Transport and Infrastructure Net Zero Consultation Roadmap

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Department of Climate Change, Energy, Environment and Water

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5 First name
Genevieve

6 Last name
Cowie

7 Email
[redacted]

8 Phone

[redacted]

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Organisation

10 Organisation name

Doctors for the Environment Australia

11 What best describes you or your organisation?

Not for profit

12 What sector do you represent?

Climate change/net zero

13 What state or territory do you live in?

Victoria

14 Postcode

3053

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?

Yes

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.

Not answered

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?

Not answered

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

DEA Transport & Infrastructure Net Zero Roadmap submission July 2024.pdf

69 Upload a submission

Not answered

70 Upload supporting file

Not answered

71 Upload supporting file

Not answered

Transport and Infrastructure Net Zero Consultation Roadmap

Submission to the Australian Department of Infrastructure, Transport, Regional Development, Communications and the Arts

July 2024

60 Leicester Street,
Carlton Vic. 3053
0422 974 857
admin@dea.org.au
www.dea.org.a

About DEA

Doctors for the Environment Australia (DEA) is an independent, self-funded, non-government organisation of medical doctors in all Australian states and territories.

DEA's work is based on the premise that humans need a future with clean air and water, healthy soils capable of producing nutritious food, a stable climate, and a complex, diverse and interconnected humanity whose needs are met in a sustainable way. We are therefore interested in environmental protection and restoration to promote human health and social stability.

DEA has previously advocated for improvements in transport and infrastructure policy to protect health.[1, 2, 3, 4] We welcome the opportunity to contribute to this Australian Government Net Zero Roadmap, and ensure that the health impacts of transport and infrastructure emissions are considered in the pathway towards net zero.

Acknowledgement of Country

Doctors for the Environment Australia's members live and work around Australia. We would like to acknowledge Aboriginal and Torres Strait Islander peoples as the Traditional Owners of these lands, in the spirit of reconciliation.

We recognise that First Nations peoples have cared for Country and lived sustainably for millennia, and that sovereignty of this land was never ceded. We pay our respects to First Nations Elders past and present, and to emerging leaders.

Summary

There are significant health consequences associated with the emissions currently produced by the transport sector. These health consequences are both direct — urban air pollution from vehicles is linked to numerous health issues, including lung disease, heart disease, stroke, and lung cancer, and indirect — greenhouse gas emissions from the transport sector contribute to climate change which also adversely impacts health.

Reducing reliance on private vehicles and increasing the use of public transport and active transport methods, such as walking and cycling, are effective strategies to mitigate transport emissions. These measures not only reduce traffic congestion and pollution but also promote physical activity, thereby decreasing rates of obesity, diabetes, heart disease and musculoskeletal conditions.

DEA believes there is a need to transition to sustainable transportation systems. This includes promoting electric vehicles, which produce zero emissions at the point of use, and improving urban planning to encourage non-motorised transport options. While Low Carbon Liquid Fuels (LCLF) may produce net zero carbon dioxide, they still involve the burning of fuels. This contributes to air pollution with harmful chemicals

[1] Cleaner, Cheaper to Run Cars: The Australian New Vehicle Efficiency Standard | DEA Submission, Mar 2024
[2] The transition to electric vehicles | DEA Submission, Mar 2024
[3] Managing noxious emissions from non-road diesel engines | DEA Submission, Jul 2023
[4] Health impacts associated with traffic emissions in Australia | DEA Expert position statement, Feb 2023

such as NO_2 and fine particulate matter, which also affect health. Therefore, DEA supports electric vehicles rather than LCLF proposals.

Urban planning is an important aspect of future sustainable transport solutions. The greening of urban areas — increasing green spaces and planting trees — helps to absorb CO_2, reduce the heat-island effect in cities, and improve the quality of urban life. Additionally, spending time in natural landscapes is beneficial for mental health, reducing stress hormones and improving mood. Sustainable urban planning includes investing in active and public transport infrastructure such as bike paths and walking trails, and reducing the development of road infrastructure and car parks.

DEA calls for stronger policies and leadership to reduce emissions from the transport sector. This includes setting ambitious emissions reduction targets and implementing measures to achieve these targets. Such measures include investing in public transport infrastructure, incentivising the use of zero-emission vehicles, reducing development of road infrastructure, and stringent and ambitious new vehicle efficiency standards for both light and heavy vehicles. These actions are essential for mitigating the adverse health impacts of climate change and ensuring a healthier environment for future generations.

