

Transport and Infrastructure Net Zero Consultation Roadmap

Take the survey

Department of Climate Change, Energy, Environment and Water

Response received at:

July 29, 2024 at 10:34 AM GMT+10

Response ID:

sbm2f92018e3ffc486c03be8

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

NT Department of Infrastructure Planning and Logistics

4 Confirm that you have read and understand this declaration.

Yes

5 First name

Jo

6 Last name

Cruickshank

7 Email

[REDACTED]

- 8 Phone
[REDACTED]
- 9 Who are you answering on behalf of?
Organisation
- 10 Organisation name
NT Department of Infrastructure, Planning and Logistics
- 11 What best describes you or your organisation?
Government
- 12 What sector do you represent?
All transport
Infrastructure
- 13 What state or territory do you live in?
Northern Territory
- 14 Postcode
0801
- 15 What area best describes where you live?
City
- 16 1. Do you support the proposed guiding principles?
Not answered
- 17 1.1 Please add details to your response.
Not answered
- 18 2. Do you support the use of the avoid-shift-improve framework as a tool to identify opportunities for abatement?

Not answered

19 2.1 Please add details to your response.

Not answered

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

Not answered

21 3.1 Please add details to your response.

Not answered

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

Not answered

23 5. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure the movement of people contributes to transport emissions reduction?

Not answered

24 6.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure that the movement of goods contributes to transport emissions reduction?

Not answered

25 6.2. How would these actions address the identified challenges and opportunities for emissions reduction in the movement of goods?

Not answered

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

Yes

27 7.1 Please add details to your response.

While the Northern Territory is supportive of the move to National Fuel Efficiency Standards for light vehicles, it is important that the unique characteristics of the Northern Territory are considered to ensure any potential adverse impacts on regional and remote communities are avoided.

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?

The vast distances and road conditions in the Northern Territory present a challenge for electric vehicle (EV) uptake. Regional and remote travel is reliant on the use of heavy duty, generally diesel powered four-wheel-drive vehicles. It is anticipated that electrification of the Northern Territory's light vehicle fleet will lag behind national levels of adoption, due to the current lack of appropriate vehicles to meet Northern Territory conditions and challenges with the delivery of charging infrastructure, including energy grid constraints. An equitable emissions reduction strategy will need to incorporate measures that respond to local geographic and socio-demographic characteristics. Whilst the Roadmap discusses the opportunities for electrification of transport modes in the Northern Territory and the advantages provided through solar power, the transition remains reliant on access to suitable vehicles for navigating unsealed roads and the move to renewable energy in remote communities.

The availability of reliable EV charging infrastructure is a key enabler for the uptake and use of EV's in the Northern Territory. The implementation of charging infrastructure on major highways and other key routes by the Australian Government, in partnership with the NRMA, is an essential initiative to support EV uptake in the Northern Territory.

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?

Low carbon liquid fuels and hydrogen are acknowledged in the Roadmap as potential alternatives for heavy vehicles over longer distances and with larger payloads. Low carbon liquid fuels provide an opportunity in the near-term due to the maturity of the technology. Hydrogen-fuel cell heavy vehicles may present a transition opportunity in the medium-long term as hydrogen technology and associated refuelling infrastructure evolve and mature and become commercially viable.

Fuel costs are a major proportion of the input costs for heavy vehicle transport operators and industry is therefore already heavily incentivised to reduce fuel usage where possible. The introduction of low carbon liquid fuels will provide an alternative, whilst battery electric and hydrogen fuel cell adoption technology is developed and taken up by the sector. Governments will need to work closely with industry to understand the optimal mix of technologies to reduce emissions across the different transport sectors, so that investments and limited feed stocks can be prioritised where they are most needed and will have the most impact. This includes the allocation of the potential limited quantities of low carbon liquid fuels, and identifying strategies for deploying effective EV charging infrastructure for heavy vehicles.

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?

