

Cleaner, Cheaper to Run Cars: An Australian New Vehicle Efficiency Standard Consultation Impact Analysis

Departmental submission

Department of Transport and Main Roads

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Introduction

Implementation of an effective New Vehicle Efficiency Standard (NVES) is critical to ensuring Queensland is well placed to decarbonise the transport sector and achieve emissions reductions. Queensland have set bold targets, to which a NVES will be essential, committing to net zero emissions by 2050 under the [Queensland Climate Action Plan](#) (QCAP) and decarbonisation of the transport sector through implementation of the [Queensland Zero Emission Vehicle Strategy 2022-2032](#) (ZEV Strategy) and the Zero Net Emissions for Transport Roadmap (in-development).

TMR have actively supported and engaged with the Australian Government's process to date to implement a NVES in providing submissions to the [National Electric Vehicle Strategy](#) (NEVS) and *The Fuel Efficiency Standard (FES) – Cleaner, Cheaper to Run Cars for Australia* consultation papers. Through these submissions, TMR have advocated for the introduction of an NVES to reduce current supply issues and increase the availability and affordability of electric vehicles (EVs) to Queensland.

The Department of Transport and Main Roads (TMR) welcomes the opportunity to provide a submission to the Australian Government on the final design of the NVES as outlined in this paper.

TMR NVES Feedback

TMR position

Australia's automotive market is small from a global perspective and without providing the right signals, such as minimum fuel efficiency standards, manufacturers will continue to be reluctant to provide Australia with a steady supply of fuel-efficient vehicles. TMR have assessed and considered the options included in the Consultation Impact Analysis titled *Cleaner, Cheaper to Run Cars: The Australian New Vehicle Efficiency Standard* (the "Impact Analysis") including:

1. **Baseline:** the do-nothing scenario which is the forecast of a scenario without a NVES. There are no additional benefits or costs associated with this scenario, and the options below are measured as change against this scenario.
2. **Option A:** an amalgamation of views of stakeholders that would prefer a more modest and cautious approach.
3. **Option B (*the Australian Government's preferred option*):** the Government's preferred position based on the arguments presented in the phase 1 consultation, seeking to balance ambition and achievability.
4. **Option C:** an amalgamation of views of stakeholders that would prefer the most stringent and ambitious approach possible.

TMR agrees with Option B which seeks to balance ambition and achievability – it is noted that this aligns to and provides support for the Australian Government's preferred position. TMR notes that it is purported that Option B will reduce emissions while also delivering cost savings for consumers and enable the supply of cleaner, more economical vehicles to Australia.

Reason for your choice

TMR is generally supportive of the approach used in the Impact Analysis underpinned by guiding principles used to assess the merits of each of the options in the design of a NVES. TMR note the guiding principles align with TMR's vision to *deliver a single integrated network accessible to everyone*, and includes:

- **Effective** in reducing carbon dioxide (CO₂) transport emissions from new cars
- **Equitable** to ensure all Australians can access the vehicles they need for works and leisure
- Intervention emphasises **simplicity and transparency** in design and operation
- **Credible and robust** through interventions that are based on the latest and best analysis available
- **Enable** availability of vehicles with the best emissions and safety technology

The following sections outline TMR's reasoning for this choice as it relates to the six key elements of the NVES being headline targets; fleet limit curves; vehicle categories; credit banking, pooling, and trading; technology credits; and penalties.

Headline Targets

This section outlines the headline CO₂ target and how it should change over time. The headline target is one of the key parameters to develop a NVES, and the key parameter stakeholders focus on in assessing the ambition of a NVES¹. The options are as follows:

Option A	Option B	Option C																																																																								
<p>Slow start and broadly equivalent rate of decline as the United States (US) NVES.</p> <p>Two CO₂ targets, one for passenger vehicles and a higher target for light commercial vehicles, but includes many Sports Utility Vehicles (SUV) in the light commercial vehicle class, along with utes and vans.</p> <p>No catch up.</p>	<p>A strong, ambitious and achievable NVES that seeks to catch up with the US around 2028 and then match the stringency of these standards, while not seeking to go beyond these standards.</p> <p>Two CO₂ targets, one for passenger vehicles and SUVs, and a higher target for utes and vans (including large pick-ups) in the light commercial vehicle category.</p>	<p>An aggressive NVES that catches up with the US around 2026 and then brings forward US targets for 2029-2031 to the Australian NVES in 2028 and 2029.</p> <p>Two CO₂ targets, one for passenger vehicles and SUVs and a higher target for utes and vans (including large pick-ups) in the light commercial vehicle category.</p>																																																																								
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TMR support the headline targets outlined in Option B and provide the following considerations:

