

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 1:38 PM GMT+10

Response ID:

sbm2f833717fb114211153ee

- 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
Origin Energy
- 4 Confirm that you have read and understand this declaration.
Yes
- 5 First name
Courtney
- 6 Last name
Markham
- 7 Email


8 Phone



9 Who are you answering on behalf of?
Organisation

10 Organisation name
Origin Energy

11 What best describes you or your organisation?
Industry

12 What sector do you represent?
Energy

13 What state or territory do you live in?
Victoria

14 Postcode
3000

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?
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

02. Origin response TINZ Roadmap consultation.pdf

69 Upload a submission

Not answered

70 Upload supporting file

Not answered

71 Upload supporting file

Not answered



26 July 2024

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

Submitted online: <https://www.infrastructure.gov.au/have-your-say/transport-and-infrastructure-net-zero-consultation-roadmap>

RE: Transport and Infrastructure Net Zero Consultation Roadmap

Origin Energy appreciates the opportunity to provide a submission in response to the Department of Infrastructure, Transport, Regional Development, Communications and the Arts consultation on the Transport and Infrastructure Net Zero Consultation Roadmap (Consultation Roadmap).

All sectors of the economy will need to contribute to emission reduction goals if Australia is to meet an ambitious target for 2035, and ultimately to reach net zero emissions. The transition to net zero will not be easy. Government also has a key role to play in building and maintaining support for the transition and ensuring that all sectors are coordinated in this goal.

- **Electrification** - Origin supports an approach which transitions fuel sources to electrification where possible. We acknowledge that this is challenging for transport and infrastructure, where the technologies to support electrification are immature or do not currently exist in a form that is reliable and economically viable.
- **Low Carbon Liquid Fuels** - We consider that policy should take a technology agnostic approach to the development and adoption of other Low Carbon Liquid Fuels (LCLF).
- **Common user infrastructure** - To facilitate a coordinated and efficient transition, we believe common user infrastructure for the transport sector will be essential. Port, rail, heavy transport, and maritime sectors will require Government investment in refuelling and enabling infrastructure to meet the sectoral transition timeframes set out in the Consultation Roadmap.
- **Demand side policies** - We would advocate for policies which provide clear direction to industry requiring uplift in use of renewable fuel alternatives and provide certainty to investors in developing the required product and supporting infrastructure. This would ensure the emergence of industries to support the Transport and Infrastructure transition to net zero.

Origin's views on the issues raised in the Consultation Roadmap are set out below.

Decarbonising freight and supply chains

Origin agrees that currently the most efficient way to decarbonise is to switch to renewable electricity as a fuel source where possible. One of the benefits of the electricity sector decarbonising is that it can unlock potential decarbonisation opportunities in other sectors. We are pleased to see that this will be the case for transport, in addition to the consideration of a New Vehicle Efficiency Standard.

A key consideration of sectoral plans must be the facilitation of optimum levels of market-led investment in the type of resources needed to facilitate a smooth transition and beyond, while also giving governments confidence around reliability outcomes.

We consider that this outcome relies on continued investment in variable renewable energy (VRE) and flexible dispatchable plant such as storage and gas-powered generation (GPG) that allow for the rebalancing of VRE. An increase in demand for renewable energy from other sectors puts increased pressure on the energy transition, and sectoral plans with co-dependence on energy decarbonisation ought to take this into consideration.

Road - light vehicles

Origin supports the proposed net zero pathway for light road vehicles. We also support the Governments New Vehicle Efficiency Standard and National Electric Vehicle Strategy.

We consider that the sectoral plan for transport ought to consider that Electric Vehicles (EV's) as the low emissions vehicle of choice in the light vehicle market may change over time. We must be careful not to create a circumstance in which we will be required to re-transition to other, unsupported technologies as these develop, by making investment only in EV supporting infrastructure.

We consider that the government ought to create a framework that provides consumers with real choice about which version of low emissions vehicle is best for them. This can be done by ensuring the pathway provides for appropriate infrastructure to support other types of low emissions vehicles. This will ensure the development of a competitive low emissions vehicle market and allow for innovation in the low emissions vehicle space.

EV uptake will have ramifications for the management of Australia's electricity grid (e.g., higher electricity demand, load shifting to meet minimum and maximum demand, managing voltage limits). It is therefore important the non-energy sectoral plans are properly integrated with the energy sectoral plan to ensure these challenges can be recognised and addressed.

