

Transport and Infrastructure Net Zero Consultation Roadmap

Take the survey

Department of Climate Change, Energy, Environment and Water

Response received at:

July 26, 2024 at 4:06 PM GMT+10

Response ID:

sbm2f83beab1e6062fab7af9

1 Confirm that you have read and understand this privacy notice.

Yes

2 Please indicate how and if you want your submission published.

Public

3 Published name

Toyota Motor Corporation Australia

4 Confirm that you have read and understand this declaration.

Yes

5 First name

Vivek

6 Last name

Shah

7 Email

[REDACTED]

8 Phone



9 Who are you answering on behalf of?

Organisation

10 Organisation name

Toyota Motor Corporation Australia

11 What best describes you or your organisation?

Industry

12 What sector do you represent?

Light road vehicles (cars, utes etc.)

13 What state or territory do you live in?

Victoria

14 Postcode

3207

15 What area best describes where you live?

City

16 1. Do you support the proposed guiding principles?

Not answered

17 1.1 Please add details to your response.

Not answered

18 2. Do you support the use of the avoid-shift-improve framework as a tool to identify opportunities for abatement?

Not answered

- 19** 2.1 Please add details to your response.
Not answered
- 20** 3. Do you agree the development of a national policy framework for active and public transport will support emissions reduction?
Not answered
- 21** 3.1 Please add details to your response.
Not answered
- 22** 4. What should be included in a national policy framework for active and public transport and how should it be developed?
Not answered
- 23** 5. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure the movement of people contributes to transport emissions reduction?
Not answered
- 24** 6.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure that the movement of goods contributes to transport emissions reduction?
Not answered
- 25** 6.2. How would these actions address the identified challenges and opportunities for emissions reduction in the movement of goods?
Not answered
- 26** 7. Do you agree with the proposed net zero pathway for light road vehicles?
Not answered

27 7.1 Please add details to your response.

Toyota's view is that electrified vehicles including BEVs, PHEVs and HEVs are all an important part of a net zero pathway for light vehicles.

However, Toyota believes that further consideration should also be given on the important role that other low carbon technologies such as hydrogen FCEVs, H2 ICE (hydrogen internal combustion engine) and LCLFs such as e-fuels and biofuels (such as biodiesel) can play in decarbonising the light vehicle sector. See submission for imagery.

The images above describe Toyota's multi-pathway approach to decarbonisation. As evident, Toyota believes that a variety of technologies are required to help decarbonise the automotive industry. A particular technology may not meet the needs of every customer,

and each technology has advantages and drawbacks. Although there is overlap, the image above notes Toyota's view that BEVs, HEV/PHEVs and FCEVs, as well as H2 ICE and LCLFs, will all have a role to play based on vehicle size and desired travel distance. As an example of this, Toyota has recently begun local trials and evaluation of a prototype HiAce van (commercial vehicle) powered by an ultra-low CO2 emissions hydrogen-fuelled internal combustion engine, with pilot testing currently being undertaken by CPB Contractors. This vehicle is ideal for back-to-base operations and carrying heavy loads without suffering from the extended charging time (and consequent downtime) that equivalent BEVs may face. Toyota is exploring further improvements in the range and efficiency of hydrogen ICE technology by pairing it with our hybrid technology.

Toyota notes that the Roadmap (p. 38) discusses Australians' increasing preference for heavy passenger vehicles such as SUVs and utes as a challenge to decarbonising light vehicles. Toyota would like to provide some further commentary in relation to this: see submission for imagery.

As evident in the images above, a substantial portion of Toyota's SUV and light commercial vehicle (LCV) customers live in rural areas, with many customers in the farming, mining and construction sectors.

BEV options in the commercial space (with required payload, towing and range capabilities suitable for the sectors identified above) are extremely limited, and are not yet practical,

capable or affordable. This creates a challenge for the Australian market, as commercial vehicles are an essential pillar of life for many Australians, including those working in primary industries such as agriculture, mining, construction and trades. Where commercial

ZLEVs are available, required attributes such as driving range are greatly diminished when towing or carrying loads.

These capability requirements in relation to durability and performance in very harsh conditions make LCLFs and other electrified technologies a more viable option to decarbonise compared to currently available BEV technology.

See case study in submission.

With regard to the timeline described in Figure 9 of the Roadmap (p. 39), Toyota notes the following:

- Within the 2024-2030 timeframe, Toyota anticipates that technologies such as HEV technology will continue to carry a significant upfront price advantage compared to BEVs. For example, our RAV4 HEV has a starting price over \$20,000 less than our similarly sized bZ4X BEV (both are SUVs). Toyota believes that although this gap may reduce, it will likely remain substantial towards 2030.

- Toyota would like to seek further clarification on the Government's EV charging infrastructure plan, and questions whether this will be adequately widespread across the country by 2040. Toyota notes that the National EV Strategy (published in 2023 and referenced on p. 38 of the Roadmap) did not include any new announcements related to EV charging infrastructure.

