

Transport and Infrastructure Net Zero Consultation Roadmap

Take the survey

Department of Climate Change, Energy, Environment and Water

Response received at:

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Response ID:

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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

LanzaJet

4 Confirm that you have read and understand this declaration.

Yes

5 First name

Flyn

6 Last name

van Ewijk

7 Email

[REDACTED]

8 Phone



9 Who are you answering on behalf of?
Organisation

10 Organisation name
LanzaJet

11 What best describes you or your organisation?
Industry

12 What sector do you represent?
Energy
Climate change/net zero
Heavy road vehicles (trucks, buses etc.)
Other: "Aviation"

13 What state or territory do you live in?
Victoria

14 Postcode
3691

15 What area best describes where you live?
Regional area

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.
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?
Yes
- 31 9.1 Please add details to your response
Australia's decarbonization goals align with policies directing low carbon fuels toward aviation. We agree with the Roadmap's net zero pathway for heavy road transport showing that, while trucks may need some low carbon liquid fuels in the short and medium term, the long term outlook is a shift principally to battery electric and hydrogen fuel cell vehicles.
- 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?

Yes

- 48 19.1 Please add details to your response.

When used in aviation, low carbon liquid fuels provide additional climate benefits that they do not provide in any other sector. Aviation produces substantial non-CO2 climate warming as a result of contrail cirrus clouds—impacts that scientists estimate to be between half and three times as large as those from regular CO2 emissions.

SAF has been found to significantly reduce these effects, by over 20% for a 50% SAF blend or up to half in an eventual shift to 100% SAF.

These benefits, though overlooked in the Roadmap, are beginning to gain attention in jurisdictions around the world as the science evolves.

- 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?

Policy should be designed to favor the use of low carbon liquid fuels in aviation.

- 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

LanzaJet_Response_Transport_and_Infrastructure_Net_Zero_Roadmap_7.25.24_Final.6062f905_Redacted.pdf

69 Upload a submission

Not answered

70 Upload supporting file

Not answered

71 Upload supporting file

Not answered

July 29, 2024

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

Submitted online via: <https://consult.dceew.gov.au/transport-and-infrastructure-net-zero-consultation-roadmap>

RE: Transport and Infrastructure Net Zero Consultation Roadmap

LanzaJet welcomes and appreciates the opportunity to respond to the Transport and Infrastructure Net Zero Consultation Roadmap. We comment chiefly to commend the Australian Government’s strategic view on the role of low carbon liquid fuels in the aviation sector and to offer broad suggestions for the policy path ahead.

LanzaJet is an industry-leading sustainable aviation fuel (SAF) producer using a proprietary alcohol-to-jet (ATJ) process to convert any source of low-carbon, sustainable ethanol into ASTM-compliant SAF and renewable diesel. Following a decade of technology development and demonstration, LanzaJet was launched in 2020 with a clear mission—to scale the SAF market and enable the decarbonization of the aviation sector. To that end, we have constructed a first-of-a-kind, 38 million litres per year commercial scale SAF facility in Soperton, Georgia, U.S., which will produce SAF beginning in 2024. LanzaJet’s equity investors include LanzaTech, Suncor, Mitsui, British Airways, ANA, Shell, Southwest, Groupe ADP, Microsoft, MUFG, and Airbus.

Australia is an important market for LanzaJet. In partnership with Jet Zero Australia and with support from the Qantas Group, Airbus, and the Queensland Government, we are developing Project Ulysses: a 100 million litres per year SAF production facility in North Queensland, which will directly support emissions reductions in one of Australia’s hardest-to-abate industries.¹ With this project, we have taken vital first steps toward:

- harnessing Australia’s robust agricultural sector with new market opportunities;
- onshoring the economic benefits of domestic production of transportation fuels;
- job creation and investment in regional Queensland;
- increasing Australia’s liquid fuel security; and
- helping Qantas meet its ambitious goal of using 10% SAF by 2030 and reaching net zero emissions by 2050.

LanzaJet applauds Australia for its commitment to addressing climate change via direct abatement in heavy-duty road transport and in aviation.

¹ See <https://www.lanzajet.com/sustainable-aviation-fuel-readies-to-take-flight-in-australia/>

Consultation questions addressed:

9. Do you agree with the proposed net zero pathway for heavy road vehicles?
19. Do you agree with the proposed net zero pathway for aviation?
- 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?
- 20.2. How would these actions address the identified challenges and opportunities to reduce aviation emissions?
24. How should the use of low carbon liquid fuels be prioritised across different transport modes over time to achieve maximum abatement?

First, LanzaJet applauds the Government’s strategic view on the use of low carbon liquid fuels. We strongly agree with the need to weight them toward the “highest decarbonization value products,” and urge policy actions that prioritize the use of low carbon liquid fuels in the hard-to-abate aviation sector.