Overall, addressing transport emissions is vital for combating climate change and protecting public health. By adopting sustainable transport practices and improving urban planning, we can significantly reduce the environmental and health impacts associated with vehicle emissions. The transition to greener transport systems not only helps in mitigating climate change but also offers substantial health benefits, contributing to a healthier and more sustainable future.

Transport emissions, climate change and health

Transport emissions have a significant impact on climate change and public health. Transport emissions, primarily from private vehicles, are a large contributor to air pollution and greenhouse gas emissions, exacerbating climate change. Urgent action is needed to reduce emissions to keep global warming at less than 2°C. If we fail to do this, climate change tipping points will be reached at which limits on global warming will be exceedingly difficult or impossible to manage.[5,6]

Transport emissions affect health in many ways. Transport emissions include greenhouse gases such as CO_2, which exacerbate climate change. Climate change has many health impacts, such as physical trauma, illness and mortality from extreme weather events such as floods, storms, bushfires and heatwaves, changing patterns of infectious diseases, changing patterns of air pollution, exposure to bushfire smoke and allergens, rising sea levels with coastal inundation, biodiversity loss, and threats to secure shelter, food, and water.[7] An especially severe consequence of climate change in Australia is increasing extreme heat — heat waves have directly killed hundreds of Australians already,[8] and mortality from heatwaves is increasing worldwide.[9] The increasing frequency and intensity of natural disasters such as bushfires, storms, and floods, causes the displacement of people from their homes and communities, injury, and death. Greater variability in rainfall,

[5] Trajectories of the Earth system in the Anthropocene | PNAS, Aug 2018
[6] As climate change worsens, a cascade of tipping points looms | Yale E360, Dec 2019
[7] How Climate Change Affects Your Health: The Facts | DEA, Aug 2021
[8] Heatwave fatalities in Australia, 2001–2018: An analysis of coronial records | IJDRR, Nov 2021
[9] The burden of heat-related mortality attributable to recent human-induced climate change | Nature, May 2021

rising temperatures, prolonged droughts, and a higher frequency and severity of extreme weather events threaten Australian food and water security in the decades ahead.[10]

There are more direct health impacts associated with the emissions from the transport sector too. In most urban areas, road traffic emissions (which include dust, non-tailpipe and tailpipe emissions) are the most widespread source of anthropogenic (man-made) air pollution to which the public are chronically exposed.[11] Tailpipe emissions include tiny respirable particles of black carbon and toxic gases that are released at ground level in locations where people spend much of their time — on roads, footpaths and in buildings along busy roads. The increased concentration of pollutants like nitrogen dioxide (NO_2) and fine particulate matter from vehicle exhausts contributes to respiratory and cardiovascular diseases. NO_2 has been estimated to account for 13% of global paediatric asthma incidence,[12] and an increase of 4 parts per billion in NO_2 was associated with a 54% increased risk in asthma prevalence in children.[13] Particles formed by combustion processes are particularly small and can enter the bloodstream leading to systemic inflammation and harmful effects on organs throughout the body. The tiny size and chemical composition of vehicular exhaust particles contribute to particularly toxic effects on DNA and living cells,[14] causing respiratory disease, high blood pressure, cardiovascular disease, and cancer.[15]

Additionally, dependence on private vehicles for transport contributes to sedentary behaviour. Sedentary behaviour increases the risk of a range of diseases, including cardiovascular disease, a range of cancers, diabetes, high blood pressure, and depression.[16] A switch to active and public transport provides an opportunity to increase daily physical activity through walking and cycling, which can help reduce the burden of these diseases.[16] Regular active transport, such as cycling, has clear health benefits for individuals and communities. A large Danish cohort study demonstrated a 40% mortality risk reduction for those who regularly cycled to work.[17] Active transport also reduces the incidence of diseases such as obesity, diabetes and hypertension, some common types of cancer, and depression.[18]

Consultation questions

1. Do you agree with the proposed guiding principles?

Firstly, DEA is disappointed that health stakeholders have not been directly included in the initial development of the Consultation Roadmap. The Department of Health did not form a part of the Interdepartmental Committee. Moving forward, health must have a seat at this table, given the large threat to the health of Australians that climate change and transport emissions pose.

