

# Transport and Infrastructure Net Zero Consultation Roadmap

## Take the survey

Department of Climate Change, Energy, Environment and Water

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Response received at:

August 6, 2024 at 12:48 AM GMT+10

Response ID:

sbm2fb91bed3e017b8207e70

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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

Institution of Civil Engineers

4 Confirm that you have read and understand this declaration.

Yes

5 First name

David

6 Last name

McNaught

7 Email

[REDACTED]

8 Phone

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9 Who are you answering on behalf of?

Organisation

10 Organisation name

Institution of Civil Engineers

11 What best describes you or your organisation?

Other: "Membership"

12 What sector do you represent?

Infrastructure

All transport

Energy

Climate change/net zero

13 What state or territory do you live in?

Outside Australia

14 Postcode

[REDACTED]

15 What area best describes where you live?

City

16 1. Do you support the proposed guiding principles?

Not answered

17 1.1 Please add details to your response.

Not answered

18

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

Not answered

19 2.1 Please add details to your response.

Not answered

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

Not answered

21 3.1 Please add details to your response.

Not answered

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

Not answered

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

Not answered

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

Not answered

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

Not answered

- 26 7. Do you agree with the proposed net zero pathway for light road vehicles?  
Not answered
- 27 7.1 Please add details to your response.  
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  
ICE submission to the Transport and Infrastructure Net Zero Consultation Roadmap\_FINAL.pdf
- 69 Upload a submission  
Not answered
- 70 Upload supporting file  
Not answered
- 71 Upload supporting file  
Not answered

# ICE submission to the Australian Government on the Transport and Infrastructure Net Zero Consultation Roadmap

August 2024

## Introduction

The Institution of Civil Engineers (ICE) is a 97,000-strong global membership organisation with over 200 years of history.

The ICE has over 2,300 members based in Australia.

It is a centre of engineering excellence, qualifying engineers and helping them maintain lifelong competence, assuring society that the infrastructure they create is safe, dependable and well-designed.

Its network of experts offers trusted, impartial advice to politicians and decision-makers on how to build and adapt infrastructure to create a more sustainable world. The ICE is well-respected by the UK government as a source of independent advice, which it delivers through its policy programmes and annual State of the Nation reports.<sup>1</sup> While the ICE is a UK-based institution, it offers advice to governments globally. It facilitates the exchange of insight between civil servants, practitioners and other experts worldwide to ensure the world has the engineering capacity and infrastructure systems it needs.

For more information, please contact [policy@ice.org.uk](mailto:policy@ice.org.uk)

This submission responds to the Department of Climate Change, Energy, the Environment and Water consultation on the Transport and Infrastructure Net Zero Consultation Roadmap. It focuses on:

- the role of public behavioural change in transport decarbonisation and the steps policymakers should take to enable it.
- reducing embodied carbon in transport infrastructure.

In particular, it responds to:

- Questions 3-5: the development of a national policy framework for active and public transport to support emissions reduction.
- Questions 7-8: the proposed net zero pathway for light road vehicles.
- Question 22: additional actions governments, communities, industry and other stakeholders need to take now and in the future to reduce transport infrastructure emissions.
- Question 25: the best ways for the Australian Government to work collaboratively with industry, business, governments and communities to implement the proposed pathways.

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<sup>1</sup> ICE [Policy insights and advice: State of the Nation](#)

## 1. Enabling public behavioural change to reduce transport emissions

Public behavioural change has a huge role in the net zero transition. For example, in the United Kingdom, it is estimated that around two-thirds of emissions reductions to 2035 alone must involve some form of public choice.<sup>2</sup> Yet, to change their behaviour, people need the support of policymakers and businesses and an infrastructure system that enables them to make net zero-aligned choices.