- Australia and Russia are the only advanced economies in the world that have not yet implemented a NVES. Option B headline targets will enable Australia to catch-up to other comparable markets, like the United States of America (US), by around 2028. This will ensure we meet our emission reduction targets and prevent Australia from becoming a dumping ground for the most polluting, inefficient cars.
- The headline targets will address Australia's current EV supply issues by bringing in a wider range of new and more efficient EVs, hybrids and Internal Combustion Engine (ICE) vehicles, thereby enabling Queenslanders to choose cheaper and cleaner cars.
 - Headline targets that enable emissions reductions in the short time, with significant and cumulative increase in carbon reductions over time will ensure Queensland meets its emissions reduction targets.
 - A dynamic and consultative approach to target setting will be beneficial in balancing early and substantial carbon reduction while minimising the potentially adverse economic impacts on industry during the transitional and implementation period.
- Option B's approach benefits consumers by improving vehicle model availability and increasing choice. The timescale provides sufficient time to adjust and become familiar with a new vehicle market and make considered choices about the kind of new vehicles they purchase.
- A higher target for light commercial vehicles (LCVs) will limit the unintended consequence of reducing the number of available LCV models that are popular in Queensland due to our unique geographic profile (i.e., regional/remote communities), travel habits (i.e., travel greater distances) and purchasing behaviours (i.e., higher rates of vehicle ownership, more likely to purchase larger vehicles).

¹ US current average reduction rate: ~9% per annum. Australia baseline forecast reduction rate: ~4% per annum (PVs), 2% per annum (LCVs).

- The headline targets and timeframes will support and complement initiatives to reduce fuel pollutants and emissions (such as the reduction of the allowable level of sulfur and aromatics) already legislated under the *Fuel Quality Standards Act 2000* and *Fuel Quality Standard Regulations 2019*.

Fleet Limit Curve

The fleet limit curve defines the amount of CO₂ a vehicle supplier's fleet of cars is able to emit on average, over time and is often a graphic representation of vehicle mass graphically. A NVES gives heavier cars a relatively higher CO₂ target as it recognises that some consumers (such as small business/trades) genuinely require a larger car for their work.

The fleet limit curve is a way of adjusting the CO₂ limit for a specific car or vehicle category, to account for its mass. This reduces the disadvantage that heavier (or larger) vehicles have, because heavier vehicles naturally use more fuel. A break point is a vehicle weight above, or below, the limit curve and is used to create a cap on how much the fleet limit curve assists both heavier cars and very light cars.

The options for design of the fleet limit curve are as follows:

Option A	Option B	Option C
Limit curve and reference mass derived based on fleet of vehicles sold in 2022 and updated during scheduled reviews of the NVES. No break points.	Limit curve and reference mass derived based on fleet of vehicles sold in 2022 and updated on a rolling basis annually during the operation of the NVES. The 2022 limit curve settings in this Impact Analysis are applied to NVES in 2025 and 2026. After 2025, rolling updates to the limit curve and reference mass, with 2025 vehicle data used in 2026 to set new limit curve slope for 2027, and so on for future years. Break points: <ul style="list-style-type: none"> • PV: lower break point at 1,500 kg, upper break point at 2,000kg. • LCV: lower break point at 1,500 kg, upper break point at 2,200kg. 	Flattened limit curve to reduce allowance for heavier vehicles with break points included (30% reduction on 2022 measured slope). Break points: <ul style="list-style-type: none"> • PV: lower break point at 1,500 kg, upper break point at 2,000kg. • LCV: lower break point at 1,500 kg, upper break point at 2,200 kg.

TMR support the fleet limit curve and break points defined under Option B and provide the following considerations:

- Option B includes an achievable baseline reduction rate for 2025, that then reduces annually to enable Australia to 'catch up' to comparable markets, including the US by around 2028.
- Option B provides opportunity to update the fleet limit curve on a rolling basis during the operation of a NVES. This approach enables the NVES to remain dynamic to a rapidly changing market, and account for the impact of new and emerging technologies, and changes to the composition (i.e. weight, efficiency) and availability of vehicles on the Australian market.
 - TMR note that the enabling legislation for the NVES is explicit on the timeframes and frequency of updates to the fleet limit curve.
- The cars that Queenslanders drive are a critical part of how they live and work and need to be practical and consider the highly geographically dispersed population of states and territories, such as Queensland.
 - Providing concessions for heavier cars, and caps for concessions on very heavy and very light vehicles, ensures the NVES does not unduly negatively impact any particular group of Queenslanders or part of Australia.

- Small businesses and trades people play a central role in the Queensland economy, with the construction industry reported to be the top small business in 2021². These businesses typically require larger vehicles and would likely experience disbenefit under a mass-derived non-concessioned model that is proposed under Option A.

Vehicle Categories

This section outlines what types of vehicles are included in a NVES and the specific vehicle category they fall under. The options are as follows:

Option A	Option B	Option C
<p>Vehicle categories:</p> <ul style="list-style-type: none"> • Passenger Vehicles (PVs) class is passenger vehicles, light SUVs and two-wheel drive versions of four-wheel drive vehicles (MA* and MB* categories). • Light Commercial Vehicles (LCVs) class is larger SUVs, four-wheel drives, and utes and vans gross vehicle mass (GVM) up to 4.5 tonnes (MC, NA and NB1 vehicles, with some exceptions). 	<p>Vehicle categories:</p> <ul style="list-style-type: none"> • PVs class is passenger vehicles, light and heavier SUVs and 4WDs (MA, MB and MC categories). • LCVs class is utes and vans GVM up to 4.5 tonnes (NA and NB1 vehicles with some exceptions). 	<p>Vehicle categories:</p> <ul style="list-style-type: none"> • PVs class is passenger vehicles, light and heavier SUVs and 4WDs (MA, MB and MC categories). • LCVs class is utes and vans GVM up to 4.5 tonnes (NA and NB1 vehicles with some exceptions).