Without increasing mass limits for heavy vehicles, additional mass on a vehicle will translate to compensations such as reductions in payload or fuel load, which can affect efficiency. Additionally, heavier, lower emission vehicles are in some cases already starting to approach or exceed statutory mass limits on steer axles, which in some circumstances cannot be easily compensated. This is especially an issue for road train prime movers fitted with additional equipment essential for operation in remote areas. To further support the heavy vehicle industry to reduce emissions from transport tasks that are difficult to abate, governments will need to collaborate with industry to identify, develop, and understand the impacts of measures to increase the efficiency of their operations. This may assist industry to not only find reductions in diesel use, but also reductions in operational costs.

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?

There will need to be a strategic approach by all levels of Government and support for the various production methods of SAF. Opportunities for establishing an Australian market will be dependent on the production method and require material support for enabling feedstock and investment into technological developments.

The Australian Government's establishment of the Jet Zero Council and ongoing investment in infrastructure to support the development of SAF in Australia is supported. However, the impact on the cost base of operations needs to be considered and support provided to ensure that the cost of transitioning to SAF does not drive up airfare pricing, impacting demand, cost and viability of aviation services.

- 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?

The size and budget of transport infrastructure projects in the Northern Territory is relatively small compared with other jurisdictions due to the Northern Territory's lower population and spatial distribution. National triggers for carbon assessment may have disproportionate impact on the Northern Territory's capacity to meet carbon reduction targets given the relative lack of maturity in the greenhouse gas emissions reduction field. Climate change also presents geographically disparate impacts where the Northern

Territory's high rainfall over short periods is expected to have increasingly significant impacts on transport infrastructure. This in turn will contribute to emissions as the maintenance effort is increased.

The Northern Territory's abundance of day-time solar power presents significant opportunities for charging EVs with renewable power and reducing transport emissions. For example, the prototype off-grid solar EV charger which has recently been installed at Erldunda, 200 kilometres south of Alice Springs through the Australian Government / NRMA partnership, indicates the potential of this technology, particularly for regional and remote communities.

- 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
NT Dept Infrastructure Planning and Logistics_Submission_Transport and Infrastructure
net Zero Consultation Roadmap.PDF
- 69** Upload a submission
NT submission PDF_Redacted.pdf
- 70** Upload supporting file
Not answered
- 71** Upload supporting file
Not answered

Chief Executive Level 5
Energy House 18-20
Cavenagh Street
DARWIN NT 0801Postal Address
GPO Box 1680
DARWIN NT 0801

T 08 8924 7029

E [REDACTED]

File Ref
2024/2091-0003**Submission to the Transport and Infrastructure Net Zero Consultation Roadmap**

The Northern Territory Department of Infrastructure, Planning and Logistics would like to provide the following submission on the Transport and Infrastructure Net Zero Consultation Roadmap (the Roadmap), noting that the submission is not confidential and may be published.

The Consultation Roadmap provides a comprehensive overview of the technological advances necessary to deliver decarbonisation of the transport sector by 2050. The timeframe associated with developing sustainable fuel sources, adopting affordable zero emission vehicles and decarbonising the rail, shipping and aviation sectors, is a complex and critical challenge. Australian Government leadership and investment in technological innovation, collaboration with industry and strong partnerships with the State and Territory governments will be necessary to ensure that emission reduction measures can be delivered equitably across the nation.

Decarbonisation of the transport sector is integral to the Northern Territory Climate Change Response Towards 2050. A high level of consistency exists between the key principles and pathways of both the Australian and Northern Territory Governments on climate change responses, with agreement on the need to transform transport systems and networks. The Northern Territory pathway to transport decarbonisation aligns with the Australian Government's framework of avoid-shift-improve.

Northern Territory actions to reduce transport emissions has concentrated on a range of measures including the transition to low and zero emissions vehicles, supporting mode change, promoting walking, cycling and public transport, facilitating heavy vehicle efficiency, investigating the role of sustainable aviation fuels and increasing rail freight through the development of Regional Logistics Hubs.

