**. Most of the anthropogenic GHG's released into the atmosphere since the start of the industrial revolution are still there, contributing to global heating. Rather than focussing on the goal of reaching net zero emissions, we need to have strong interim targets and ensure we limit GHGs each and every year. **Winning slowly on climate is still losing, as is highlighted starkly in the graphs in Figure 1**.

[33] DW (2018), 'Carbon capture: Expensive, risky - and indispensable?'

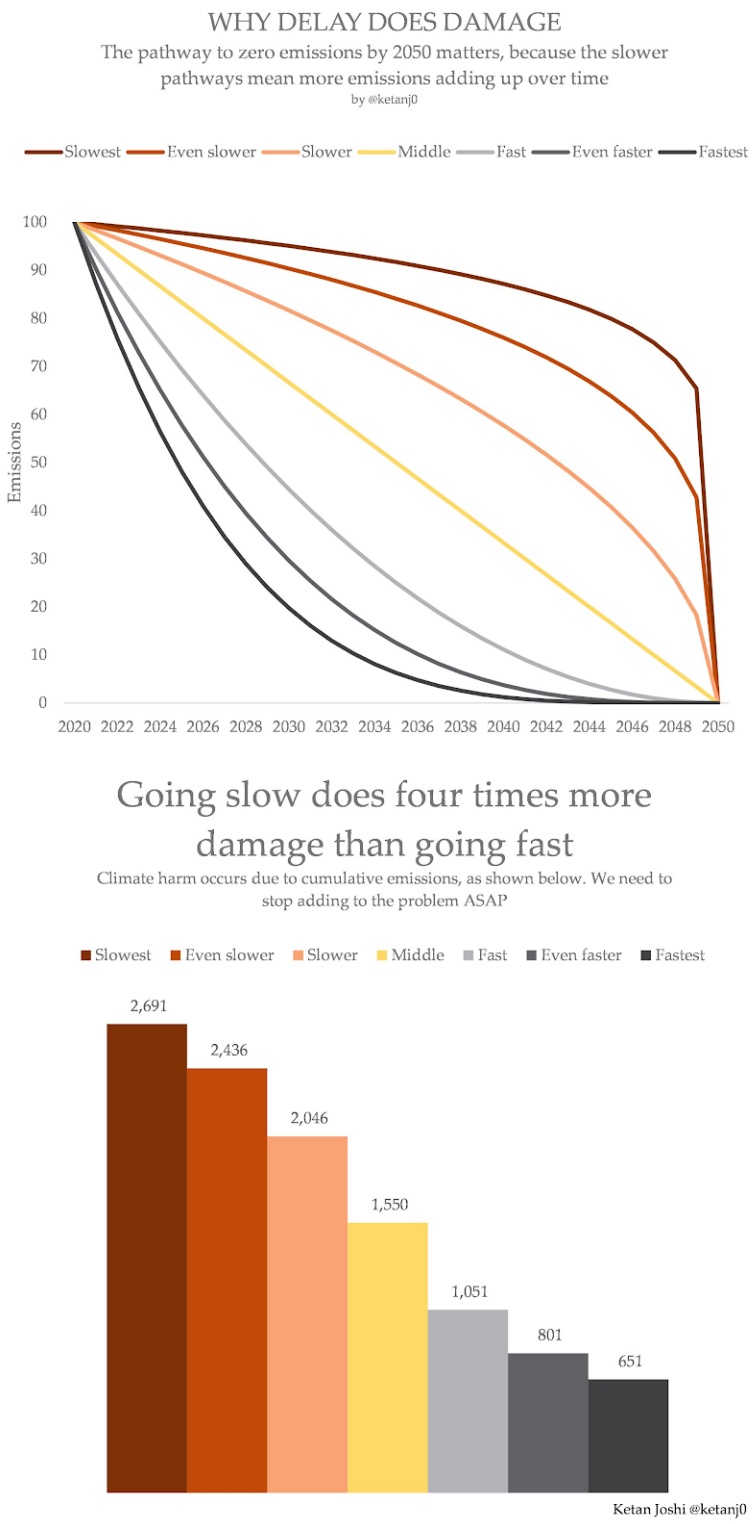

Figure 1: Rapid emissions reduction is critical now. The difference in cumulative emissions between steep cuts now and later is critical. Net zero by 2050 does not limit global temperature rise to 1.5 degrees unless there are steep cuts this decade.[34]

[34] Joshi, K (2021) 'Why Delay Does Damage' .