The ICE and the UK Parliament's All Party Parliamentary Group on Infrastructure (APPGI) recently published a report to help policymakers enable public behaviour change through a net zero infrastructure system.<sup>3</sup> It makes the following recommendations relevant to this consultation:

- **Create a clear policy path to follow**
  - Develop a consistent policy framework across all levels of government outlining a long-term plan for an approved pipeline of infrastructure upgrades designed to support change in public behaviours.
  - The public needs the right infrastructure in place before they can change their behaviour. Public engagement must be included within a wider program of infrastructure upgrades to accelerate the net zero transition.
  - An enabling framework should focus on how net zero's up-front and operational costs can be reduced to assist the public in making behaviour changes.
- **Address market and non-financial barriers**
  - Address structural issues with the market by ensuring electric vehicle (EV) companies provide a market response to encourage public take-up.
  - Improve the design aesthetic of EV infrastructure to make it more visually appealing.
- **Deliver blue-green infrastructure that is accessible to everyone**
  - As more road space is allocated to blue-green infrastructure, walking and cycling can become more attractive and accessible modes of transport, helping to increase active travel.<sup>4</sup>
  - Blue-green infrastructure includes natural and semi-natural features, interventions, and structures that provide functions and benefits for an area. "Green" features include street trees, natural and semi-natural vegetation, green roofs and green walls, woodlands, grasslands, and parks. The "blue" component includes rivers, canals, ponds, rain gardens, swales, and filter strips, which are all integrated into the management train of Sustainable Drainage Systems (SuDS)
  - Ensuring the public has equal access to BGI not only improves their health and wellbeing but also means they can play an active role in the net zero transition. The needs of people with disabilities should be considered through consultation processes and developing equality impact assessments.

### Communication that enables behavioural change

Polling for the ICE found that most people in the UK want to make a change and believe individuals have at least some responsibility to make changes themselves.<sup>5</sup> To help them do this, communication around the required behavioural changes needs to be appropriate, concise, targeted and delivered at the right time.

In the context of transport, the research identified the following times people are most likely to consider making net-zero-friendly changes:

- **Using more public transport – Taking advantage of upgraded local infrastructure:** People considering changing their transport habits are most likely to have trialled the new journey once or twice or worked out cost

<sup>2</sup> Climate Change Committee (2020) [Sixth Carbon Budget](#)

<sup>3</sup> ICE/APPGI (2023) [What Are the Public Behavioural Changes Required to Meet Net Zero?](#)

<sup>4</sup> Chartered Institution of Highways & Transportation (2023) [Green and Blue Infrastructure: a Transport Sector Perspective.](#)

<sup>5</sup> ICE/APPGI (2023) [What Are the Public Behavioural Changes Required to Meet Net Zero?](#)

implications. The most popular ‘trigger’ is improving local transport infrastructure, highlighting the need for visible infrastructure upgrades to influence more people to change their behaviour.

- **Getting an electric vehicle – Promoting EVs alongside Internal Combustion Engines online when people seek to replace their existing vehicle: Participants often researched** online on upgrading to an EV. EVs could be promoted to everyone alongside other options to drive wider take-up.

Communication can help reframe net zero choices and how they fit into people’s everyday lives as additions with positive value rather than being a burden. Unambiguous language can demystify net zero choices and make them more relatable to the public. The narrative framing can convey the functional, emotional, and social benefits of the net zero transition.

- **Functional** benefits include improved health and well-being, cost savings, and increased job opportunities.
- **Emotional** benefits can include an increased sense of purpose, feeling and acting more optimistically, and a greater sense of control and stability.
- **Social** benefits include a greater sense of belonging and stronger local communities.

### De-mystifying net zero choices

There is a lot of information about the low-carbon choices people can make in the public domain. Much of it is either contradictory or unnecessarily complex. Public engagement in areas such as active travel and electric vehicles should demystify these changes and make them seem more realistic to individuals interested in making a difference.

Encouraging public behavioural change in travel behaviour needs to recognise the benefits of blending incentives with disincentives, the value of a package of place-specific measures, and the reality that there is no single silver bullet for reducing vehicle journeys.