The Northern Territory Context

The Northern Territory's population is small and widely dispersed with some of the most remote communities in Australia. The 2021 Census identified that 26 percent of the Northern Territory's population is Aboriginal and Torres Strait Islander (Aboriginal), with more than 75 percent of this Aboriginal population living in remote and very remote communities.

Isolated communities are connected by an extensive 36,000 kilometre road network spread across 1.3 million square kilometres. While the 2,700 kilometre of the Northern Territory national highway network is fully sealed, 75 percent of the road network is unsealed, often rough and intersected by flood ways, creek and river crossings. Travel by road in regional and

remote areas of the Northern Territory often requires high clearance, diesel four-wheel drive vehicles. The Northern Territory relies heavily on road transport to move freight across vast distances and provide a critical connection to the rest of Australia and to trade opportunities internationally. The unique transport context in the Northern Territory presents significant challenges to transport decarbonisation.

Value of the Transport Sector to the Northern Territory

Effective, safe and reliable transport systems are a key enabler of the Northern Territory's economic and social development and wellbeing. With a small population spread over a vast geographic area, the provision of transport infrastructure and services is challenged by long distances, climatic extremes, remoteness and isolation.

Transport systems support the Northern Territory's major tourism, mineral, energy and agricultural sectors and are essential for the provision of public services. Reliable, affordable and effective transport systems are critical for enabling equitable access to services for remote and isolated Territorians, including isolated Aboriginal communities, and supports the ability to meet Closing the Gap outcomes. Limited public passenger services link the Northern Territory's major centres and outlying remote communities, Territorians are heavily reliant on private vehicles and air travel for the movement of people.

Approximately two thirds of interstate land freight is moved by road in the Northern Territory and most regions are completely reliant on road freight for the movement of goods. Many remote and regional areas of the Northern Territory, including island communities, also rely on air or barge services to enable access to essential services or connectivity to major centres, including during times of disruptions to road access and emergency response.

Light Vehicle Fleet

Consistent with national greenhouse gas emissions, road transport is the major source of transport emissions in the Northern Territory, with cars and light vehicles comprising 61 percent and heavy vehicles 39 percent of emissions. Decarbonisation of the light vehicle fleet in the Northern Territory is focussing on electrification, with the greatest emission reductions achieved through the use of renewable electricity.

The vast distances and road conditions in the Northern Territory present a challenge for electric vehicle (EV) uptake. Regional and remote travel is reliant on the use of heavy duty, generally diesel powered four-wheel-drive vehicles. It is anticipated that electrification of the Northern Territory's light vehicle fleet will lag behind national levels of adoption, due to the current lack of appropriate vehicles to meet Northern Territory conditions and challenges with the delivery of charging infrastructure, including energy grid constraints.

An equitable emissions reduction strategy will need to incorporate measures that respond to local geographic and socio-demographic characteristics. Whilst the Roadmap discusses the opportunities for electrification of transport modes in the Northern Territory and the advantages provided through solar power, the transition remains reliant on access to suitable vehicles for navigating unsealed roads and the move to renewable energy in remote communities.

Approximately 40 percent of all registered vehicles in Darwin are diesel, increasing to 45 percent in Alice Springs and 60 percent of vehicles in Katherine and Tennant Creek. As there is a lack of low and zero emission vehicles that are suitable replacements for existing

diesel four-wheel-drives, this sector of the fleet will require a longer timeframe and alternative strategies to reduce emissions.

The availability of reliable EV charging infrastructure is a key enabler for the uptake and use of EV's in the Northern Territory. The implementation of charging infrastructure on major highways and other key routes by the Australian Government, in partnership with the NRMA, is an essential initiative to support EV uptake in the Northern Territory.