* Note: Vehicle Category Codes:

MA - PASSENGER CAR - A passenger vehicle, not being an off-road passenger vehicle or a forward-control passenger vehicle, having up to 9 seating positions, including that of the driver.

MB - FORWARD-CONTROL PASSENGER VEHICLE - A passenger vehicle, not being an off-road passenger vehicle, having up to 9 seating positions, including that of the driver, and in which the centre of the steering wheel is in the forward quarter of the vehicle's 'Total Length'.

MC - OFF-ROAD PASSENGER VEHICLE - A passenger vehicle having up to 9 seating positions, including that of the driver and being designed with special features for off-road operation. See Definitions and Vehicle Categories for special features

NA - LIGHT GOODS VEHICLE - A goods vehicle with a 'Gross Vehicle Mass' not exceeding 3.5 tonnes.

NB1 - MEDIUM GOODS VEHICLE - A goods vehicle with a 'Gross Vehicle Mass' over 3.5 tonnes, up to 4.5 tonnes

TMR support the vehicle categorisation of PVs and LCVs defined in Option B, and provide the following considerations:

- In 2023, transport represented 21% of Australia's total greenhouse emissions with 60% of this attributable to passenger cars and light commercial vehicles combined. TMR view these vehicles as an important segment to focus on if introducing a NVES.
- TMR support the categorisations for PVs and LCVs outlined in Option B which align to category definitions utilised by TMR in Queensland. There are no impacts to TMR's current registration system and processes.
- Option B enables detailed work to be done to identify specific vehicle types that should be exempt for the NVES in developing primary and secondary legislation.
 - This approach provides an important differentiation between LV/LCV and heavy vehicles, vehicles subject to heavy vehicle emissions tests, military vehicles, law enforcement vehicles, emergency service vehicles, agricultural, construction or mining equipment, motorhomes, horse trucks and motorcycles.
 - Before finalising exemptions TMR urge the Federal Government to consider further interrogation of the practical need for some of these exceptions, prior to commencement of a NVES. There are many

² Data published by the Australian Bureau of Statistics and collated by the Queensland Government Statistician's Office, June 2021

international examples of electric drive-train versions of the above vehicles and potential cost savings that can be achieved by improving the fuel efficiency of these vehicles.

- Fulsome consideration of the impact of particular exemptions on an NVES, will ensure the transition/implementation period for standards is undertaken in a way that balances potential adverse impacts whilst ensuring maximum benefit.
- TMR does not support outright heavy vehicle registration bans, prompted by fuel inefficiencies, given the large number of rural operators in Australia that may be affected.
- In relation to the proposed effective date, TMR agrees that an NVES should only apply to new cars purchased from 1 January 2025. There is unacceptable risk involved should an NVES apply to existing vehicles in the states fleet (i.e., via buy-back scheme, retrofitting, incentives).
 - TMR is committed to providing cost effective, sustainable transport options to Queenslanders and the application of an additional charge to enable the application of an NVES on existing vehicles is not tenable.

Credit banking, pooling, and trading

The impacts of climate change are linked to cumulative greenhouse gas emissions concentrations rather than emissions in a particular year. As such, mechanisms, such a credit banking, pooling and trading, can provide flexibility around when emissions reductions occur to help manage costs, whilst still maintaining the effectiveness of the NVES. They also provide incentives for suppliers to supply more efficient vehicles sooner. Credit banking allows regulated entities to bank credits for a later year and trading allows regulated entities that have overachieved in a particular year, to sell credits to other suppliers that may have not met their targets. Pooling allows a group of regulated entities to form a collective entity whose emissions results are considered collectively.

The implementation of the NVES will require establishment of new enabling legislation (proposed to be a new Act), and establishment of a regulator. The regulator proposed in the Impact Analysis to operate within the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (the Department), along with the systems and processes will be responsible for a range of functions, including the management of the credit trading platform, as well as monitoring, compliance and enforcement, penalties, data collection and reporting. The Regulator will perform its functions and be required to comply with the principles of the *Public Governance, Performance and Accountability Act 2013* and the *Public Governance, Performance and Accountability Rule 2014*

The options are as follows:

Option A	Option B	Option C
Credit banking, pooling and trading available.	Credit banking and trading are available. No pooling.	Credit banking and trading are available. No pooling.
Credits last five years after the year of issuance, debits must be acquitted after no more than five years after the year of issuance.	Credits last three years after the year of issuance, debits must be acquitted after no more than two years after the year of issuance.	Credits last two years after the year of issuance, debits must be acquitted after no more than two years after the year of issuance.

