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Department of Climate Change, Energy, the Environment and Water
Australian Government
Submitted via the [online survey](#)

Submission on the Transport and Infrastructure Net Zero Consultation Roadmap

Nexa Advisory welcomes the opportunity to share its perspectives and insights on the Australian Government's Transport and Infrastructure Net Zero Consultation Roadmap.

Nexa Advisory supports the development of a Transport and Infrastructure Net Zero Roadmap and Action Plan, which will in part be achieved through this consultation process. The Federal Government's commitment to creating six sectoral plans to provide clear decarbonisation pathways for industry is a key ingredient to the country reaching its goal of net zero emissions by 2050.

Nexa Advisory is a consultancy that is expert in the energy sector. Our focus is accelerating the clean energy transition with people in mind. We have a proven track record in policy creation, political risk assessment and management, advocacy at all levels of government and regulation, and project design and delivery.

As such, Nexa Advisory's interest and expertise in regard to this consultation on the Roadmap is that decarbonisation of the transport sector has some aspects in common with the transition in the energy sector, and has two key implications for it:

- To the extent that the transport sector is electrified, it will play a significant part in the increase in demand for generated power.
- Electric vehicles have the potential to be part of the solution in managing the 'minimum demand' issue inherent in a power system that had a high penetration of renewable energy, in particular Distributed Energy Resources (DER) such as roof top solar. They can also be used as part of the storage solution.

Context

Nexa Advisory believes that a national plan, underpinned by clear principles, policies, incentives, and programs, is crucial for decarbonising the transport sector. We do not underestimate the task involved - developing a credible plan requires a fundamental shift in how governments at all levels plan and fund transport, prioritising emission reductions at the core. To create a resilient, diverse and decarbonised transport system it will be important to establish targets, prioritise technological innovation alongside non-technical solutions, and promote electrified transport modes.

Transport accounted for 21 per cent of Australia’s emissions in 2023¹. It is the fastest-growing and third-largest source of greenhouse gas emissions in the country², and is on track to become Australia’s largest source of direct emissions (26 per cent) by 2030 without further action³. The reality is that, even with the full implementation of current transport policies under consultation, the sector is still expected to be Australia’s second-highest emitter. As such, it has a critical role to play in the country’s decarbonisation journey.

Global trends and Australia's position

At a global level there is a move towards adopting diverse transport solutions that reduce emissions. The decline in lithium battery prices has made them more accessible and affordable, and accelerated the adoption of electric vehicles (EV), trucks, and trains. Australia is currently lagging behind, but it stands to benefit significantly from following the trend.

Australian drivers are competing for EVs with countries that already have high rates of adoption and large market volumes. As a small market, Australia needs to give clear signals, including through government policies, that demand is shifting. Without these signals, Australia risks becoming a dumping ground for fossil-fuelled cars.

Previous submissions by Nexa Advisory on the fuel efficiency standard⁴, to the Inquiry into the transition to electric vehicle⁵, and on the National EV Strategy⁶ have highlighted this issue. To catch up, Australia needs to set clear targets and establish trade avenues with countries like China, which are leading in EV production and technology.

Setting targets

Targets that guide emissions reduction and enhance accountability are essential for providing supply-side certainty and attracting private investment and technological innovation. This has been clearly demonstrated by the energy sector. As such, Nexa Advisory supports setting specific targets for each transport sector within the Transport and Infrastructure Net Zero Roadmap.

We recommend adopting a framework similar to the energy sector. National targets should align with Australia’s emission reduction goals, which must be supported by clear policies, incentives, and programs.

Complementing existing actions

The Federal Government should collaborate closely to ensure that the Roadmap complements and supports existing actions at state and local governments levels. Coordination between governments should focus on aligning policies, ensuring consistent, efficient, and rapid implementation, and avoiding unnecessary duplication.