While the Northern Territory is supportive of the move to National Fuel Efficiency Standards for light vehicles, it is important that the unique characteristics of the Northern Territory are considered to ensure any potential adverse impacts on regional and remote communities are avoided.

Road Freight and Heavy Vehicles

As recognised in the Roadmap, the most challenging transport sectors to decarbonise are heavy vehicles, rail, maritime and aviation. The majority of long distance general and bulk road freight in the Northern Territory is carried by triple road trains with vehicle combinations consisting of a prime mover and three full size freight trailers. While road trains require heavy duty, diesel powered prime movers, in comparison to smaller vehicle combinations such as rigid trucks and combinations hauling fewer trailers, road trains use less fuel and have a lesser impact on the road network per tonne of freight carried.

The road transport regulatory environment in the Northern Territory includes "as-of-right" access for road trains and "higher mass limits" for all heavy vehicles across the road network. This means that while there are appropriate controls for regulating safety and minimising undue impact on the road infrastructure, there are few restrictions on industry transporting freight as efficiently as possible. For example, if access for a fully laden standard road train was not available and the equivalent amount of freight was needed to be transported on single trailer combinations, it could take up to three or more single trailer configurations to carry out the task.

While there are opportunities to rapidly reduce emissions for the road freight task in urban areas with smaller vehicles and combinations and over shorter distances, significant challenges to reducing emissions are likely to remain for the long distance road train based freight task. As recognised in the Roadmap, zero emission technology development will take some time to be commercially deployable for high mass, long distance freight vehicles. Battery-electric heavy vehicles are currently limited to shorter distances with lower payloads until battery technology improves. Due to the Northern Territory's vast landmass, providing sufficient charging stations for battery powered heavy vehicles will remain a significant infrastructure challenge. Operating in remote northern Australia is also likely to present additional challenges to alternative fuel technologies, such as high ambient temperatures, extreme weather events and operating on unsealed roads. Given some of these unique challenges, potentially it may not be feasible to fully electrify the transport task in the Northern Territory.

Low carbon liquid fuels and hydrogen are acknowledged in the Roadmap as potential alternatives for heavy vehicles over longer distances and with larger payloads. Low carbon liquid fuels provide an opportunity in the near-term due to the maturity of the technology. Hydrogen-fuel cell heavy vehicles may present a transition opportunity in the medium-long term as hydrogen technology and associated refuelling infrastructure evolve and mature and become commercially viable.

The Northern Territory is keen to support the establishment of a hydrogen industry and is working towards foundational activities to enable private sector development. The implementation of 2024 Federal Budget initiatives to support industry development, including the Hydrogen Production Tax Incentive and expansion of the Hydrogen Headstart Program, will assist the accelerated growth of the industry.

In the absence of immediate low carbon alternatives, efficiency is a critical lever to reducing emissions. To maximise the efficiency of road train transport, the Northern Territory administers the Innovative Vehicle Scheme, which provides opportunities for the heavy vehicle industry to increase efficiencies even further. Operators that design innovative, higher productivity heavy vehicle combinations that demonstrate better overall on-road safety performance than that of an equivalent standard vehicle, can obtain permits to operate these vehicles on the road network. Vehicles such as quad road trains (four trailers) have become commonplace in the Northern Territory through this scheme and these are some of the most efficient road freight combinations operating anywhere in the world. Working with industry and infrastructure owners to continue to improve productivity and efficiency through innovative vehicle combinations will be crucial to reducing emissions from freight tasks which are difficult to abate.

Fuel costs are a major proportion of the input costs for heavy vehicle transport operators and industry is therefore already heavily incentivised to reduce fuel usage where possible. The introduction of low carbon liquid fuels will provide an alternative, whilst battery electric and hydrogen fuel cell adoption technology is developed and taken up by the sector. Governments will need to work closely with industry to understand the optimal mix of technologies to reduce emissions across the different transport sectors, so that investments and limited feed stocks can be prioritised where they are most needed and will have the most impact. This includes the allocation of the potential limited quantities of low carbon liquid fuels, and identifying strategies for deploying effective EV charging infrastructure for heavy vehicles.