Scientists say **the world can only afford about eight more years at the pre-COVID level of global greenhouse emissions if we are to avoid triggering irreversible natural tipping points such as ice sheet failure (and the resultant multi-metre sea level rise); total loss of coral reefs; release of methane currently trapped in northern hemisphere permafrost; and others that collectively would condemn us to runaway climate change.**[35] As former Chief Scientist Penny Sackett and climate scientist Will Steffen have noted, **Australia's share of the budget, on a per capita basis, is currently about *two more years at current emissions levels***.[36]

Australia is particularly vulnerable to climate change. Even if the Paris goal is achieved, global heating of 1.5ºC will devastate Australia, destroying a majority of our coral reefs, jeopardising the continuity of water and food supplies, and setting in motion unstoppable multi-metre sea level rise over the coming centuries, which will in time inundate our major cities and destroy billions of dollars of coastal infrastructure.[37] **The time for business-as-usual is over: we need our governments and businesses to make a real, concerted effort to address these challenges and mitigate risks.**

In light of this, **Australia's current Paris target of 26-28% off 2005 emissions by 2030 is negligent**. **Apart from the one-off dip in emissions from Covid, the emissions trend since 2015 has been a reduction of a mere two percent.[38] Clearly, Australia's current emissions reduction policies are ineffective, and must be radically overhauled.**

Not only must Australia's 2030 target be doubled (as a minimum)[39] for Australia to claim it is pulling its weight on the world stage, but we need genuine strategies, policies, laws and, above all, *action* to belatedly begin to make the long overdue deep cuts. With emissions abatement, more is better in terms of risk reduction, and reaching net zero and real zero even more quickly has huge benefits.

While we acknowledge that current State and Federal laws are wholly inadequate to constrain greenhouse emissions, **decisions that do not rapidly decrease the use of fossil fuels at this point in history will in future be viewed as acts of inter-generational genocide**.[40]

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[35] Nature (2019), 'Climate tipping points - too risky to bet against',
[36] Sydney Morning Herald (2019), 'Our carbon budget is all but spent, but who in Canberra is counting?'
[37] NASA (2019), 'A Degree of Concern: Why Global Temperatures Matter'
[38] The National Greenhouse Gas Inventory figures (June 2020) indicate (Table 1B) that in FY2015 total emissions were 538.6 Mt CO_2-e. In the year to December 2019 (i.e. the full year before Covid-19), total emissions were 526.1 Mt CO_2-e, a change of only 2.3%.
https://www.industry.gov.au/sites/default/files/2020-11/nggi-quarterly-update-june-2020.pdf
[39] Indeed, Australia's "fair share" based on the emissions budget methodology, has been calculated at a 74% reduction by 2030, as documented in the Climate College at the University of Melbourne's (2021) paper, Australia's Paris Agreement Pathways: Updating The Climate Change Authority's 2014 Emissions Reduction Targets
[40] The Monitor (2019), 'The all too ugly truth: Climate change is generational genocide'.

Conclusion

Sadly, the Future Fuels Strategy: Discussion Paper appears not to be based on global trends nor what climate science tells us is necessary to maintain a climate that can support Australians in the future. **We strongly recommend the Department make rapid emissions reduction the core focus of the Strategy.**

At this critical point in history, when we must be lowering emissions immediately and significantly in order to have any chance of maintaining a safe climate, any government policy that results in any outcome other than immediate, deep, science based emissions reduction amounts to an act of inter-generational genocide. **Does the Australian Government and its officials wish to be complicit in destroying our children's future health, safety and prosperity?**