- o Although the Government has since announced the Recharging Automotive Program (\$60 million to provide EV charging infrastructure to automotive businesses), Toyota notes that ambitious supply-side measures such as the New Vehicle Efficiency Standard (NVES) should be matched with equally ambitious demand-side measures. Toyota recommends that the Government collaborate with State and Territory Governments to provide certainty, and a nationally consistent and unified approach to EV charging infrastructure.

- o In addition to BEV and PHEV charging infrastructure, Toyota continues to urge the Government to consider increasing hydrogen refuelling infrastructure to support uptake of FCEVs, that are particularly suited to larger vehicles with heavy loads and/or requiring long-distance travel.

- o Toyota notes that upstream factors such as the capability of the grid to handle load from charging EVs, extent to which the grid is powered by renewable energy sources and cost of substation upgrades (e.g. to support multiple DC fast chargers) must all be considered when developing a sustainable EV charging network.

- Toyota notes that as some light vehicles may have a lifespan exceeding 20 years, ICE vehicles sold in 2030 may remain operable in 2050.⁷ In order to decarbonise the existing, primarily ICE, light vehicle fleet and reduce fossil fuel demand, there must also be a corresponding uptick in the supply and availability of reasonably priced LCLFs as 2050 approaches.

28 8. The Australian Government is currently developing an Australian New Vehicle Efficiency Standard and has already begun to implement actions in the National Electric Vehicle Strategy.8.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce light vehicle emissions?

As Question 8 references the National Electric Vehicle Strategy, Toyota's responses to these questions are geared around recommendations to increase uptake of electrified vehicles.

However, Toyota notes that a holistic approach to reducing light-vehicle emissions must consider measures to support other technologies (such as hydrogen and LCLFs) to ensure low and zero tailpipe emissions vehicles are viable for all customers. Toyota refers to its submission to the LCLF consultation in this regard.

In relation to increasing uptake of electrified vehicles, Toyota recommends:

Holistic approach key to success

A holistic approach should be taken with regard to the establishment of resources, systems and infrastructure required to transition to electrified vehicles. We understand that Government proposals such as NVES address the supply side of the equation to increase the uptake of ZLEVs. In addition, the Government should also consider demand-side measures

such as:

- Planning and provision for the growth and widespread availability of public recharging infrastructure, including the number of chargers, serviceability and uptime.
- Consumer-support mechanisms such as grants, tax credits and other incentives.

Charging infrastructure and Australian market requirements

Toyota Australia has partnered with Jet Charge to roll out Australia's largest dealership-based EV charging network, with EV charging hardware now installed at 244 metropolitan and rural Toyota dealerships across every Australian state and territory. This includes a mix of AC and fast-charging DC outlets to deliver the best possible customer experience for Toyota BEV owners.

Our key learning from overseas markets is that charging infrastructure needs to grow in

step with ZLEV vehicle availability. To support this, Toyota recommends substantial further Government investment in ZLEV charging and refuelling infrastructure to support alleviating consumer concerns such as range anxiety.

Subsidies could also extend to the construction of new EV charging stations (expanding on programs such as the Recharging Automotive Program), as well as other aspects of the EV ecosystem such as home charging.

Consumer support mechanisms

Toyota's view is that whole of life vehicle costs are also important considerations when consumers evaluate whether to purchase an electrified vehicle. Key costs include:

- Up front purchase price
- Fuel/energy price
- Servicing
- Repair costs
- Insurance costs
- Trade-in values
- Battery replacement cost (as applicable)
- Useful life of the vehicle

Toyota believes that consumer support mechanisms such as incentives and tax credits will support reducing these whole-of-life costs. We expect ZLEV technology to continue to grow in popularity and demand, however our previous experience from the introduction of hybrid vehicles shows the transition may take considerable time in the mass market segment and can only occur with the right focus on education, affordability and infrastructure.

Toyota continues to advocate for the introduction of technology-agnostic incentives to purchase LZEVs, including consumer incentives for purchasing zero tailpipe emissions vehicles (e.g. BEVs and FCEVs), as well as PHEVs, HEVs, low-CO2 emission ICE based vehicles and biofuel/LCLF compatible vehicles. These consumer incentives could take the form of purchase subsidies, tax cuts or preferential treatment in other areas such as lower parking fees.

Toyota notes that a review of the NVES is expected to commence before the end of 2026, and notes that this is a good opportunity to consider including credits such as super credits and off-cycle credits in a manner consistent with similar schemes internationally.

A National Road User Charge

Following the invalidation of the Victorian Government's ZLEV Road User Charge (RUC) by the High Court, we believe that consideration should be given to a national RUC as part of a broad base of tax reform that replaces the current fuel excise. Funds generated by the RUC could be directed towards roads and infrastructure, as well as consumer subsidies to support the usability and accessibility of ZLEVs and help drive demand.