¹ <https://www.infrastructure.gov.au/infrastructure-transport-vehicles/towards-net-zero-transport-and-infrastructure#:~:text=Australia's%20transport%20sector%20is%20the,largest%20in%20Australia%20by%202030.>
² <https://www.climateworkscentre.org/resource/decarbonising-australias-transport-sector-diverse-solutions-for-a-credible-emissions-reduction-plan/>
³ <https://greenhouseaccounts.climatechange.gov.au/>
⁴ <https://nexaadvisory.com.au/nexa-advisory-submission-new-vehicle-efficiency-standard-7-march-2024/>
⁵ <https://nexaadvisory.com.au/nexa-advisory-submission-inquiry-into-the-transition-to-evs-22032024/>
⁶ <https://nexaadvisory.com.au/nexa-advisorys-submission-national-electric-vehicle-strategy-consultation-paper/>

Guiding principles

Nexa Advisory understands that the Transport and Infrastructure Net Zero Roadmap is underpinned by five guiding principles:

1. Maximise Emissions Reduction
2. Value for Money
3. Maximise Economic Opportunity
4. Inclusive and Equitable
5. Evidence-Based

To ensure that Australia keeps pace with technological advancements in a way that is implied in the Consultation Roadmap, Nexa Advisory suggests adding 'Technological Innovation' a sixth principle.

Additionally, informed by the experience of the energy sector, we stress the crucial importance of a consumer-focused approach and recommend it be considered as a guiding principle. Any effort to increase the uptake of EVs must be centred on the needs and preferences of the people that will purchase and use them.

For clarity, we also recommend that guiding principles 1 and 5 be aligned with Australia's legislated emission reductions targets of 43 per cent by 2030 and net zero by 2050, which support the Paris Agreement commitment of limiting global warming to 1.5 degrees Celsius.

Non-technology solutions

Nexa Advisory strongly supports the exploration of diverse non-technology contributions to emissions reduction and enhancing resilience⁷. For example, reducing transport activity, increasing efficiency, or increasing public transport convenience⁸.

As such, in addition to the on-road transport improvements already being considered in this Roadmap, policymakers should explore ways to minimise the need for motorised travel. This includes improving land-use planning, implementing demand management strategies, and encouraging remote working.

Several councils are already making strides in improving land-use planning and can serve as real-world case studies. For instance, the City of Melbourne has been actively working to minimise the need for motorised travel. The Melbourne Planning Scheme, along with the introduction of 20-minute neighbourhoods, focuses on developing mixed-use areas where residential, commercial, and recreational facilities are in close proximity, reducing the need for long commutes.^{9,10} In addition, Melbourne's City Road Master Plan aims to manage

⁷ <https://www.climateworkscentre.org/resource/decarbonising-australias-transport-sector-diverse-solutions-for-a-credible-emissions-reduction-plan/>

⁸ <https://www.climateworkscentre.org/resource/decarbonising-australias-transport-sector-diverse-solutions-for-a-credible-emissions-reduction-plan/>

⁹ <http://www.melbourne.vic.gov.au/building-and-development/urban-planning/melbourne-planning-scheme/Pages/melbourne-planning-scheme.aspx>

¹⁰ https://www.planning.vic.gov.au/__data/assets/pdf_file/0022/653125/Creating-a-more-liveable-Melbourne.pdf

travel demand by enhancing pedestrian and cycling infrastructure¹¹. It would make sense to align this Roadmap with existing council-level plans and introduce complementary programs and initiatives at the State and Federal level.

Sector-specific strategies for transport

In the following sections Nexa Advisory has responded to the consultation questions and offers recommendations for each transport mode where it aligns with our expertise.

Our response and recommendations primarily focus on light on-road vehicles. However, we have included some recommendations on other aspects, where that has been informed by research and our expertise in the energy sector and effective ‘change incentivising and facilitating’ policy more generally.

We want to emphasise that Nexa Advisory believes electric transport is the future for both light and heavy on-road vehicles. In contrast, hydrogen holds significant potential for long-distance transport, such as heavy trucks, as well as for decarbonising the aviation and maritime sectors. While hydrogen is already viable, we note that green hydrogen will likely take some time to become widespread.

Across all transport modes, the Government plays a crucial role in reducing technological uncertainty by offering guidance, supporting trials, and demonstrating integrated use cases. Government–industry pilots are essential for evaluating new technology, assessing operational impacts, and shaping requirements for scaling the technology.