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[10] AR5 Synthesis Report: Climate Change 2014 | IPCC, 2014
[11] Exposure to traffic-related air pollution and risk of development of childhood asthma | Environment International, Mar 2017
[12] Global and urban burdens of paediatric asthma incidence attributable to ambient NO2 pollution | Lancet, Apr 2019
[13] The Australian Child Health and Air Pollution Study (ACHAPS) | Environment International, Aug 2018
[14] Airborne Particulate Matter and Human Health | Journal of Environmental Science and Health, Dec 2008
[15] What constitutes an adverse health effect of air pollution? | European Respiratory Journal, 2017
[16] Effect of increasing active travel in urban England and Wales on costs to the National Health Service | Lancet Jun 2012
[17] All-Cause Mortality Associated With Physical Activity During Leisure Time, Work, Sports, and Cycling to Work | JAMA Internal Medicine, Jun 2000
[18] Assessing the Economic Impact and Health Effects of Bicycling in Minnesota | Center for Transportation Studies, Dec 2016

Otherwise, the proposed guiding principles are commendable, and DEA supports them. DEA believes that guiding principle 1 is the most important, as it is the reduction of emissions in the largest quantity possible which will have a positive impact on the health of people and the planet.

Regarding guiding principle 2, while maximising cost-effectiveness is commendable for the Australian taxpayer, the emphasis on short-term cost-effectiveness may lead to the prioritisation of cheaper solutions that will not be the most cost-effective in the medium to long term. Initially cheaper solutions are often not the most effective, sustainable, or beneficial for the health of people in the long run. The cost of managing the natural disasters driven by climate change and the cost of treating the medical conditions caused or exacerbated by climate change must also be taken into consideration.

For example, LCLFs still involve the burning of fuels, creating air pollution which is ultimately detrimental to health through pollutants such as NO_2 and fine particulate matter. There is a risk of neglecting the benefits of larger, longer-term investments which would be more effective in emission reductions in the long term. Cost considerations must be balanced with long-term sustainability and innovation benefits, ensuring that cost-saving measures do not compromise the overall effectiveness and durability of the solutions.

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

The avoid, shift, improve framework is an appropriate guiding principle to propel Australia to net zero. DEA advocates strongly for an ambitious approach to eliminating fossil fuels entirely from transport in Australia and cautions strongly against initiatives that simply aim to reduce fossil fuel use or improve the efficiency of vehicles that require fossil fuels. All fossil fuel use contributes to climate change and creates air pollution leading to illnesses such as asthma, heart disease, stroke, and cancer.

3. Do you agree the development of a national policy framework for active and public transport will support emissions reduction?

Yes, DEA believes that a national policy framework that puts active and public transport at the centre of moving people in and between our cities and towns and that will support emissions reduction. These forms of transport both mitigate climate change by reducing, and eventually eliminating, fossil fuel use, and reduce sedentary behaviour by switching to more active modes of transportation. Focusing on active and public transport is positive for both the health of people and the planet.

4. What should be included in a national policy framework for active and public transport and how should it be developed?

The national policy framework:

- Will require significant infrastructure investment and urban planning to prioritise active and public transport over more carbon-intensive modes of transport. This is discussed further in our response to Questions 5 and 21.
- Must be inclusive and ensure the needs of outer metropolitan and regional Australians are considered.
- Must ensure that any planned public transport changes are designed to be free of fossil fuels.

This policy should be developed keeping in mind the health benefits of active and public transportation.

- Active and public transport have comparatively low carbon emissions. Reducing emissions results in fewer health impacts from climate change, as outlined previously.[7]
- Active and public transport produce less air pollution than other modes of transportation. Reducing air pollution leads to positive health outcomes such as reduced incidence of asthma, cardiovascular disease, stroke, and cancer.[9, 15]
- Active and public transport reduce sedentary behaviour and improve the health of the population through incidental exercise. This reduces the incidence of cardiovascular disease, diabetes, high blood pressure, and mental health problems.[16]

DEA supports the idea of the Active Transport Fund, however, $100 million is inadequate to accomplish the extent of the modal shift needed to see real reductions in transport emissions. There is currently a lack of detail about the Active Transport Fund — DEA eagerly awaits more information, as a move towards increased use of active transport is positive for the health of Australians.

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?

Australian cities have become vastly over-reliant on private light road vehicles, such as passenger cars, SUVs, and light commercial vehicles. It is stated in the Consultation Roadmap that light road vehicles account for almost 60% of transport emissions and is therefore the biggest opportunity to reduce emissions from the transport sector. The strategy identifies that 'achieving higher rates of active and public travel will require investment in electrified public transport and improvements in the safety, connectivity and convenience of walking and cycling infrastructure.' Active and public transport must be equally, or more attractive, affordable, and convenient than personal use of light vehicles.