Resolving servicing and maintenance issues

- Skills shortages are a particular issue for the automotive industry. As highlighted recently by the MTAA, there were acute skills shortages in the automotive industry in 2023.⁸ In addition, EV technicians require different skills and training, as indicated by the occupation's "automotive electrician" unique national training qualification.
- Further support and incentives must be provided to the industry to ensure that BEVs can be serviced as demand increases.

29 8.2 How would these actions address the identified challenges and opportunities to reduce light vehicle emissions?

Not answered

30 9. Do you agree with the proposed net zero pathway for heavy road vehicles?

Not answered

31 9.1 Please add details to your response

Not answered

32 10. The proposed pathway for heavy road vehicles relies on a mix of battery electric, hydrogen fuel-cell and low carbon liquid fuels. Rank from 1 to 3, the order in which these should be prioritised for emissions reduction.

Not answered

33 10.1 Please add details to your response. Why did you rank them in that order?

Not answered

34 11. What role should low carbon liquid fuels play in the heavy vehicle decarbonisation?

Not answered

35 12. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce heavy vehicle emissions?

Not answered

36 13. Do you agree with the proposed net zero pathway for rail?

Not answered

37 13.1 Please add details to your response.

Not answered

38 14. The proposed pathway for rail relies on a mix of battery electric, hydrogen fuel-cell and low carbon liquid fuels. Rank from 1 to 3, the order in which these should be prioritised for emissions reduction.

Not answered

39 14.1 Please add details to your response. Why did you rank them in that order?

Not answered

40 15. What role should low carbon liquid fuels play in rail decarbonisation?

Not answered

41 16. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce rail emissions?

Not answered

42 16.1 How would these actions address the identified challenges and opportunities to reduce rail emissions?

Not answered

43 17. Do you agree with the proposed net zero pathway for maritime?

Not answered

44 17.1 Please add details to your response.

Not answered

45 18. The Australian Government is engaging in consultation as part of the development of the Maritime Emissions Reduction National Action Plan and those consultations will also inform the final Roadmap and Action Plan. 18.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce maritime emissions?

Not answered

46 18.2 How would these actions address the identified challenges and opportunities to reduce maritime emissions?

Not answered

47 19. Do you agree with the proposed net zero pathway for aviation?

Not answered

48 19.1 Please add details to your response.

Not answered

49 20. The Australian Government has already engaged in consultation on aviation decarbonisation through the development of the Aviation White Paper and those consultations will also inform final Roadmap

and Action Plan.

Not answered

- 50 20.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce aviation emissions?

Not answered

- 51 21. Do you agree with the proposed net zero pathway for transport infrastructure?

Not answered

- 52 21.1 Please add details to your response.

Not answered

- 53 22. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce transport infrastructure emissions and ensure that transport infrastructure is ready for and enables low-emission transport modes?

Not answered

- 54 22.1 How would these actions address the identified challenges and opportunities to reduce transport infrastructure emissions?

Not answered

- 55 23. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure the energy mix is ready to support transport emissions reduction?

Not answered

- 56 24. How should the use of low carbon liquid fuels (LCLFs) be prioritised across different transport modes over time to achieve maximum

abatement?

Not answered

- 57 25. What are the best ways for the Australian Government to work collaboratively with industry, business, governments and communities to implement the proposed pathways?

Not answered

- 58 25.1 What are good domestic or international examples of partnership and collaboration on transport and transport infrastructure emissions reduction that could inform the final Roadmap and Action Plan?

Not answered

- 59 25.2 What opportunities can Government leverage to show leadership in Australia and internationally?

Not answered

- 60 26. What measures and metrics should be used to evaluate the final Transport and Infrastructure Net Zero Roadmap and Action Plan?

Not answered

- 61 26.1 What other data and evidence could governments use and how could this offer further insights on the pace, scale and location of transport emissions reduction pathways?

Not answered

- 62 27. Do you have any feedback on the proposed review process?

Not answered

- 63 28. Do you have any further feedback on the Consultation Roadmap and proposed pathways?

Not answered

- 64 28.1 Is there anything missing? Are the sections appropriately integrated? Is the Roadmap appropriately ambitious?
Not answered
- 65 29. Is there any further information or documentation that you wish to be considered with your submission?
Not answered
- 66 Would you like to upload a document?
Yes
- 67 Have you removed any identifying information from your submission?
Yes
- 68 Upload a submission
Toyota Australia - Submission to Net Zero Consultation Roadmap Final.pdf
- 69 Upload a submission
Not answered
- 70 Upload supporting file
Not answered
- 71 Upload supporting file
Not answered

TOYOTA

Submission by
Toyota Motor Corporation Australia
to the
*Transport and Infrastructure Net Zero
Consultation Roadmap*

July 2024

Contents

Section	Page
Executive Summary	3
About Toyota Australia	5
Responses to Section 3.1 (Questions 7 and 8)	6
Conclusion	13