Road - light vehicles

Maximising the adoption of electric light vehicle technology, which is ready for immediate implementation, is crucial to reducing emissions and achieving net zero in road transport.

Barriers to EVs

Overcoming barriers in electric light vehicle uptake should be a central focus of this Roadmap as on-road transport accounts for approximately 13 per cent of the country’s greenhouse gas emissions, with 10 per cent coming from light vehicles¹². Light vehicles make up 60 per cent of the transport sector’s total emissions¹³.

There is a plateau or decline in EV sales in nations leading EV adoption, prompting manufacturers to reduce production¹⁴. There are several contributing factors to this, and it is crucial for Australia to learn from others’ experiences and address them to ensure a robust EV adoption¹⁵:

- Charging: availability and reliability of nation-wide charging infrastructure.

¹¹ <http://www.melbourne.vic.gov.au/building-and-development/shaping-the-city/city-projects/city-road/Pages/city-road-master-plan.aspx>

¹² <https://www.climatechangeauthority.gov.au/reviews/light-vehicle-emissions-standards-australia/opportunities-reduce-light-vehicle-emissions>

¹³ <https://nexaadvisory.com.au/nexa-advisory-submission-inquiry-into-the-transition-to-evs-22032024/>

¹⁴ <https://www.reuters.com/business/autos-transportation/industry-pain-abounds-electric-car-demand-hits-slowdown-2024-01-30/>

¹⁵ <https://acapmag.com.au/2024/01/government-inquiry-into-national-ev-transition/>

- Upfront vehicle costs: the bulk of EV purchases to date have been made by high-income households and there has been difficulty with engaging lower income demographics.
- Vehicle supply: supply chain challenges have caused delays in EV production.
- Government policies: Governments have reduced EV incentives and other adoption-support policies, which has slowed demand growth.
- Technology competition: competition from other low-carbon mobility options such as hybrid vehicles.

Focus on the user experience

EVs are an important component of a successful transition in the energy system. Charging of EVs can play a significant role in the management of energy demand and supply when coupled with distributed energy resources (DER) such as roof top solar. As such, the needs of energy system and EV users are aligned. However, drawing from the DER experience, it is critical to achieve effective consumer outcomes by building trust early through control and flexibility. This consideration should be a focus of the Roadmap.

For instance, implementing smart energy management systems to address minimum demand challenges in the electricity network, along with tariffs that incentivise charging EVs¹⁶, maximises benefits by establishing the appropriate price signals and empowering consumers.

Original Equipment Manufacturers (OEMs) play a crucial role in promoting smart charging by developing communication protocols, implementing load management strategies and facilitating V2G technology.

For instance, V2G technology can allow EVs to serve as energy storage systems, contributing to grid stabilisation by recharging during low-demand periods¹⁷. OEMs utilising V2G can transfer electricity between EV batteries and the power grid, providing owners with incentives for selling excess energy back during peak hours. A South Australian trial has demonstrated this in a limited capacity, but further investigation for use across Australia is needed¹⁸.

The Roadmap should also explore updated standards and regulations, including improved technical standards and regulations for DER, that align with the potential of smart energy management. Standards and regulations should follow the International Electrotechnical Commission (IEC) standards to ensure alignment with global supply chains¹⁹.

Overly restrictive measures seen in Queensland and South Australia²⁰ have been shown to limit consumer options for home charging, which is detrimental to EV adoption.

¹⁶ <https://nexaadvisory.com.au/web/wp-content/uploads/2024/03/Nexa-submission-Inquiry-into-the-transition-to-EVs-22032024.pdf>

¹⁷ <https://nexaadvisory.com.au/web/wp-content/uploads/2024/03/Nexa-submission-Inquiry-into-the-transition-to-EVs-22032024.pdf>

¹⁸ <https://www.energymining.sa.gov.au/industry/modern-energy/electric-vehicles/smart-charging-trials>

¹⁹ <https://www.iec.ch/publications/international-standards>

²⁰ https://electricvehiclecouncil.com.au/wp-content/uploads/2023/07/State-of-EVs_July-2023_.pdf

Nexa Advisory advocates for nationally consistent energy policies for integrating EVs into the grid, and we caution against the implementation of complex state-based technical standards imposed by distribution network services providers (DNSPs). This will ensure consumer benefits are prioritised.