National Urban Policy needs to focus on the planning of cities and towns to support active and public transport with bike paths, walking paths, and electrified public transport. The focus must shift away from infrastructure which promotes increased personal light vehicle use, such as new road infrastructure projects. National Urban Policy needs to not only promote active and public transport, but limit new policy and infrastructure which will increase the use of private light vehicles. This is largely missing from the proposed national policy framework. Some examples of policy and infrastructure decisions that deter private light vehicle use include:

- reducing/restricting the development of road infrastructure
- reducing/restricting the development of carpark infrastructure
- implementing congestion charges or low-emission zones.

These will be explored further in our response to questions 8, 21, and 22.

6. The Australian Government has already engaged in consultation on the 2023 review of the National Freight and Supply Chain Strategy and those consultations will also inform the final Roadmap and Action Plan.

Not addressed as not within DEA's expertise.

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

DEA believes the proposed net zero pathway for light road vehicles is a positive step towards reducing transport emissions. DEA supports the National Electric Vehicle Strategy and proposed measures to increase uptake of EVs, such as road pricing reforms, increased availability of charging infrastructure, and government incentives for purchasing EVs over internal combustion engine vehicles.

The Australian New Vehicle Efficiency Standard is a step in the right direction, however DEA advocates for more ambitious targets. The current 2029 targets of 58g CO_2/km for passenger vehicles and 110g CO_2/km for light commercial vehicles do not go far enough, and DEA advocates for targets of 34g CO_2/km for passenger vehicles, and 56g CO_2/km, the most aggressive of the proposed options in The Australian New Vehicle Efficiency Standard Impact Analysis.[19] The current legislation means that many SUVs are reclassified as light commercial vehicles. However, DEA advocates for all SUVs to be classified as passenger vehicles rather than light commercial vehicles, so that they too must adhere to stricter efficiency standards. This is especially important as the consultation roadmap itself admits that 'More than 50% of new vehicles sold in the country last year were SUVs'. Increasing vehicle efficiency will ultimately reduce the impacts of climate change and reduce air pollution, both of which will have a positive impact on health.

Similarly, DEA advocates for vehicle registration checks including those on exhaust quality to pick up poorly maintained vehicles, or those with tampered pollution controls. This would help target the small number of highly polluting cars that contribute an outsized share of the problem.

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 in our answer above, DEA advocates for the most ambitious efficiency standards for passenger and light commercial vehicles, vehicle registration checks to include exhaust quality, and for all SUVs to be classified as passenger vehicles.

DEA advocates for measures to not only improve the efficiency of light road vehicles, but also reduce the amount of light road vehicles which are on our roads. Reductions in the use of light vehicles would:

- reduce CO_2 emissions directly from vehicles, mitigating climate change
- reduce the need for future road infrastructure projects which are very carbon intensive, mitigating climate change
- reduce pollutants from vehicles, improving population health through reductions in respiratory disease such asthma, cardiovascular disease, and cancer[15]
- improve population health through a switch to active transport modes such as walking and biking, reducing obesity, cardiovascular disease, and cancer.[16]

[19] The Australian New Vehicle Efficiency Standard | The Office of Impact Analysis, Australian Government, Mar 2024

DEA advocates for implementation of congestion charges or low emission zones as well as anti-idling policy.

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

More ambitious vehicle efficiency standards reduce emissions per km driven effectively. Infrastructure policy and projects which reduce the number of passenger and light commercial vehicles on the road are another effective measure to reduce transport emissions as detailed in our answer to Question 7.

Implementing congestion charge zones or low emission zones in line with those in use in London, Stockholm, Milan and Singapore would contribute to decreasing emissions through financial deterrents for using private vehicles. Low emission zones/congestion charges reduce pollution-related health outcomes such as cardiovascular disease and asthma, and reduce road traffic injuries, improving population health.[20] Stockholm's congestion charge saw a 50% reduction in asthma attacks requiring hospitalisation in children due to reduced pollution in the city.[21]

Anti-idling policy, specifically around schools, protects the most vulnerable people in our community from exposure to noxious transport emissions which cause respiratory disease. Health authorities globally have recommended anti-idling policies to reduce both CO_2 emissions and air pollution.[22] Anti-idling laws would bring Australia in line with much of the US,[23] the UK,[24] and Hong Kong.[25]

9. Do you agree with the proposed net zero pathway for heavy road vehicles? Please add details to your response.

DEA supports the electrification of heavy road vehicles as electrification offers a viable pathway to achieving zero emissions, especially for urban and regional transport. Hydrogen fuel cells present a possible solution for long-haul heavy vehicles, providing the benefit of zero emissions directly from the fuel combustion. However, the vast majority of hydrogen is 'grey' hydrogen, which has greenhouse emissions associated with its production.[26] Only 'green' hydrogen, generated through renewable energy such as wind, solar, or hydroelectricity is truly zero emissions.