Executive Summary

Key points

- Toyota's global strategic direction is to decarbonise through a multi-pathway approach, that offers a breadth of low and zero-carbon technologies to allow customers to choose the right option for them, leaving nobody behind.
- Toyota's global 'Environmental Challenge 2050' includes a target to reduce average greenhouse gas emissions from light vehicles (passenger and light commercial vehicles) by 33.3% by 2030 (from a 2019 baseline) and is in-line with the overall direction of the Roadmap.¹
- Toyota notes that commentary on p. 35 of the Roadmap that '*2023 saw EVs overtake sales of conventional hybrid vehicles in Australia*' is misleading as it lacks context and is not representative of current (YTD 2024) sales trends.²
- Toyota Australia continues to urge the Government to also consider the importance of Low Carbon Liquid Fuels (LCLFs) in decarbonising the light vehicle sector, including decarbonising the existing internal combustion engine (ICE) based vehicle fleet. Toyota notes that the Government has currently emphasised the role that LCLFs play in other sectors such as heavy vehicles, rail, maritime and aviation. Toyota refers the Department to its submission in the '*A Future Made in Australia: Unlocking Australia's LCLF Opportunity*' consultation for further details.
- Toyota Australia continues to advocate for the introduction of technology-agnostic incentives and support mechanisms, including charging infrastructure, credits (for consideration during the NVES review) and consumer incentives to purchase low and zero emissions vehicles (LZEVs).

Toyota Motor Corporation Australia Limited (Toyota Australia) welcomes the development of a long-term net zero roadmap for the transport and infrastructure sector. The overall direction of the Roadmap is in-line with Toyota's global long-term 'Toyota Environmental Challenge 2050', including a target to reduce average greenhouse gas emissions from light vehicles (passenger and light commercial vehicles) by 33.3% by 2030 (from a 2019 baseline).³ Toyota recognises the important role that electrified vehicles, including BEVs, have in decarbonising the light vehicle sector, while also noting that a diversity of low and zero carbon options are required to cater for the motoring needs of all Australians.

¹2023 Toyota Australia Sustainability report p. 15, accessible at: [2023 Toyota Australia Sustainability Report](#). Please see also the Toyota Global Sustainability data book p. 47, accessible at: [Sustainability Data Book \(global.toyota\)](#). Toyota Australia notes that this target has been validated by the Science Based Targets initiative (SBTi)

²See publicly available VFACTS 2024 YTD sales figures, e.g. as reported by CarExpert: [VFACTS June 2024: Soft finish for record half-year | CarExpert](#)

³See (1) above

Toyota believes that carbon reduction, rather than a particular technology, should be the focus. Toyota is committed to a multi-pathway approach, which focuses on developing a breadth of solutions and technologies that meet the diverse needs of our customers without leaving anyone behind.

This approach will ensure our current and future customers can choose low-carbon solutions that are right for them; from zero and low tailpipe emission vehicles (ZLEVs) options that will include Battery Electric (BEV), Hybrid Electric (HEV), Plug-in-Hybrid Electric (PHEV) and Fuel Cell Electric (FCEV), as well as future technologies under development such as hydrogen internal combustion and other LCLFs such as e-fuels and biodiesel.

Toyota Australia notes that commentary on p. 35 of the Roadmap that '*2023 saw EVs overtake sales of conventional hybrid vehicles in Australia*' lacks context and is misleading. Based on current (2024 YTD) sales trends, hybrid vehicles have a higher market share and sales than BEVs.⁴ Toyota Australia notes that the reduced amount of hybrid vehicle sales in 2023 was due to supply shortages, rather than a lack of demand. Toyota Australia disagrees with the implication that 2023 sales figures are representative of an irreversible trend towards BEV sales in Australia overtaking those of other electrified vehicle technologies.

Toyota notes that to move towards carbon neutrality and the ultimate goal of net zero in the light vehicle sector, the Government must consider new vehicles as well as the existing (primarily ICE-based) vehicle fleet, which can have a lifespan exceeding 20 years.⁵ To this extent, Toyota anticipates that future LCLFs will play a prominent role in decarbonising the existing light vehicle fleet, including light commercial vehicles.

This is why Toyota supports a multi-pathway technology approach to drive towards carbon neutrality – BEVs where they are most appropriate, as well as other powertrains that make the best use of available infrastructure and other considerations (such as cost) to help meet the diverse vehicle needs to ensure mobility for all Australians.

Toyota's response to the consultation paper provides comments on the Roadmap as applicable to light vehicles, focused on Chapter 3.1 (road-light vehicles). Toyota Australia also supports the views of the FCAI (Federal Chamber of Automotive Industries) in relation to this consultation.

⁴ See publicly available VFACTS 2024 YTD sales figures, e.g. as reported by CarExpert: [VFACTS June 2024: Soft finish for record half-year | CarExpert](#)

⁵Based on publicly available used car sales data. See, for example, vehicles produced in 2004 [and earlier on Carsales](#).