Hydrogen versus electric

The decreasing cost of lithium batteries has made EVs more affordable. This has caused a significant shift towards electric transport globally.

As such, battery-electric light vehicles should be the focus of this Roadmap in the short-term. Further testing of hydrogen and electric technologies in real-world conditions is needed to determine their comparative advantages in terms of costs, efficiency, range, and charging refuelling time²¹.

However, battery-electric trucks have already undergone extensive testing and are in commercial operation, demonstrating clear advantages over hydrogen trucks in terms of range and charging time²².

NVES is a good starting point

Nexa Advisory is pleased to see the Government is progressing with the New Vehicle Efficiency Standard (NVES). This is a good starting point and will give Australia the opportunity to reduce a substantial portion of its transport emissions. However, as the NVES is currently designed, it would not sufficiently reduce light vehicle emissions to align with a 1.5-degree Celsius trajectory²³.

In addition, the success of the NVES will be dependent on complementary policy mechanisms that focus on fleet policies, promoting second-hand EV markets, supporting low-income households, ensuring charging infrastructure access, and aligning with global EV policy trends.²⁴

Recommendations

- **Prioritise user experience:** Address the critical link of timely, cost-effective access to power supply in EV adoption through a review of DNSP Network Price determinations and the economic regulatory framework²⁵. This can be done through the Australian Energy Regulator (AER) and directed by State Energy Ministers.
- **Implement demand flexibility:** Recognise the flexibility of significant electricity loads from transportation electrification as a valuable resource. Implement pricing strategies, such as flexible tariffs, to incentivise EV charging. This should be introduced alongside EV incentives and nationally consistent energy policies for integrating EVs into the grid.
- **Ensure access to electricity supply:** Ensure timely, cost-effective access to electricity supply. The lengthy and costly process of securing power supply from DNSPs remains

²¹ <https://thedriven.io/2024/04/14/fossil-fuel-backers-still-arguing-hydrogen-has-advantage-over-batteries-for-transport/>

²² <https://thedriven.io/2024/04/14/fossil-fuel-backers-still-arguing-hydrogen-has-advantage-over-batteries-for-transport/>

²³ <https://www.climateworkscentre.org/resource/decarbonising-australias-transport-sector-diverse-solutions-for-a-credible-emissions-reduction-plan/>

²⁴ <https://nexaadvisory.com.au/nexa-advisory-submission-new-vehicle-efficiency-standard-7-march-2024/>

²⁵ <https://nexaadvisory.com.au/nexa-advisory-submission-inquiry-into-the-transition-to-evs-22032024/>

a significant bottleneck in EV charging infrastructure deployment and has the potential to increase costs for consumers.

- **Focus on EVs:** Prioritise battery-electric light vehicles until both hydrogen and electric technologies have been tested against each other under real-world conditions.
- **Introduce complementary policy mechanisms:** Beyond the NVES, support complementary policy mechanisms focused on fleet policies, promoting second-hand EV markets, supporting low-income households, ensuring charging infrastructure access, and aligning with global EV policy trends.

Thank you for the opportunity to provide a submission on this important discussion. If you would like to discuss any of the areas raised in this submission, please contact me.

Yours Sincerely

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[About Nexa Advisory](#)

Nexa is a advisory firm focused on accelerating the clean energy transition. We work with public and private clients including renewable energy developers, investors and climate impact philanthropists to help accelerate efforts towards a clean energy future. With a proven track record across policy creation, advocacy, political risk assessment and project delivery, we're holistic in our approach and deliver solutions with commercial intent.

The Nexa Advisory team are passionate energy specialists, who have been shaping the energy industry for over 20 years and all committed to the successful transformation of Australia's energy markets. The team is focused on helping clients grasp the unpredicted opportunities the energy transformation will bring.