TMR support the inclusion of flexibility mechanisms for regulated entities outlined in Option B, and provide the following considerations:

- Option B supports decarbonisation of the transport sector by allowing vehicle manufacturers and suppliers that overachieve, to sell credits to those that may not have met the targets, or bank credits for a later year.
 - Adequate safeguards must be established as part of the regulatory framework to prevent the abuse of these mechanisms and ensure that manufacturers are not able to use flexibility mechanisms to avoid any meaningful attempt to meet the requirements of a NVES.
- Option B is effective in addressing the potential erosion of real emissions reductions through the exclusion of credit pooling.
- The Australian Government should ensure the regulatory framework of the NVES enables and supports continuous evaluation and identification of potential improvements to credit banking and trading as the market matures (i.e., considering shorter credit periods which may encourage manufacturers to improve model upgrades at a faster rate during the development lifecycle of their vehicles). The design of the regulatory framework must

ensure the Regulator will have obligations to publish information on its website regarding performance of the NVES to ensure alignment with the guiding principles of the NVES to be credible, robust and transparent.

Technology credits

Some countries have implemented NVES that enable suppliers to reduce their reported average emissions through new and innovative technologies. Supercredits provide additional credits when an eligible vehicle (typically EV or plug in hybrids) is sold by allowing them to be counted more than once. Off-cycle credits awarded include particular types of technology (i.e., heat reflective paint) and air conditioning credits such as low global warming air conditioning refrigerant. The options are as follows:

Option A	Option B	Option C
<p>Adopt generous supercredits for a wide range of emissions reduction technologies.</p> <ul style="list-style-type: none"> • Supercredits for: <ul style="list-style-type: none"> ○ Efficient vehicles (60% of limit curve for the vehicle mass level and/or hybrid) (1.5). ○ Plug in hybrids (2) (defined as vehicles with CO₂ emissions of 1-50g CO₂/km). ▪ Zero emission vehicles ▪ Off-cycle credits available and all technologies on European and United States technology menu eligible. Credit available for off-cycle credits capped at 10g CO₂/km. ▪ Air-conditioning credits available and included in off cycle credit cap. ▪ All technology credits to be phased out from 2029. 	<p>Maximise simplicity and transparency.</p> <ul style="list-style-type: none"> • No supercredits. • No off-cycle credits. • No air conditioning credits. 	<p>Maximise simplicity and transparency.</p> <ul style="list-style-type: none"> • No supercredits. • No off-cycle credits. • No air conditioning credits.

TMR support the Option B design which excludes technology credits, maximising simplicity and transparency and provide the following considerations:

- A NVES reflecting transparency, simplicity, and ease of administration will ensure the timely implementation and reduction of current supply barriers.
- The purpose of the NVES is to reduce emissions and meet Australia's national and international commitments. TMR agrees with the Australian Government preferred approach to avoid accommodations, like the inclusion of super credits, off-cycle credits and air conditioning credits, which would erode real emissions reduction and limit the effectiveness of a NVES. Further, air conditioning credits can be addressed through other legislative measures, other than a NVES.

Penalties

Penalties are reflective of the amount of money that a supplier would need to pay for failing to meet the NVES CO₂ target. The regulated entity that will incur credits and debits under the NVES legislation is the supplier who first enters a particular vehicle onto the Register of Approved Vehicles (RAV). All road vehicles—cars, trucks, trailers, caravans and so on—must be entered on the RAV before they can be provided to the market for the first time in Australia. A NVES is imposed on a supplier's vehicle fleet as an average and does not impose fees on the vehicle's emissions level. The intent of the penalty is to ensure suppliers comply with the regulated obligations.

The options are as follows:

Option A	Option B	Option C
Low penalty rate of \$40 per g/km. NVES commences in 2025 but offers a 2-year grace period with binding targets commencing in 2027.	Moderate penalty rate of \$100 per g/km. Fastest practical commencement. NVES commences in full on 1 January 2025.	High penalty rate of \$200 per g/km. Fastest practical commencement. NVES commences in full 1 January 2025.

TMR support the penalty design in Option B and provide the following considerations:

- A systems level approach through imposing penalties on suppliers who do not meet the emissions reductions targets is an effective mechanism used in other States, such as the US and New Zealand, to ensure compliance, and should be included in an Australian NVES.
- TMR notes the importance of ensuring transparency and simplicity in the regulatory framework including ensuring suppliers are clear on when and how they will incur a penalty, and what the repercussions are if the penalty is not paid.
- A moderate penalty rate of \$100 per g CO₂/km provides sufficient incentive for suppliers to comply with the standard while reducing the risk of suppliers withdrawing some vehicles from the Australian market.
- Commencing the penalty settings as soon as practical after the NVES commencement recognises that transport emissions reduction is required now to meet our targets and mitigate the worst impacts of climate change.

Do you support the Government's preferred option (Option B)?

TMR support the Australian Government's preferred option (Option B) for the NVES, for the reasons outlined in the sections above. The design of the elements included in Option B reflect a NVES that will be effective, equitable, simple, transparent, credible and robust, and enabling. TMR have considered the key benefits and costs associated with each of the options for NVES design. TMR note Option B purports to deliver the highest benefit to cost ratio through avoiding extremely high costs for government and compliance, vehicle technology costs, electricity costs, battery replacement costs, while providing benefits to Australians through fuel savings, reduced vehicle maintenance, health benefits and GHG emissions.