DEA does not support reliance on low-carbon liquid fuels. While LCLFs may provide a short-term solution by utilising existing diesel infrastructure, they contribute to air pollution, which is detrimental to public health. These fuels still emit harmful pollutants; a review found that while 'green diesel' emitted slightly less particulate matter, there were higher nitrogen oxide emissions.[27] These pollutants are detrimental to health, and lead to respiratory disease, cardiovascular disease, and cancer.[15] Hence, their use does not align with the long-term goal of achieving zero emissions and eliminating health impacts associated with vehicle pollution.

[20] Health effects of low emission and congestion charging zones: a systematic review | Lancet, Jul 2023
[21] Congestion Pricing, Air Pollution and Children's Health | NBER, Mar 2018
[22] Best Practices for Reducing Near-Road Pollution Exposure at Schools | EPA, Nov 2015
[23] Compilation of State, County, and Local Anti-Idling Regulations | EPA, Apr 2006
[24] Engine idling | City of London, Aug 2023
[25] Motor Vehicle Idling (Fixed Penalty) Ordinance | Hong Kong eLegislation, Dec 2011
[26] The economics and the environmental benignity of different colors of hydrogen |IJHE, Jul 2022
[27] Energy saving and pollution reduction by using green fuel blends in diesel engines | Applied Energy, Dec 2015

DEA strongly advocates for the introduction of a new vehicle efficiency standard for heavy vehicles, including Euro VI. Current government policies are focused on removing regulatory barriers and supporting the infrastructure needed for low and zero-emission vehicles. Implementing such a standard would accelerate the transition to more fuel-efficient and low-emission vehicles, thus reducing overall emissions from this sector more effectively. It would bring Australia in line with other jurisdictions which have stringent heavy vehicle efficiency standards such as the EU,[28] US,[29] and Canada.[30]

Similarly, DEA advocates for registration checks including on exhaust quality to pick up poorly maintained vehicles, or those with tampered pollution controls. This would help target the small number of highly polluting trucks that contribute an outsized share of the problem.

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.

1. Battery Electric
2. Hydrogen Fuel Cells
3. Low Carbon Liquid Fuels

10.1. Why did you rank them in that order?

Battery electric vehicles produce zero tailpipe emissions, which directly reduces greenhouse gas emissions and air pollution, thereby improving public health. Battery electric vehicle technology is available now, and is continuously improving, making this the most viable option for a fast transition to net zero and to reduce health impacts of transport emissions. Battery swapping technology for heavy vehicles is already well developed and viable in countries around the world, such as China.[31] New Zealand has also recently embraced battery swapping as a viable option for the net-zero transition for heavy vehicles,[32] demonstrating battery swapping is a viable option in an economic climate more similar to Australia's.

A recent study modelling projections in emissions from future truck fleets demonstrated that overall, hydrogen trucks have higher lifecycle emissions intensity than electric trucks.[33] While hydrogen fuel cells also produce zero tailpipe emissions (similar to EVs), the full life cycle of the hydrogen must be considered to assess the full carbon footprint. Much of hydrogen production currently relies on 'grey' hydrogen, which is derived from fossil fuels and generates significant emissions.[26] If improvements in hydrogen technology result in 'green' hydrogen which generates no to very little greenhouse emissions in production, this is a more viable option to reduce the health impacts of transport emissions.

LCLFs, while reducing carbon emissions compared to traditional fossil fuels, still contribute to air pollution, which has adverse health impacts such as respiratory disease, cardiovascular disease, and cancer.[15] DEA advocates for as little reliance on LCLFs as possible to reduce the health impacts of transport emissions.

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[28] Reducing CO_2 emissions from heavy-duty vehicles | European Commission May, 2024
[29] Regulations for Greenhouse Gas Emissions from Commercial Trucks & Buses | US EPA, Mar 2024
[30] Canada's heavy-duty vehicle regulations | Government of Canada, Jun 2014
[31] China is propelling its electric truck market by embracing battery swapping | ICCT, Aug 2023
[32] Charging forward: trialling battery electric trucks in your fleet | EECA, Oct 2023
[33] A lifecycle comparative evaluation of electric and hydrogen trucks powered from renewable energy | Swinburne University, Dec 2023

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

Low carbon liquid fuels should play a limited role in heavy vehicle decarbonisation. LCLFs continue to contribute to air pollution, which is detrimental to public health. These fuels still emit harmful pollutants when combusted; a review found that while 'green diesel' emitted slightly less particulate matter, there were higher nitrogen oxide emissions.[27] These pollutants are detrimental to health, and lead to respiratory disease, cardiovascular disease, and cancer.[15] Hence, their use does not align with the long-term goal of achieving zero emissions and eliminating health impacts associated with vehicle pollution.