As stricter emissions standards are imposed on new heavy vehicles by the Australian Government and international emissions standards trickle into the Australian market, there will continue to be emission reductions across the diesel powered heavy vehicle fleet in the Northern Territory. Likewise, where feasible over shorter routes with lighter payloads, battery EV will start to make inroads into fleets. However, there are also barriers to the uptake of these cleaner vehicles, given that batteries in electric vehicles are heavier and diesel emission control equipment increases weight. While heavy vehicle mass limits can be considered as a barrier to the deployment of more efficient and zero emission vehicles, they are in place to manage the impact on road infrastructure within road maintenance and upgrade funding budgets.

Roads are the lifeblood of remote Australia and it is crucial to understand the impact of heavier vehicles on road infrastructure, and to develop a plan to fund any increased maintenance, upgrades, and new design standards to provide for heavier vehicles. Deployment of heavier vehicles with lower or zero emissions, cannot come at the cost of the provision of a productive and resilient road network, or unsustainable freight costs for people living in and servicing remote Australia. Additionally, the emissions associated with a widespread increase in road maintenance and construction, or higher construction standards, must be well understood and balanced against the benefits of deploying heavier vehicles.

Without increasing mass limits for heavy vehicles, additional mass on a vehicle will translate to compensations such as reductions in payload or fuel load, which can affect efficiency. Additionally, heavier, lower emission vehicles are in some cases already starting to approach or exceed statutory mass limits on steer axles, which in some circumstances cannot be easily compensated. This is especially an issue for road train prime movers fitted with additional equipment essential for operation in remote areas.

To further support the heavy vehicle industry to reduce emissions from transport tasks that are difficult to abate, governments will need to collaborate with industry to identify, develop, and understand the impacts of measures to increase the efficiency of their operations. This may assist industry to not only find reductions in diesel use, but also reductions in operational costs.

Aviation

The Northern Territory is heavily reliant on air travel due to its vast area and the long distances between the Northern Territory's remote communities and major centres, and to interstate destinations. Territorians undertake more flights per capita than any other Australian jurisdiction. In 2022, the NT's estimated domestic and international flights per capita was 1:7, compared to an Australian average of 1:1. The high use of aviation is reflected in emissions data, which shows that domestic aviation accounts for 21 percent of Northern Territory transport emissions compared to only 5 percent nationally.

As global demand for cleaner fuel grows, low carbon jet fuel will be key for airlines to achieve net zero emissions by 2050. The Northern Territory Government has committed funding to undertake a feasibility study on the development of a Sustainable Aviation Fuel (SAF) industry in the Northern Territory. The study will assess the Northern Territory's role in the SAF value chain and consider the market outlook, production costs, SAF technologies and the Northern Territory's locational advantages. While beneficial to the Australian market, a local SAF industry would be focused on meeting regional demand, as well as serving local defence requirements.

There will need to be a strategic approach by all levels of Government and support for the various production methods of SAF. Opportunities for establishing an Australian market will be dependent on the production method and require material support for enabling feedstock and investment into technological developments.

The Australian Government's establishment of the Jet Zero Council and ongoing investment in infrastructure to support the development of SAF in Australia is supported. However, the impact on the cost base of operations needs to be considered and support provided to ensure that the cost of transitioning to SAF does not drive up airfare pricing, impacting demand, cost and viability of aviation services.

Rail

The Northern Territory currently has a single rail line linking Adelaide to Darwin, with 1,737 kilometres of standard gauge rail line within the Northern Territory. Rail freight is generally more cost effective over large distances and is less emission intensive.

A network of Regional Logistics Hubs is planned across the Northern Territory, including the development of rail hubs, sidings and spurs which will focus on upgrading the capacity of the existing rail network and improving rail efficiency.