The NVES is critical to decarbonisation of the transport sector but will require extensive collaboration to ensure its success. TMR urge the Australian Government to continue to consult and engage with all states and territories to ensure a holistic and coordinated approach to achieving net zero transport emissions while minimising the economic impact on Australians.

Regulatory framework

TMR note legislative drafting to implement a NVES is ongoing and will require a new enabling legislation, and a regulator to be responsible for the day-to-day management and oversight of NVES operations. TMR **support** the regulatory apparatus proposed in the NVES. That is, for the regulator to sit within the Department with key functions to assess supplier performance against the NVES targets and ensure compliance.

TMR note that the onus of target setting on a five yearly basis falls to the Minister responsible for the legislation in the Administrative Arrangement Orders, being the Commonwealth Transport Minister. TMR also note that these targets are to be set on advice provided by the Department.

On this basis, TMR strongly urge the Federal Government to consider how the legislation will include existing governance mechanisms such as Infrastructure and Transport Ministers (ITMM) group. This will ensure policy advice provided by the Department in reviewing the targets is reflective of findings and positions from across the states and territories. Relatedly the legislation *must* reflect a requirement for cross-state/territory consultation. Without acknowledging the role of existing executive decision-making mechanisms and an explicit commitment to consult with states and territories, the success of the NVES is threatened by way of isolation.

Do you have any feedback on the analysis approach and key assumptions used?

Analysis approach

TMR are supportive of the analysis approach used in the Impact Analysis to determine suitable options to introducing a NVES.

Whilst generally supportive of the approach used in the Impact Analysis, TMR strongly urge the Federal Government, in finalising the NVES to:

- Provide further information on the methodology for the cost-benefit analysis.
- Provide further information on the impact of the NVES on vehicle prices and fuel expenditure ensuring they are sufficiently supported by modelling or analysis.

TMR note the multi-staged approach to analysis - in alignment with impact analysis requirements of the Australian Government - complements best practice approaches to policy and regulation development used by the Queensland Government (i.e. [Queensland Government Better Regulation Policy](#)). In doing this the Impact Analysis provides the appropriate approach to enable contextual justification for, and outlines the risks and impacts associated with not introducing an appropriately considered NVES.

Common features

TMR's views and feedback on the other common features included in the Impact Analysis, including exceptions on vehicle categories, targets, credit trading and super credits, concessions and break points, and off-cycle credits, has been addressed in the sections above.

Key assumptions in CBA

TMR note the key assumptions used to understand the cost and benefits of the proposed NEVs outlined at Appendix B of the Impact Analysis – TMR positions on assumptions is outlined as follows:

#	Assumption	Basis for assumption	Value, where possible	Support / Do not support
1	Population growth to 2050	ABS and Treasury forecasts (see next cell)	Detailed historical population by gender by age by remoteness region estimates based on ABS 2021 Census and ABS Estimated Resident Population catalogue numbers 3101 (15 June 2023) and 3235 (30 August 2022). Forecasts from Australian Government Centre for Population (Budget 2023-24: State and Territory Population Projections, 2022-23 to 2026-27, and Budget 2023-24: National Population Projections, 2022-23 to 2033-34) and forecasts thereafter.	Support
2	Inflation rate	Did not use explicitly, considered as part of other forecasts.		Support
3	Scrappage rates	Non-linear function, with survival rate of vehicles declining on an 's curve' (see next cell)	Survival rates based on the static scrappage model in the US CAFÉ Model (Shaulov, M., Baskin, D., Clinton, B., Eilbert, A., Garcia-Israel, K., Green, K., Pickrell, D., Saenz, G., & Vargas, A. (2022, April). CAFE model documentation (Report No. DOT HS 813 281). National Highway Traffic Safety Administration) calibrated to match 2022 new vehicle sales.	Support
4	Battery replacement costs	Assumed to be required at 12 years of use.	Cost of \$5,000 for PVs, \$8,000 for LCVs and then reducing at 0.9% per annum in line with technology improvements.	Support
5	Vehicle maintenance costs	Lower maintenance cost of EVs, saving may be up 40% compared to an ICE vehicle, due to fewer moving parts and less brake wear, but this varies considerably between suppliers and models. Sources such as WhichCar ¹ .	\$350 per annum maintenance saving for an EV compared to an ICE vehicle.	Support
6	Health benefits	Source: Annual estimates for health cost due to emissions based is on assumptions used in GHD Advisory and ACIL Allen, Fuel Quality Standards Implementation, Cost Benefit Analysis, 2022. Accessed 12 October 2023.	The 2022 Fuel Quality Standards Cost Benefit analysis includes estimated health costs of fuel (RON91, RON95, RON98, and diesel) from 2025 to 2040. Arithmetic average of RON91, RON95, and RON98 was used for petrol health cost. 2025 starting point of \$0.1210/km for average petrol and \$0.0684/km for diesel. Projections from 2041 to 2080 is derived using linear trend from estimates between 2025 and 2040 (rate of increase of 0.05% per year).	Support
7	NPV discount rate	In line with Government guidelines	7% for central case; sensitivities at 3% and 10%.	Support