About Toyota Australia

<p>Facts and Statistics</p>	<ul style="list-style-type: none"> ▪ Presence in Australia since 1959 ▪ 21 consecutive years as Australia’s best-selling automotive brand with 215,240 vehicles delivered in 2023. Additionally, Lexus Australia sold 15,192 vehicles in 2023. ▪ Toyota Australia directly employs 1,500+ staff ▪ Dealer network of approximately 280 Dealers with their own workforce of approximately 15,000 employees ▪ 200+ EV chargers across Toyota Dealers, including 16 that are publicly available. Toyota Australia has over 25 EV charging points across our corporate properties. ▪ While no longer a local manufacturer, Toyota Australia continues to deliver diverse operations above and beyond import/distribution as is evident through our Altona Centre of Excellence (COE). COE functions include: <ul style="list-style-type: none"> – Product Planning & Development, Conversions and Accessories – Design, develop or customise vehicles to meet the needs of the Australian market – Product knowledge centre – Carry out vehicle evaluation on a 1.2km test track purpose built to replicate Australian road conditions – Hydrogen Centre – Victoria’s first integrated hydrogen site including generation of hydrogen and refuelling station – Local assembly of Hydrogen Power Generators intended for both Australian and export markets. – Corporate Social Responsibility (CSR) initiatives - Sharing Toyota Production System knowledge with local industry through our Toyota Production System Support Centre (TSSC) and broader community support through Toyota Community Trust contributions (1% of pre-tax profit to community with a value between \$2.5-\$3.5 million per year). – Sponsorships and grass-roots community contributions such as the AFL ‘Good for Footy’ program, Cricket Australia, National Tree Day, Olympics and Tamworth Country Music Festival.
<p>Product Information</p>	<ul style="list-style-type: none"> ▪ Market leader in hybrid vehicle technology <ul style="list-style-type: none"> – Introduced the first mass produced hybrid vehicle to the Australian market (Toyota Prius) in 2001 ▪ Pioneer in hydrogen fuel cell vehicle (FCEV) technology ▪ Toyota and Lexus hybrid and other zero and low tailpipe emissions vehicle product range: <ul style="list-style-type: none"> – Toyota <ul style="list-style-type: none"> ○ Hybrids <ul style="list-style-type: none"> • Yaris • Corolla Sedan and Hatch • Camry • RAV4 • C-HR • Yaris Cross • Corolla Cross

- Kluger
- Hydrogen Fuel Cell Electric Vehicle
 - Mirai⁶
- Battery Electric Vehicle
 - bZ4X
- Lexus
 - Hybrids
 - LBX SUV
 - UX SUV
 - NX SUV
 - RX SUV
 - ES sedan
 - LS sedan
 - LC coupe
 - LM people mover
 - Battery Electric Vehicle
 - UX SUV
 - RZ SUV

Toyota launched its first hybrid in Australia in October 2001 with the original Prius, and has now sold more than 430,000 hybrid vehicles since then.

Responses to Section 3.1

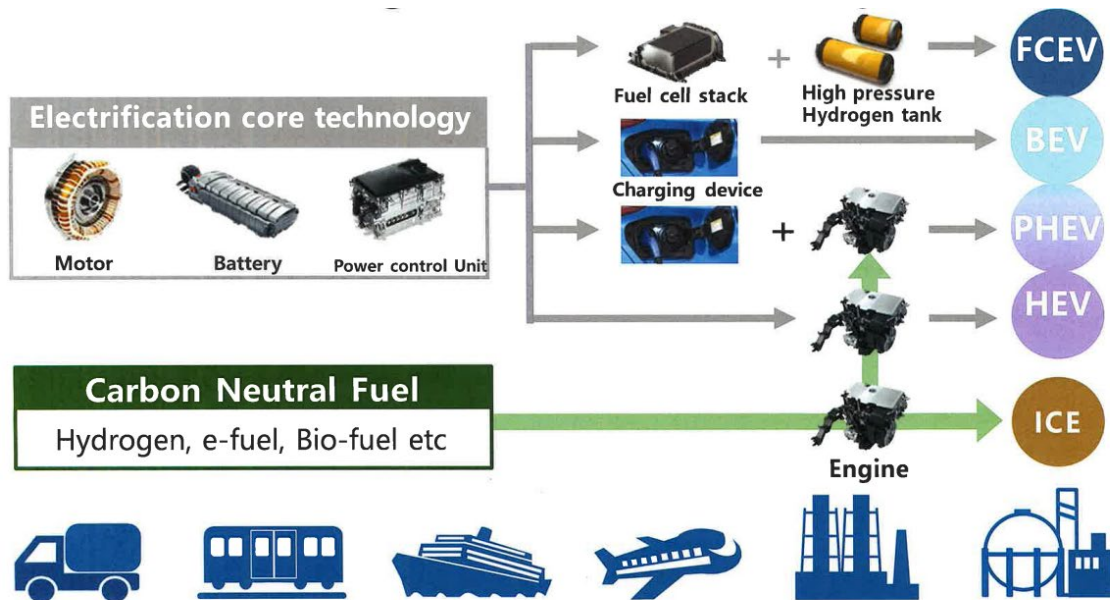
7. Do you agree with the proposed net zero pathway for light road vehicles.