### Public transport and active travel

Active travel is a popular choice for those looking to change their behaviour to help reach net zero. Polling for the ICE on UK public attitudes found that:

- switching to public transport or active travel – even once a week – can provide meaningful change for people who want to cut emissions but don’t feel like they can.
- out of the changes in behaviour tested on the public, 32% of people think using more public transport is personally feasible, which had the highest feasibility among the changes tested.
- public transport can be an effective lower-cost option for the 34% of people ‘seeking empowerment’ who want to make a change but do not feel able to, mainly because of cost.

However, concerns around safety and accessibility can act as barriers to change. In the UK, the Road Safety Foundation’s Active Travel Tool aims to combat this by helping road authorities evaluate active travel facilities for safety according to Safe System principles and age and ability.<sup>6</sup>

For some communities, cultural barriers and lack of representation are also a problem; for example, heightened safety concerns among ethnic minority women translate to less representation of these groups in cycling. Rather than designing new active travel facilities for the traditional “reference man” (a 20–30-year-old white male in good physical and financial health and full-time employment), an intersectional approach is required to ensure active travel works for the communities it serves.<sup>7</sup> There is a need to work with communities and key links into these to address each one’s barriers through bespoke campaigns and infrastructure. Creating a sense of ownership amongst users ensures that transport systems are safe and open to all.

Active travel infrastructure in countries such as the Netherlands and Denmark normalises cycling. It makes it simpler for the public to make a net-zero-friendly choice, as active travel is increasingly safer, more convenient and easier than other

<sup>6</sup> International Road Assessment Programme (iRAP) (2024) [Active Travel Tool](#)

<sup>7</sup> Arup and Urban Transport Group (2022) [Equitable Future Mobility](#)

methods of travel.<sup>8</sup> By addressing safety concerns around active travel, the public is more likely to feel comfortable changing their existing travel behaviour.

Public engagement can improve awareness of public transport or active travel options while tackling common safety or infrastructure misconceptions. Subnational authorities and transport bodies have a crucial role to play in ongoing evaluation to assess the efficacy of interventions relating to public transport and active travel, both in terms of monitoring the safety, efficiency and suitability of interventions in their area, as well as adding to the broader evidence base.

### **Electric vehicles (EVs)**

The UK's Zero Emissions Vehicle mandate came into force in January 2024 to phase out the sale of new non-zero emission cars and vans. It requires that 80% of cars and 70% of vans sold in Britain be electric by 2030, increasing to 100% by 2035.<sup>9</sup>

However, while many people claim to have a long-term intention of upgrading to an EV, research for the ICE highlights that 37% of people in the UK view cost as the main barrier. In the UK, 17% of adults have no savings at all and face genuine barriers when it comes to upgrading to an EV.<sup>10</sup>

Public engagement can take EVs out of their 'early adopter' stage by positioning them as the easy way to cut carbon emissions and show evidence of cost savings. When people are already replacing their car, they are open to considering an EV.

EV companies should also provide a market response to create demand for new models. Companies that match customer demand with suitable EV models and catch regulatory tailwinds will benefit from growth and gain a greater future customer share.<sup>11</sup>

Research carried out in the UK by Transport for the North has highlighted that consumers within the EV market still need more choices of affordable new models within the market. Choices in the second-hand vehicle market and options for repairing and servicing hybrid and electric vehicles also remain limited.<sup>12</sup> A local authority-led approach could promote EV charging infrastructure where it is most needed, where it is unlikely to be funded by other means, and where there are few alternatives.<sup>13</sup>

There is also a need to reduce vehicle size. As Sustrans has highlighted, the bigger the vehicle, whether internal combustion or electric, the lower the fuel efficiency and higher the emissions.<sup>14</sup> Improved design guidance, including for the size of parking bays, can thus help encourage behaviour changes away from purchasing larger cars.