#	Assumption	Basis for assumption	Value, where possible	Support / Do not support
8	Inferred headline limit	Headline limits after the initial period (2025-29) are not set, instead an inferred headline limit was created to track parallel to the BAU (to a floor of 20g CO ₂ /km).	Dynamic adjustment for 25 years, with a floor of 20g CO ₂ /km.	Support
9	Oil and fuel prices	IEA World Energy Outlook data 2022 (https://iea.blob.core.windows.net/assets/830fe099-5530-48f2-a7c1-11f35d510983/WorldEnergyOutlook2022.pdf), Accessed July 2023; Australian Petroleum Statistics, March 2023, Provided by DISR; Fuel Quality Standards Implementation, Cost Benefit Analysis, 2022. Accessed 12 October 2023.	Dynamic adjustment to 2050 2025 petrol \$1.76/l 2025 diesel \$1.75/l 2050 petrol \$3.93/l 2050 diesel \$3.99/l Average rate of change for petrol: 1.59% Average rate of change for diesel 1.62%	Support
10	Carbon intensity of fuel (petrol and diesel) and forecast changes	DCCEEW, Australia emissions projections and methodology, 2022. Accessed July 2023	Data for Figures 2.31 and 2.32 are from Methodology for the 2022 projections, DCCEEW, 2022, Available at: https://www.dcceew.gov.au/sites/default/files/documents/methodology-for-the-2022-projections.pdf See Appendix, Table 13 and 14 Data for Figure 2.34 is from Australia's emissions projections 2022, DCCEEW, 2022, Available at: https://www.dcceew.gov.au/sites/default/files/documents/ageis-projections-chart-data.xlsx See Tab 15 All data accessed in July 2023	Support
11	Electricity prices	There is additional electricity demand and consumption, impacting prices, assuming a rapid uptake of EVs ⁱⁱ Source: GHD Advisory and ACIL Allen, Economic and Technical Modelling of the ACT Electricity Network Strategic Report; 26 April 2022. Accessed 12 October 2023.	The Economic and Technical Modelling of the ACT Electricity Network Strategic Report includes estimated residential electricity prices from 2023 to 2045. The 2025 estimate of 27.2 c/kWh is used as the starting value. Estimates for between 2046 and 2080 are derived using exponential smoothing forecasts based on values from 2023 to 2045. The rate of change is estimated to be -0.16% per year.	Support
12	GDP and related macro-economic parameters	Treasury forecasts – 2021 Intergenerational Report (https://treasury.gov.au/publication/2021-intergenerational-report)	Real GDP grows from approximately \$2 trillion in 2021-22 by 2.5% per annum.	Support
13	Value of carbon	Australian Transport Assessment and Planning Guidelines, 2021	\$60 / tonne, increasing by 3% annually.	Support

#	Assumption	Basis for assumption	Value, where possible	Support / Do not support
14	Light vehicle fleet size	Projections for the number of cars on Australian roads will be driven primarily by population growth, ABS population estimates to 2050 (See #1 for ABS Population reference). Historical vehicle stock (1990-2022) from 2022 BITRE Infrastructure Yearbook (Road) (https://www.bitre.gov.au/sites/default/files/documents/bitre-yearbook-2022-6-road.xlsx)	Total number of light vehicles is 15.064 million in 2022, with dynamic adjustment based on vehicle ownership rate and population growth.	Support
15	Vehicle ownership rate and growth	Historical vehicle stock (1990-2022) from 2022 BITRE Infrastructure Yearbook (Road) (https://www.bitre.gov.au/sites/default/files/documents/bitre-yearbook-2022-6-road.xlsx) . The figure will be relatively constant, with slow growth. Projections from 2023 to 2050 were estimated by developing a logarithmic trendline.	In 2022, passenger motor vehicles per person was 0.58 growing to around 0.59 passenger motor vehicles per person by 2035 and 0.60 in 2050. The rate of adjustment is logarithmic, the shape of which aligns with international research.	Support
16	Kilometres driven per passenger vehicle per year	Projects total vehicle kilometres travelled (1990-2022) from 2022 BITRE Infrastructure Yearbook (Road) (https://www.bitre.gov.au/sites/default/files/documents/bitre-yearbook-2022-6-road.xlsx) .Trends of decrease in kilometres travelled per vehicle per year to 2030 and 2050.	In 2022, annual kilometres driven per passenger motor vehicles per person was 10,443km. In 2030, this figure is projected to be 11,340 km, falling to 10,027 km in 2050.	Support
17	Shift to larger vehicles/SUVs	Projects VFACTS and S&P sales data (2012 to 2022) to 2050. Growth in line with current trend to 2028 then plateauing.	In 2022 share of sales of new SUVs was 74%, growing to around 80% by 2028 and continues at this level to 2050.	Support
18	EV demand/uptake	The approach adopted is based on Bloomberg 2022 data (https://bnef.turtl.co/story/evo-2022/page/1) and Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2022 projections (https://www.dcceew.gov.au/sites/default/files/documents/australias-emissions-projections-2022.pdf) . Bloomberg projections used a conservative option, more benefits could be expected if uptake exceeds these expectations (noting estimates to date have consistently underestimated uptake and the fast transition pace).	Demand for EVs will continue to grow with uptake projections developed to 2050.	Support