7.1 Please add details to your response.

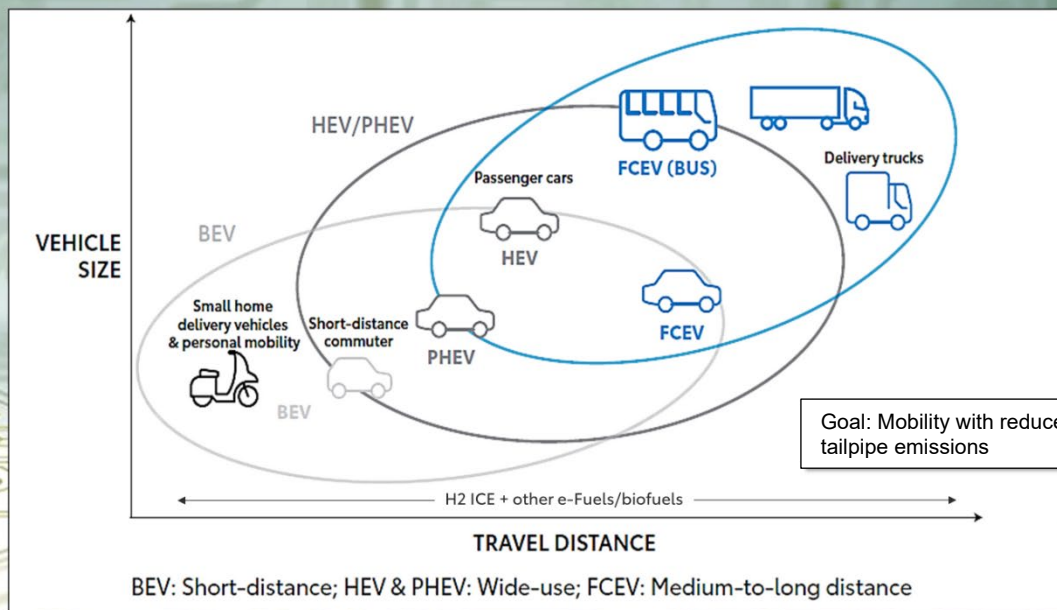
Toyota's view is that electrified vehicles including BEVs, PHEVs and HEVs are all an important part of a net zero pathway for light vehicles.

However, Toyota believes that further consideration should also be given on the important role that other low carbon technologies such as hydrogen FCEVs, H2 ICE (hydrogen internal combustion engine) and LCLFs such as e-fuels and biofuels (such as biodiesel) can play in decarbonising the light vehicle sector.

⁶Available in limited numbers to select fleet customers only.



Multipathway Approach



The images above describe Toyota's multi-pathway approach to decarbonisation. As evident, Toyota believes that a variety of technologies are required to help decarbonise the automotive industry. A particular technology may not meet the needs of every customer, and each technology has advantages and drawbacks. Although there is overlap, the image above notes Toyota's view that BEVs, HEV/PHEVs and FCEVs, as well as H2 ICE and LCLFs, will all have a role to play based on vehicle size and desired travel distance.

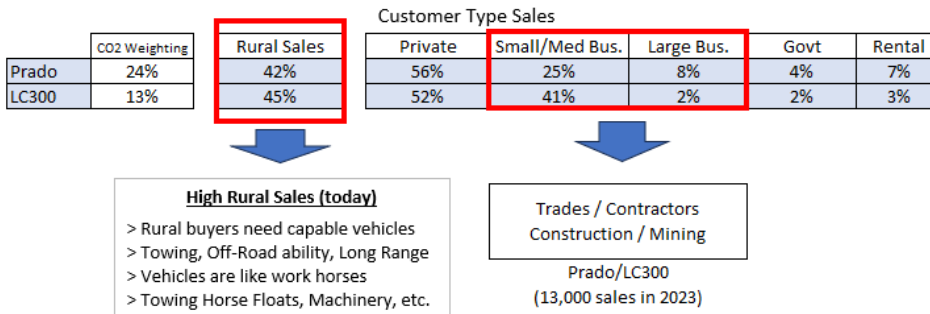
As an example of this, Toyota has recently begun local trials and evaluation of a prototype HiAce van (commercial vehicle) powered by an ultra-low CO2 emissions hydrogen-fuelled internal combustion engine, with pilot testing currently being undertaken by CPB Contractors. This vehicle is ideal for back-to-base operations and carrying heavy loads

without suffering from the extended charging time (and consequent downtime) that equivalent BEVs may face. Toyota is exploring further improvements in the range and efficiency of hydrogen ICE technology by pairing it with our hybrid technology.