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?

DEA has not answered this question.

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

It is unclear why consideration of rail electrification by third rail or overhead has not been included in the pathway. If there are cogent reasons for this, it would be helpful to have them articulated.

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.

1. Battery Electric
2. Hydrogen Fuel Cells
3. Low Carbon Liquid Fuels

14.1. Why did you rank them in that order?

Battery electric vehicles produce zero tailpipe emissions, which directly reduces greenhouse gas emissions and air pollution, thereby improving public health. Battery electric technology is available now, and is continuously improving, making this the most viable option for a fast transition to net zero and to reduce health impacts of transport emissions

A recent study modelling projections in emissions from future truck fleets demonstrated that overall, hydrogen trucks have higher lifecycle emissions intensity than electric trucks.[33] While hydrogen fuel cells also produce zero tailpipe emissions, much of hydrogen production currently relies on 'grey' hydrogen, which is derived from fossil fuels and generates significant emissions.[22] If improvements in hydrogen technology result in 'green' hydrogen which generates no to very little greenhouse emissions in production, this is a more viable option to reduce the health impacts of transport emissions.

LCLFs, while reducing carbon emissions compared to traditional fossil fuels, still contribute to air pollution, which has adverse health impacts such as respiratory disease, cardiovascular disease, and cancer.[34] DEA advocates for as little reliance on LCLFs as possible to reduce the health impacts of transport emissions.

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

Low carbon liquid fuels should play a limited role in rail decarbonisation. LCLFs continue to contribute to air pollution, which is detrimental to public health. These fuels still emit harmful pollutants when combusted; a review found that while 'green diesel' emitted slightly less particulate matter, there were higher nitrogen oxide emissions.[23] These pollutants are detrimental to health, and lead to respiratory disease, cardiovascular disease, and cancer.[15] Hence, their use does not align with the long-term goal of achieving zero emissions and eliminating health impacts associated with vehicle pollution.

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

DEA contends that incentivising transport to use more rail, rather than road, is a good first step. The necessity of reducing rail emissions should not be a barrier to using more rail.

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

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.

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

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 as out of DEA's scope of expertise.

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

DEA supports the proposed net-zero pathway for transport infrastructure, especially a transition to low and zero emission building materials.

DEA advocates for transport infrastructure and urban planning which focuses on cities and towns supporting active and public transport with transport infrastructure such as bike paths, walking paths, and electrified public transport. Increased use of public and active transport such as walking and cycling is positive for health, which can help in reducing the burden of diseases caused by sedentary lifestyles, such as cardiovascular disease, cancer, diabetes, and high blood pressure.[16]

Focus must shift away from infrastructure which promotes increased personal light vehicle use, such as new road infrastructure projects. Continued addition of road infrastructure is not only carbon intensive, but causes induced demand.[34] As more road infrastructure is built, it encourages the use of more private light road vehicles and draws commuters away from other, more sustainable and healthy modes of travel, such as active and public transport.[35] An example of this occurred in Sydney, where crossings of the Sydney Harbour in private vehicles increased 30% in 5 years when the Sydney Harbour Tunnel opened in 1992. In the previous

[34] What's Up With That: Building Bigger Roads Actually Makes Traffic Worse | WIRED, Jun 2024
[35] The Fundamental Law of Road Congestion: Evidence from US cities | NBER, Sep 2009

10 years, there had been only a 13% increase in crossings of the Harbour in private light road vehicles when the Sydney Harbour Bridge existed alone — the addition of an alternative motorway increased the amount of private light vehicles being used to cross the city.[36, 37] Infrastructure such as this increases the use of light vehicles, so increasing transport emissions and pollution, leading to poorer health outcomes.