Behavioural norming nudges (such as the introduction of blue triangles on number plates) can also act as an encouragement and a visual reminder to other road users of the benefits of switching to a zero-emission vehicle.<sup>15</sup>

### **Availability and design of supporting infrastructure**

Sufficient charging infrastructure is needed to support the transition and make it easier for people to upgrade to an EV. Public engagement must be part of a broader programme of infrastructure upgrades to accelerate the net zero transition. The UK's National Infrastructure Commission highlighted that public attitudes towards congestion charging increased in support when people understood that the revenue raised would be spent on improvements to local transport.<sup>16</sup>

<sup>8</sup> ICE/APPGI (2023) [What Are the Public Behavioural Changes Required to Meet Net Zero?](#)

<sup>9</sup> UK Government / Department for Transport (2023) [Government sets out path to zero emission vehicles by 2035](#)

<sup>10</sup> Department for Energy Security and Net Zero and the Department for Business Energy and Industrial Strategy (2023) [Mission Zero: Independent Review of Net Zero](#)

<sup>11</sup> McKinsey (2020) [McKinsey Electric Vehicle Index](#)

<sup>12</sup> Transport for the North (2024) [How Can We Increase Consumer Confidence in the Electric Vehicle Transition?](#)

<sup>13</sup> Arup and Urban Transport Group (2022) [Equitable Future Mobility](#)

<sup>14</sup> Sustrans (2023) [Why Are Cars Getting Bigger? A Deep Dive Into How UK Regulations Are Enabling Car Size Growth](#)

<sup>15</sup> UK Government / Department for Transport (2020) [Road to Zero in Sight as Green Number Plates Introduced on UK Roads](#)

<sup>16</sup> National Infrastructure Commission (2023) [The Second National Infrastructure Assessment](#)

It is only possible to change public behaviour if infrastructure and services are in place to allow people to make different choices without undue friction. Well-designed energy, transport, and other structures and systems will be needed in terms of physical connections and other 'kit' and operational matters, including price structures and the availability of tools such as information portals to simplify decisions. National and subnational governments and regulators will play a vital role in ensuring this.

## 2. Reducing embodied carbon in transport infrastructure – PAS 2080

The ICE has been supporting the creation and mainstreaming of the use of PAS 2080 during infrastructure planning and delivery. PAS 2080 is a standard for managing carbon in buildings and infrastructure, which supports clients to reduce whole-life carbon and cost through intelligent design, construction and use:<sup>17</sup>

- PAS 2080 guides the management of carbon across the lifecycle of buildings and infrastructure.
- Implementing PAS 2080 can lower project costs, emissions and enhance tender competitiveness.
- It emphasises early collaboration, defined roles, and integrated decision-making for sustainability.
- Using it shows commitment to decarbonising the built environment and effective carbon management.

### PAS 2080 in transport infrastructure planning and delivery

PAS 2080 is increasingly becoming the go-to specification for carbon management in the built environment in the UK. It is a key reference document in the UK Government's Construction Playbook, which sets out key policies and guidance for how public works projects and programs are assessed, procured and delivered.<sup>18</sup>

In addition, the UK Government's National Networks National Policy Statement (NNNPS) provides planning guidance for promoters of nationally significant road, rail and strategic rail freight interchange projects.

The NNNPS has recently been updated, including a number of changes around the need to reduce carbon emissions in transport.<sup>19</sup>

The document now provides more information on the requirement for whole-life carbon assessments in the construction and operation of national network infrastructure. The NNNPS now signposts the PAS 2080 standard as best practice for managing and reducing carbon in the built environment.

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<sup>17</sup> British Standards Institution [Carbon Management in Infrastructure and Built Environment - PAS 2080](#)

<sup>18</sup> UK Government / Cabinet Office (2023) [The Construction Playbook](#)

<sup>19</sup> UK Government / Department for Transport (2024) [National Networks National Policy Statement](#)