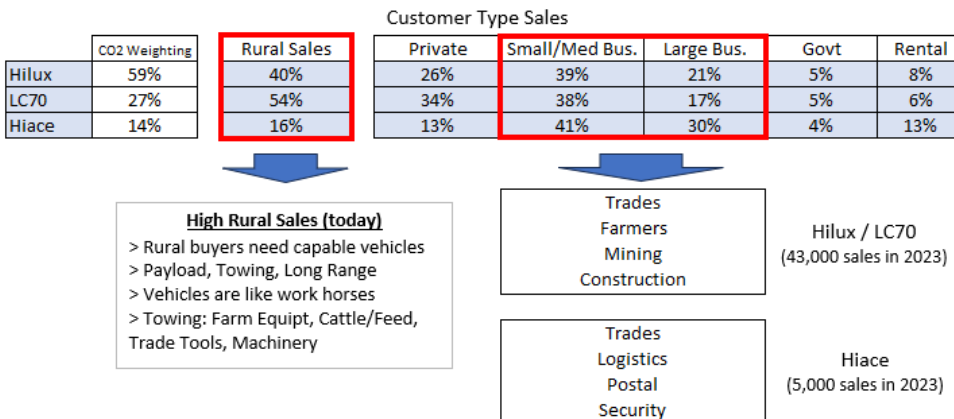


Toyota notes that the Roadmap (p. 38) discusses Australians' increasing preference for heavy passenger vehicles such as SUVs and utes as a challenge to decarbonising light vehicles. Toyota would like to provide some further commentary in relation to this:

Large SUV (Body on Frame) Customers are Retail & Small Business in Rural Areas



LCV Customers are Small/Medium and Large Businesses in Rural Areas



As evident in the images above, a substantial portion of Toyota's SUV and light commercial vehicle (LCV) customers live in rural areas, with many customers in the farming, mining and construction sectors.

BEV options in the commercial space (with required payload, towing and range capabilities suitable for the sectors identified above) are extremely limited, and are not yet practical, capable or affordable. This creates a challenge for the Australian market, as commercial vehicles are an essential pillar of life for many Australians, including those working in primary industries such as agriculture, mining, construction and trades. Where commercial ZLEVs are available, required attributes such as driving range are greatly diminished when towing or carrying loads.

These capability requirements in relation to durability and performance in very harsh conditions make LCLFs and other electrified technologies a more viable option to decarbonise compared to currently available BEV technology.

Case study: Meeting Australian Market Requirements

Currently, the delivery of new ZLEV technology predominantly centres around passenger vehicles and smaller SUVs, demonstrated by the increasing number of HEVs, PHEVs and BEVs available in market. There is significant research, development and evaluation underway across industry to develop suitable ZLEVs in the larger SUV and LCV segments; however, it remains challenging and requires significant time and investment.

Key customer requirements for larger SUVs and LCVs in Australia include:

- Range
- Payload
- Towing
- Off-road capabilities

In the absence of overseas mass-produced options, Toyota Australia embarked upon a local trial to convert a diesel LC70 into a BEV for use in the mining sector. Our experience demonstrated some of the challenges and key learnings from this trial, such as:

- LC70 BEVs would likely be significantly more expensive than the base diesel-powered vehicle (in the vicinity of \$80,000 higher).
- Harsh environments are extremely challenging on batteries, electric motors and other BEV specific components.
- The technology currently available is not yet suitable for market use and further development is required.



With regard to the timeline described in Figure 9 of the Roadmap (p. 39), Toyota notes the following:

- Within the 2024-2030 timeframe, Toyota anticipates that technologies such as HEV technology will continue to carry a significant upfront price advantage compared to BEVs. For example, our RAV4 HEV has a starting price over \$20,000 less than our similarly sized bZ4X BEV (both are SUVs). Toyota believes that although this gap may reduce, it will likely remain substantial towards 2030.
- Toyota would like to seek further clarification on the Government's EV charging infrastructure plan, and questions whether this will be adequately widespread across the country by 2040. Toyota notes that the National EV Strategy (published in 2023 and referenced on p. 38 of the Roadmap) did not include any new announcements related to EV charging infrastructure.
 - Although the Government has since announced the Recharging Automotive Program (\$60 million to provide EV charging infrastructure to automotive businesses), Toyota notes that ambitious supply-side measures such as the New Vehicle Efficiency Standard (NVES) should be matched with equally ambitious demand-side measures. Toyota recommends that the Government collaborate with State and Territory Governments to provide certainty, and a nationally consistent and unified approach to EV charging infrastructure.
 - In addition to BEV and PHEV charging infrastructure, Toyota continues to urge the Government to consider increasing hydrogen refuelling infrastructure to support uptake of FCEVs, that are particularly suited to larger vehicles with heavy loads and/or requiring long-distance travel.
 - Toyota notes that upstream factors such as the capability of the grid to handle load from charging EVs, extent to which the grid is powered by renewable energy sources and cost of substation upgrades (e.g. to support multiple DC fast chargers) must all be considered when developing a sustainable EV charging network.
- Toyota notes that as some light vehicles may have a lifespan exceeding 20 years, ICE vehicles sold in 2030 may remain operable in 2050.⁷ In order to decarbonise the existing, primarily ICE, light vehicle fleet and reduce fossil fuel demand, there must also be a corresponding uptick in the supply and availability of reasonably priced LCLFs as 2050 approaches.