Road – heavy vehicles

Heavy vehicles are considered a hard-to-abate sector, and their decarbonisation is a long-term prospect. Origin considers that a mix of battery electric, hydrogen fuel cell and low carbon liquid fuels (LCLFs) is the most appropriate approach to the decarbonisation of heavy vehicles as these technologies are the most likely to develop. We note that the development of Hydrogen Fuel Cell Electric Vehicles is taking longer than anticipated in the Roadmap, and as such a longer transition period ought to be considered.

Part of the puzzle will be rolling out an infrastructure network to support battery charging and hydrogen fuel cell refuelling. Ensuring the availability and sustainability of these required inputs can be challenging, especially in remote areas. Establishing the necessary infrastructure for LCLF production and distribution, such as LCLF production facilities distribution networks, requires significant planning, investment, and coordination across various stakeholders. Given the challenges the energy transition is facing through the build out of infrastructure and transmission networks, there may be an opportunity to combine this planning through the Net Zero Australia authority to ensure any lessons can be learned and then procedural improvements applied across sectors.

The supporting model for infrastructure design should be, where possible, to shift heavy freight haulage back to rail to reduce reliance on fossil fuels. Large scale rail freight can then be supported by road haulage from a suite of distribution centres, in a multi-hub, multi-modal transportation network for freighted goods.

Common user infrastructure for the transport sector should be considered as essential. Port, rail, heavy transport, and maritime sectors will require Government investment in refuellers and enabling infrastructure. This would ensure that any supporting infrastructure can be co-located for multiple transport types, increasing their commercial viability. The optimal location of these facilities is important, as transport of LCLFs is challenging, and direct access to clean energy resources and infrastructure are constrained.

Rail

We consider that decarbonisation is not the only issue facing our railway networks, and the transition presents multiple opportunities for improving rail as a transport and haulage option.

Origin agrees that electrification of the rail network is the most mature and readily available solution for decarbonisation of the metropolitan passenger rail sector.

It may be necessary to approach emissions reduction and improved network service and connectivity jointly, and with different technological solutions depending on the service subtype. For instance:

- Regional rail networks have rollingstock reliant on a mixture of fuel sources and would benefit from upgrades which support transition goals, and which also allow for more frequent services, which may require a different solution than metropolitan areas¹.
- Long haul rail freight is likely to need a different technological solution again, given the vast distances between major ports and cities across the country. It is likely that LCLFs would be most useful fuel replacement in this case.

We observe that the introduction of hydrogen fuel cells for locomotives is possible beyond the proposed pathway of 2030-2040. This is due to the insufficient demand and demonstrations of hydrogen for locomotives in Australia and internationally. Perceived barriers to introduction include the manufacture of hydrogen fuel cell locomotives, technology readiness, the hydrogen storage and refuelling locations that are convenient for commuter locomotives. Freight locomotives are likely to represent the first opportunity to introduce hydrogen fuel cells and to take advantage of Port and renewable energy precincts.

Maritime and Aviation

Origin is supportive of the approach the Consultation Roadmap proposes to provide opportunities to encourage the development and deployment of Sustainable Aviation Fuels (SAF) and other LCLFs.

The absence of supportive policies and regulations, such as carbon pricing mechanisms, industry-wide carbon reduction mandates, or incentives for SAF and LCLF production could impede the industry's development and growth. Origin has made a separate submission to the consultation on LCLF's specifically.

Origin considers that international examples of policies which provide clear direction to industry requiring uplift in use of SAF and LCLF also provide certainty to investors in developing the required product and supporting infrastructure, ensuring the emergence of industries to support the Transport and Infrastructure transition to net zero.

Examples of these policy initiatives include:

- FuelEU Maritime Regulations which set the maximum limits for the yearly average greenhouse gas (GHG) intensity of the energy used by ships above 5,000 gross tonnage calling at European ports. The Regulation also introduces additional zero-emission requirements for ships at berth, mandating the use of onshore power supply or alternative zero-emission technologies in ports, by passenger ships and containerships, with a view to mitigating air pollution emissions in ports, which are often close to densely populated areas.²
- ReFuel EU regulation targeting a fuel uplift at EU airports, with a requirement that they must contain at least 2% SAF with gradual increases each year, with mandates including 6% by 2030, 20% by 2035, and eventually 70% by 2050. These requirements will apply to all flights originating in the EU, regardless of destination.³

¹ For instance, if electro-diesel trains were introduced onto regional and interstate passenger lines and services were more frequent, then a greater number of passengers would be likely to utilise what would ultimately be a more reliable, lower emissions service. While this does not completely negate emissions, being able to utilise the overhead electrical wires where these are available would reduce reliance on the diesel component (particularly in urban areas where overhead electrification is already available, which also has a flow on impact to urban air quality). As a transitional measure, a diesel passenger service remains a lower emissions option compared to those passengers driving individual vehicles to their destination. Such an approach would be consistent with the Consultation Roadmap's desire to shift individual behaviour toward utilising active and public transport.