#	Assumption	Basis for assumption	Value, where possible	Support / Do not support
19	EV price parity	EVs currently cost between 20 to 50% more than the equivalent ICE model, however prices are reducing and moving towards price parity.	Linear progression towards price parity in 2030.	Support
20	EV model choice	ACIL Allen/GHG market analysis found increased consumer choices	Based on VFACTS sales data (2012-2022), the number of EV model variations with positive sales in Australia has increased from 15 in 2012 to 598 in 2022. In August 2021, the EV Council reported (https://electricvehiclecouncil.com.au/wp-content/uploads/2021/08/EVC-State-of-EVs-2021.pdf) that Australians had access to 31 passenger EV models, while in July 2023 (https://electricvehiclecouncil.com.au/wp-content/uploads/2023/07/State-of-EVs_July-2023_.pdf) this number had increased to 74.	Support
21	Vehicle technology costs	Suppliers will bring more efficient vehicles to the Australian market, resulting in additional costs compared to the BAU. Based on the current average new vehicle transaction price of \$50,161 nationally in 2022, the price differential is in the order of \$15,000 to \$20,000. EV prices continue to reduce. CSIRO research suggests EV and ICE vehicle parity pricing will be achieved in 2030 ³ .	The differential cost of deploying EV technology compared to ICE technology narrows from \$16,000 in 2022 to parity by 2030 and remains equal thereafter. Suppliers can also deploy more efficient ICE vehicles into the Australian market at an additional cost of \$1,625 per vehicle, using current mature technology available in other markets.	Support
22	2022 new vehicle fleet emissions intensity	Analysis based on BITRE supplied 2021 figure and VFACTS data sources (2022 VFACTS sales data)	The fleet emissions intensity for new vehicle sales in the projections/modelling is 179.1 gCO ₂ /km (ADR 81/02, NEDC test) in 2022; equivalent to 248.9 gCO ₂ /km real world: <ul style="list-style-type: none"> – Passenger vehicles (MA+MC) 161.9 gCO₂/km (ADR 81/02, NEDC test) (225.0 gCO₂/km real world equivalent) – LCVs (NA + part NB1) 230.3 gCO₂/km ADR 81/02, NEDC test) (320.1 gCO₂/km real world equivalent) 	Support

³ Graham, P. 2022, Electric vehicle projections 2022. CSIRO, Australia. Accessed 21 September 2023. https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/csiro-2022-electric-vehicles-projections-report.pdf

#	Assumption	Basis for assumption	Value, where possible	Support / Do not support
23	Engine efficiency gains	Small gains projected. Extrapolation of baseline projection used in the Australian Government's 2016 Draft Regulation Impact Statement for <i>Improving the efficiency of new light vehicles</i> . https://www.infrastructure.gov.au/sites/default/files/migrated/vehicles/environment/forum/files/Vehicle_Fuel_Efficiency_RIS.pdf Page 32, Figure 7 Accessed in July 2023.	Passenger vehicle and LCV efficiency gains decrease over time. For passenger vehicles, gains are approximately 2 gCO ₂ /km year-on-year in 2025, falling to reductions of 0.8 gCO ₂ /km year-on-year by 2035 (where it remains constant to 2050). For LCV, reductions are 3 gCO ₂ /km year-on-year in 2025, falling to reductions of 1.6 gCO ₂ /km year-on-year by 2035 (where it remains constant to 2050).	Support
24	Government costs	Establishing, monitoring and enforcing the NVES, including its ongoing administration incur costs. Assumes NVES regulatory office will be established within the Department with full-time administrative staffing. Costs will be front end loaded.	Varies, depending on complexity of option. Generally, Option A is more complex to administer than Options B and C.	Support
25	Compliance costs	OEMs already have some reporting capabilities in place. Additional costs are assumed for suppliers to monitor their fleet's average emissions intensity to determine and report compliance with the policy. Cost estimates only capture additional reporting effort required over BAU. The cost for each supplier will differ and is proportional to the number of vehicles each sells.	- Large brands (more than 5,000 new vehicles sold annually, based on 2022 data; 26 brands identified in S&P data) the cost per OEM is \$400,000 per year from 2025. - Small brands (equal or less than 5,000 new vehicles sold annually, based on 2022 data; 27 brands identified in S&P data) the cost per OEM is \$150,000 per year from 2025.	Support
26	Light vehicle fleet categorisation	Third Edition Australian Design Rules (ADRs). See page 17.	Passenger vehicles (PVs) include MA vehicle classes; and Light commercial vehicles (LCVs) include MC, NA, NB1 vehicle classes (subject to the option being considered)	Support
27	Fuel quality standards and Euro 6d	Euro 6 RIS. Any assumed emissions changes based on improvements in fuel quality are a result of assumptions in DCCEEW RIS.	Dynamic adjustment of fuel efficiency gains with adoption of fuel quality standards and Euro 6d.	Support
28	Testing requirements	Analysis based on changes to fuel quality standards. Expect introduction of WLTP testing requirements from 2025-28. Conversion (by vehicle class) between NEDC and WLTP in interim based on EU factors ⁱⁱⁱ .	Where conversions are required to determine real world emissions outcomes, the following headline adjustment factors are used: NEDC to WLTP: 1.2421 NEDC to real world: 1.389	Support