8. The Australian Government is currently developing an Australian New Vehicle Efficiency Standard and has already begun to implement actions in the National Electric Vehicle Strategy.

⁷Based on publicly available used car sales data. See, for example, vehicles produced in 2004 [and earlier on Carsales](#).

8.1: What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce light vehicle emissions?

8.2: How would these actions address the identified challenges and opportunities to reduce light vehicle emissions?

As Question 8 references the National Electric Vehicle Strategy, Toyota's responses to these questions are geared around recommendations to increase uptake of electrified vehicles.

However, Toyota notes that a holistic approach to reducing light-vehicle emissions must consider measures to support other technologies (such as hydrogen and LCLFs) to ensure low and zero tailpipe emissions vehicles are viable for all customers. Toyota refers to its submission to the LCLF consultation in this regard.

In relation to increasing uptake of electrified vehicles, Toyota recommends:

Holistic approach key to success

A holistic approach should be taken with regard to the establishment of resources, systems and infrastructure required to transition to electrified vehicles. We understand that Government proposals such as NVES address the supply side of the equation to increase the uptake of ZLEVs. In addition, the Government should also consider demand-side measures such as:

- Planning and provision for the growth and widespread availability of public recharging infrastructure, including the number of chargers, serviceability and uptime.
- Consumer-support mechanisms such as grants, tax credits and other incentives.

Charging infrastructure and Australian market requirements

Toyota Australia has partnered with Jet Charge to roll out Australia's largest dealership-based EV charging network, with EV charging hardware now installed at 244 metropolitan and rural Toyota dealerships across every Australian state and territory. This includes a mix of AC and fast-charging DC outlets to deliver the best possible customer experience for Toyota BEV owners.

Our key learning from overseas markets is that charging infrastructure needs to grow in step with ZLEV vehicle availability. To support this, Toyota recommends substantial further Government investment in ZLEV charging and refuelling infrastructure to support alleviating consumer concerns such as range anxiety.

Subsidies could also extend to the construction of new EV charging stations (expanding on programs such as the Recharging Automotive Program), as well as other aspects of the EV ecosystem such as home charging.

Consumer support mechanisms

Toyota's view is that whole of life vehicle costs are also important considerations when consumers evaluate whether to purchase an electrified vehicle. Key costs include:

- Up front purchase price
- Fuel/energy price
- Servicing
- Repair costs
- Insurance costs
- Trade-in values
- Battery replacement cost (as applicable)
- Useful life of the vehicle

Toyota believes that consumer support mechanisms such as incentives and tax credits will support reducing these whole-of-life costs. We expect ZLEV technology to continue to grow in popularity and demand, however our previous experience from the introduction of hybrid vehicles shows the transition may take considerable time in the mass market segment and can only occur with the right focus on education, affordability and infrastructure.

Toyota continues to advocate for the introduction of technology-agnostic incentives to purchase LZEVs, including consumer incentives for purchasing zero tailpipe emissions vehicles (e.g. BEVs and FCEVs), as well as PHEVs, HEVs, low-CO₂ emission ICE based vehicles and biofuel/LCLF compatible vehicles. These consumer incentives could take the form of purchase subsidies, tax cuts or preferential treatment in other areas such as lower parking fees.

Toyota notes that a review of the NVES is expected to commence before the end of 2026, and notes that this is a good opportunity to consider including credits such as super credits and off-cycle credits in a manner consistent with similar schemes internationally.

A National Road User Charge

Following the invalidation of the Victorian Government's ZLEV Road User Charge (RUC) by the High Court, we believe that consideration should be given to a national RUC as part of a broad base of tax reform that replaces the current fuel excise. Funds generated by the RUC could be directed towards roads and infrastructure, as well as consumer subsidies to support the usability and accessibility of ZLEVs and help drive demand.

Resolving servicing and maintenance issues

- Skills shortages are a particular issue for the automotive industry. As highlighted recently by the MTAA, there were acute skills shortages in the automotive industry in

2023.⁸ In addition, EV technicians require different skills and training, as indicated by the occupation's "automotive electrician" unique national training qualification.

- Further support and incentives must be provided to the industry to ensure that BEVs can be serviced as demand increases.

Conclusion

Toyota Australia supports the Government's intention to develop a transport and infrastructure net zero roadmap through to 2050, including for light vehicles.

Toyota is supportive of the Government's efforts to increase BEV uptake. However, rather than a sole focus on BEVs, Toyota strongly urges the Government to further consider the role that all ZLEV technologies including LCLFs and other technologies such as hydrogen and other electrification technologies can play in decarbonising the light vehicle sector going forward. Consideration must also be given to decarbonising the existing vehicle fleet, some of which may continue to be on the road in 2050.

Our philosophy of leaving no one behind means Toyota will continue to advocate for a multi-pathway and responsible approach to decarbonisation. We welcome ongoing engagement with government on this topic and other related matters.

⁸ [Skills shortages in the Australian automotive industry \(mtaa.com.au\)](https://mtaa.com.au)