Implementing congestion charge zones or low emission zones in line with those in use in London, Stockholm, Milan and Singapore would contribute to decreasing emissions through financial deterrents for the use of private vehicles. Low emission zones/congestion charges reduce pollution related health outcomes such as cardiovascular disease, and reduce road traffic injuries, improving population health.[20] Similarly, anti-idling laws (in use across the US, UK, and Hong Kong) reduce noxious transport emissions and protect the health of the most vulnerable people in the community.[22]

In addition, DEA advocates for transport infrastructure which supports rail and maritime transport over road and air transport, given that rail and maritime transport have the lowest emissions per unit moved, for both transporting people and shipping goods.[38, 39]

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?

The strategy identifies that 'achieving higher rates of active and public travel will require investment in electrified public transport and improvements in the safety, connectivity and convenience of walking and cycling infrastructure.' Active and public transport must be an equally, or more attractive, affordable, and convenient alternative to personal use of light vehicles.

Therefore, National Urban Policy needs to not only promote active and public transport but also limit new road infrastructure which will increase the use of private light vehicles. This is largely missing from the proposed national policy framework. This means:

- reducing/restricting the development of road infrastructure.
- reducing/restricting the development of carpark infrastructure and redeveloping current carparks.

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

Reducing/restricting the development of road infrastructure

An independent panel undertook a review of all proposed road projects in Wales in 2022,[40] and found that the majority of projects would ultimately lead to increased carbon emissions through their construction, and

[36] Myth: Freeways relieve traffic congestion | Public Transport Users Association, Mar 2021
[37] Traffic Volume Data | NSW Transport 2024
[38] Transport and environment report 2020 - Train or plane? | European Environment Agency, Mar 2021
[39] EEA GHG Efficiency Indicators | European Environment Agency, Mar 2021
[40] The future of road investment in Wales | Welsh Government, Feb 2023

the increased capacity for cars on the roads. They propose a framework for new road projects, stipulating that new road projects should meet four conditions:

1. Projects should minimise carbon emissions
2. Projects should not increase road capacity for cars
3. Projects should not lead to higher vehicle speeds that increase emissions
4. Projects should not adversely affect ecologically valuable sites.

Reducing/restricting the development of carpark infrastructure

Reducing carpark infrastructure is one way to reduce the use of private light vehicles, and therefore incentivise the use of public and active transport.[41] Carparks take up valuable space in urban areas, and their decommissioning provides an opportunity for the development of leisure spaces, such as green spaces and outdoor dining. Converting street parking to greener infrastructure has the added benefit of reducing the impact of heatwaves, managing stormwater in flood events, enhancing biodiversity and improving mental health.[42] This positively impacts the health of the population.

23. The Australian Government invited views on aspects of the energy transformation that represent the most material challenges and opportunities for the electricity and energy sector. Submissions closed on Friday 12 April 2024 (AEDT). This feedback will be used to inform the development of the Electricity and Energy Sector Plan and Net Zero Plan. The Australian Government will be undertaking targeted consultation to identify options for production incentives to support the establishment of a made in Australia low carbon liquid fuel industry, including through the release of a low carbon liquid fuels consultation paper. Feedback heard through this process will also inform development of the final Transport and Infrastructure Net Zero Roadmap and Action Plan.

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?

DEA believes that LCLFs should play a limited role in rail decarbonisation. These fuels still emit greenhouse gases and harmful pollutants when combusted — a review found that while 'green diesel' emitted slightly less particulate matter, there were higher nitrogen oxide emissions.[27] These pollutants are detrimental to health and lead to respiratory disease, cardiovascular disease, and cancer.[15] Hence, their use does not align with the long-term goal of achieving zero emissions and eliminating health impacts associated with vehicle pollution.

24. How should the use of low carbon liquid fuels be prioritised across different transport modes over time to achieve maximum abatement?

Low carbon liquid fuel use should be minimised and used for the shortest amount of time possible, given that LCLFs still produce pollution and greenhouse gas emissions which are detrimental to human health.[15] The focus of transport emission reduction must be on zero-emissions electric/battery vehicles. Battery

[41] Understanding the requirements and barriers for modal shift (WSP) | Climate Change Committee, Jun 2023
[42] Finding space for nature in cities: the potential of redundant car parking | npj Urban Sustainability, Nov 2022

electric technology is available now and is continuously improving, making this the most viable option for a fast transition to net zero and to reduce the health impacts of transport emissions.

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

Given the significant health consequences of transport emissions, the health community should be kept engaged and given a voice during the development of the roadmap, so that the health of Australians, and people globally, is prioritised.

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?