Briefly, describe how the NVES might impact your organisation

Under the *Queensland Climate Action Plan*, Queensland has committed to 75 per cent emissions reduction below 2005 levels by 2030 and net zero emissions by 2050. Currently, transport sector emissions make up approximately 16 percent of Queensland's emissions, so decarbonisation of the transport sector is critical to achieving these targets. Queensland is a large State with a more decentralised population than other east-coast States, covering a vast area of 1,727,000 square kilometres with a population density of only three persons per square kilometre. Given the considerable presence of remote and regional areas, Queenslanders generally drive greater distancers, have higher rates of vehicle ownership, and purchase larger cars, more 4WDs and utes when compared to some other jurisdictions (like Victoria, ACT). For this reason, and as outlined in the Impact Analysis, under the NVES regional Queenslanders will have better return on each dollar spent, with significant fuel cost savings.

The introduction of a NVES is a critical opportunity to provide a range of benefits to Queenslanders, while ensuring we achieve our collective transport decarbonisation and net zero targets by:

- Supporting Queensland to achieve key targets under the ZEV Strategy, including 100 per cent of new passenger vehicle sales to be zero emission by 2036 and 100 per cent of eligible Queensland Government fleet passenger vehicles to be zero emission by 2026.
- Increasing the supply of affordable EVs and reducing upfront costs for Queenslanders.
- Moving forward a second-hand EV market which will enable more Queenslanders to opt for EVs and access the related financial and health benefits.
- Enable earlier overall reduction in transport sector costs and improved productivity due to significantly lower operating costs compared to ICE vehicles.
- Earlier reduction in proportion of ICE vehicles in the fleet, leading to improved air quality and health outcomes, support for Australian energy and jobs, and reduced transport emissions.
- Providing road safety benefits from a reduction in the average age of Australia's vehicle fleet through an increased supply of newer, safer vehicles, as opposed to individuals/businesses hanging onto older, ICE vehicles for longer.
- Increase private industry investment in EV charging infrastructure, ensuring Queenslanders have access to fast, reliable EV chargers.

Who should the regulated entity be?

TMR agree with the principles guiding who will be captured as a regulated entity under the NVES:

- The desirability of being integrated into the existing regulatory system, especially the RVSA.
- The desirability of ensuring very good regulatory coverage and reducing the possibility of avoidance.

TMR support the proposed approach that aligns with existing processes for entering vehicle information on the Register of Approved Vehicles (RAV) in accordance with the *Road Vehicle Standards Rule 2019*, with regulated entities that will incur credits and debits under the NVES to be the approval holder type who first enters a particular vehicle onto the RAV.

TMR urge the Australian Government to ensure reporting, record keeping, and information obligations are clear, transparent and sufficiently disseminated to ensure regulated entities understand their obligations under the NVES. TMR note that this will also mitigate potential risks of suppliers avoiding (intended or unintended) compliance with the NVES in cases where new vehicles are imported to Australia through avenues other than through the maker's official distribution system (i.e. grey imports).

Conclusion

TMR support the Australian Government's commitment to implementing a NVES, and this submission emphasises Queensland's feedback previously communicated to the Australian Government on the NEVS in late 2022 and initial NVES consultation in April 2023. TMR are committed to decarbonising the transport sector and welcome continued engagement, consultation and collaboration with the Australian Government.

ⁱ Man, H., and O'Kane, T., 2023, Is it time to buy an electric car? Crunching the numbers! <https://www.whichcar.com.au/car-advice/electric-cars-do-they-make-financial-sense#running-costs>

ⁱⁱ GHD Advisory and ACIL Allen, Economic and Technical Modelling of the ACT Electricity Network Strategic Report; 26 April 2022. Accessed 12 October 2023. <https://acilallen.com.au/projects/energy/economic-andtechnical-modelling-of-the-act-electricity-network-strategic-report-1>

ⁱⁱⁱ <https://publications.jrc.ec.europa.eu/repository/bitstream/JRC107662/kjna28724enn.pdf>



Organisation questionnaire response

Privacy Setting: I agree for my response to be published with my name and position withheld.

What organisation do you represent? (required)	Department of Transport and Main Roads (Queensland)
Please rank the proposed options in order of preference. (optional)	Option A - 0th, Option B - 0th, Option C - 0th
Briefly, what are your reasons for your choice? (optional, 3000 character limit)	As per attached submission
Do you support the Government's preferred option (Option B)? (optional)	Yes
Do you have any feedback on the analysis approach and key assumptions used? (optional, 3000 character limit)	As per attached submission
Briefly, describe how the NVES might impact your organisation (optional, 3000 character limit)	As per attached submission
Who should the regulated entity be? (optional, 3000 character limit)	As per attached submission