² [Decarbonising maritime transport – FuelEU Maritime - European Commission \(europa.eu\)](https://ec.europa.eu/euro-transport/decarbonising-maritime-transport-fuelEU-maritime)

³ <https://www.trade.gov/market-intelligence/european-union-aerospace-and-defense-sustainable-aviation-fuel-regulation>

Origin would encourage the adoption of similar policies to ensure the adoption of SAF and LCLFs in Australia.

The use of LCLFs should be prioritised within use cases that are difficult to electrify including the heavy road transport, marine, aviation and rail sectors. To achieve this, we believe the biorefinery hub concept should be explored with hydrogen and waste facilities co-located to produce LCLF, biofuels, renewable fuels and low carbon fossil fuels.

To support uptake of hydrogen between 2030-2040, the continued development of the nascent hydrogen industry, including funding mechanisms that support the producer and end user, will be crucial. Investment in hubs, like the Hunter Valley Hydrogen Hub, is required to ensure enabling infrastructure and green shipping corridors are encouraged. Origin views hydrogen derived fuels like methanol and ammonia as the leading technology for low carbon maritime fuels. This includes the production for use in maritime activities, as well as an export commodity.

Transport infrastructure

The construction of transport infrastructure will be a necessary step in decarbonising the sector, and ensuring reduced embodied emissions in the construction of new infrastructure should be a priority.

The absence of supportive policies and regulations across sectoral pathways puts the decarbonisation of the materials sector at risk as it does not ensure a market for these decarbonised products. We consider that there may be a role for policies such as industry-wide carbon reduction mandates, or incentives for the utilisation of products such as green steel and concrete in infrastructure projects.

To create a secure environment for investment in decarbonised materials such as green steel and green concrete, policy ought to ensure these materials are prioritised where possible.

Partnership and collaboration towards emissions reductions

Origin's Red Bus project was a partnership between the NSW Department of Planning and Environment, local bus manufacturer ARCC, Central Coast operator Red Bus, and Origin.

The trial was initiated under the NSW government's mandate to transition its 8000 public transport fleet to zero emissions technology by 2047. The trial evaluated how hydrogen could be used as an alternative fuel and its efficiency against electric as a clean energy technology. Prior to the trial, Red Bus had already conducted a trial using a battery electric bus. As a result, we were able to make direct comparisons between how electric and hydrogen performed.

In our view, hydrogen fuel cell buses and trucks provide the best like for like replacement of diesel buses. Hydrogen fuel cell buses will likely be used in combination with battery electric buses with the mix of technology, because:

- Many bus depots will have insufficient electrical infrastructure to enable Battery Electric Vehicle (BEV) charging for all vehicles, and
- Some bus routes will not be achievable (i.e. distance driven, and time allowed to recharge) with BEV's.

The success of the trial was reliant on close collaboration between stakeholders. We found that an integrated planning and engagement model was essential to the success of the trial. We consider this is a key learning that should inform governmental approaches to decarbonisation of the transport sector.

Closing summary

Origin supports actions which enable Australia meeting its net zero target. We consider that electrification is the most efficient pathway for much of the immediate transition for impacting transport emissions volumes, particularly for light vehicles.



While we agree that creating specific sectoral plans is a useful approach to ensuring each sector is doing its part in emissions reductions activities, we would note that the cumulative impact of electrification across all sectors will have a significant impact on the volume of renewable energy required to support this transition.

We would urge the Government to be mindful of this fact and ensure it is reviewing its net zero approach and appropriate support to the energy sector, to ensure that sufficient renewable generation is available to support all sectoral pathways. To date, the energy sector has achieved the majority of heavy lifting in reducing emissions and will continue to do so, but we must not underestimate the enormous nature of this nationwide decarbonisation effort.

If you have any questions regarding this submission, please contact Courtney Markham in the first instance on [REDACTED] or at [REDACTED]

Yours sincerely

[REDACTED]

Matthew Kaspura
Manager Green and Future Energy Policy
Origin Energy Limited
[REDACTED]