The 'Cleaner Air Partnership', based in California, USA, is a collaboration involving Californian hospitals and health services, the California Air Resources Board, health advocacy groups, and other state and local, governmental, health, and environmental organisations. The partnership focuses on reducing emissions from transportation to improve air quality and public health. Key initiatives include promoting electric vehicles, developing clean transportation infrastructure, and implementing stricter emissions standards.[43] Initiatives like this ensure the health voice is heard when making important transport infrastructure decisions. A similar partnership would be valuable in Australia.

The Welsh government commissioned 'The Future of Road Investment In Wales', a strategic review to align road infrastructure development with sustainability and climate goals.[40] The project was conducted by engineers, urban planners, and sustainable development experts. This placed a moratorium on all road projects, focused on public and active travel for future infrastructure, and placed climate, environmental, and health considerations at the centre of decisions about future transport infrastructure. A similar review would be beneficial in Australia to align transport infrastructure with transport emissions targets.

25.2. What opportunities can the government leverage to show leadership in Australia and internationally?

Just as Australia became a world leader in tackling respiratory disease from cigarettes, and more recently electronic cigarettes/vapes, Australia could become a world leader in reducing respiratory disease from transport emissions. Initiatives could include:

- stringent pollution and efficiency standards for new vehicles (for both light and heavy vehicles)
- implementation of congestion charges/low emission zones
- registration checks including exhaust quality for both cars and trucks for existing vehicles
- infrastructure policy which minimises road infrastructure that leads to more vehicle utilisation and increased emissions in the long term
- public policy which restricts new car parking infrastructure and decommissions current car parking infrastructure.

[43] Cleaner Air Partnership (CAP) - Valley Vision - Sacramento

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

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?

DEA supports close monitoring of transport emissions, including the introduction of Worldwide Harmonised Light Vehicle Test Procedure (WLTP). To ensure Australia's transport sector stays on track towards net zero, DEA recommends:

- an independent body to monitor and collect data on emissions from the transport sector
- measurement of carbon emissions at regular intervals (2-5 yearly) and comparison with reduction targets.

Given the significant detrimental health effects, it is also important to monitor noxious, non-carbon emissions from the transport sector closely, such as fine particulate matter and NO_2. This would allow the government to understand the scope of these emissions, and set stringent limits for them.

Commissioning research on health outcomes would be an excellent measure of the success of the roadmap in improving the health of Australians. This could include investigating the reduction in asthma in pediatric populations thanks to reduced pollution, and the effect public and active transport has on increasing physical activity and its associated health benefits. This would allow the government to undertake an economic analysis of the social/health costs that result from anthropogenic particulate matter and NO_2 emissions and the influence of transport electrification pathways on these costs.

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

DEA applauds the Department of Transport and Infrastructure for the opportunity for advocacy groups to give feedback on the roadmap and hopes that the feedback will be carefully considered. Given the significant health consequences of transport emissions, the health community should be kept engaged and given a voice during the development of the roadmap, so that the health of Australians, and people globally, is prioritised

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

28.1. Is there anything missing? Are the sections appropriately integrated? Is the Roadmap appropriately ambitious?

DEA advocates for a more ambitious roadmap. The more ambitious, the better the health outcomes for Asutralians. This can be achieved ultimately through the complete elimination of fossil fuels by stringent and ambitious vehicle efficiency standards, fast electrification of existing transport networks, elimination of reliance on LCLFs, and promotion of public and active modes of transportation.

Below is a summary of initiatives DEA proposes in addition to those proposed in the consultation roadmap:

- congestion charges/low emission zones (refer to questions 8 & 21)

- anti-idling laws (refer to questions 8 & 21)
- reduction/cessation of building of road infrastructure (refer to question 22)
- reduction/cessation of building carpark infrastructure (refer to question 22)
- new heavy vehicle emission standards (refer to question 9)
- registration checks, including exhaust emissions, for existing vehicles (refer to questions 8 & 9.)

29. Is there any further information or documentation that you wish to be considered with your submission?

DEA has long been active in health advocacy related to climate change and transport emissions. Here are some resources which directly discuss the impacts of climate change on health, as well as transport emissions:

- Cleaner, Cheaper to Run Cars: The Australian New Vehicle Efficiency Standard | DEA Submission, Mar 2024
- The transition to electric vehicles | DEA Submission, Mar 2024
- Managing noxious emissions from non-road diesel engines | DEA Submission, Jul 2023
- Health impacts associated with traffic emissions in Australia | DEA Expert position statement, Feb 2023
- National Health and Climate Strategy | DEA Submission, Jul 2023
- How Climate Change Affects Your Health: The Facts | DEA Fact Sheet Aug 2021