Australia’s decarbonization goals align with policies directing low carbon fuels toward aviation. We agree with the Roadmap’s net zero pathway for heavy road transport showing that, while trucks may need some low carbon liquid fuels in the short and medium term, the long term outlook is a shift principally to battery electric and hydrogen fuel cell vehicles. We also agree that in aviation, SAF is the primary lever for decarbonization over the short, medium, and long-term and will ultimately need to make up the majority of aviation fuel used in Australia. These conclusions are broadly supported by many decarbonization models and roadmaps.

When used in aviation, low carbon liquid fuels provide additional climate benefits that they do not provide in any other sector. Aviation produces substantial non-CO₂ climate warming as a result of contrail cirrus clouds—impacts that scientists estimate to be between half and three times as large as those from regular CO₂ emissions.² SAF has been found to significantly reduce these effects, by over 20% for a 50% SAF blend or up to half in an eventual shift to 100% SAF.³ These benefits, though overlooked in the Roadmap, are beginning to gain attention in jurisdictions around the world as the science evolves.

Given the additional benefits of SAF and the Government’s acknowledgement that the heavy transport sector should prioritize other forms of decarbonization, policy should be designed to favor the use of low carbon liquid fuels in aviation. In our submission to the Low Carbon Liquid Fuels Consultation, we elaborate on how this should be done.

Second, we emphasize the need for early, targeted support for commercializing low carbon liquid fuels technologies. As the Government correctly acknowledges in the SAF outlook presented in Appendix A.3 of the Roadmap, the technologies and feedstocks used to

² D.S. Lee, et al., 2021. The contribution of global aviation to anthropogenic climate forcing for 2000 to 2018. *Atmospheric Environment* 244, 117834. <https://doi.org/10.1016/j.atmosenv.2020.117834>. Found that climate warming impact from contrail cirrus is between half and twice the impact from CO₂.

³ European Union Aviation Safety Agency, 2020. Updated Analysis of the non-CO₂ Climate Impacts of Aviation and the Potential Policy Measures Pursuant to EU Emissions Trading System Directive Article 30(4) (synthesizing research on SAF non-CO₂ climate benefits and suggesting further consideration of SAF policy measures to mitigate aviation climate impacts); available at https://www.easa.europa.eu/sites/default/files/dfu/201119_report_com_ep_council_updated_analysis_non_co2_climate_impacts_aviation.pdf.

produce low carbon liquid fuels will need to evolve over time. While eight technologies are already ASTM certified as drop-in fuels for aviation, only one is fully commercialized and available around the world: HEFA.⁴ However, HEFA technology can utilize only fats and oils, which make up less than a tenth of Australia’s available feedstock.⁵

Given the limitations of HEFA, it is essential to begin now to facilitate the commercialization of advanced conversion technologies, including alcohol-to-jet, Fischer Tropsch, and power-to-liquids. Along with demand-side policies and production incentives to drive SAF uptake, the Government should also implement an early, concerted infusion of investment aimed squarely at sharing the costs and risks of building the first few plants using each technology. Additional investment should also be provided for expanding blending and storage infrastructure and boosting the supply of low carbon feedstocks. Short term investments in technology commercialization are essential to ensuring the medium and long-term availability of SAF at the levels envisioned by the Roadmap. In our submission to the Low Carbon Liquid Fuels Consultation and our earlier submission to the Aviation Green Paper Consultation, we describe how other jurisdictions are already doing this, and how Australia could follow suit.

Finally, we strongly support the Government’s effort to expand the Guarantee of Origin (GO) scheme to cover low carbon liquid fuels. Robust standards and tools for certifying and verifying lifecycle emissions reductions and sustainability are a key enabler of SAF and essential for jumpstarting the industry.

The expansion of the GO scheme should generally aim prioritize alignment with existing schemes around the world. We, like many LCLF producers operate in multiple jurisdictions around the world and therefore undertake lifecycle assessment and certifications under several programs at once. Where possible, alignment across jurisdictions and leveraging existing tools can reduce administrative burden and costs.

However, it is essential that lifecycle assessment tools and methodologies adopted in Australia be tailored to reflect Australian conditions. This is especially critical for regional impacts such as direct and indirect land use change, to ensure that Australian feedstocks and producers can participate fully in domestic LCLF policy programs. Again, in our response to the Low Carbon Liquid Fuels Consultation, we offer additional detail for how existing tools, like the Argonne National Laboratory’s widely used Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation (GREET) Model, can be leveraged and adapted to Australia’s needs.

⁴ See <https://www.icao.int/environmental-protection/GFAAF/Pages/Conversion-processes.aspx#:~:text=Annex%2016%20Vol%20IV%20defines%20a%20conversion,processes%20for%20SAF%20production%20have%20been%20approved>

⁵ ICF, Nov 2023. [Developing a SAF industry to decarbonize Australian aviation](#). Pg 23.

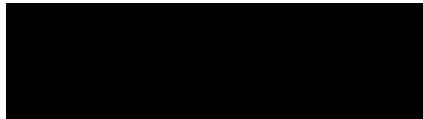
Thank you for the opportunity to comment on the Transport and Infrastructure Net Zero Roadmap Consultation.



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