

# 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:

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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  
INEOS Automotive
- 4 Confirm that you have read and understand this declaration.  
Yes
- 5 First name  
Valerio
- 6 Last name  
Scabbia
- 7 Email  
[REDACTED]

8 Phone

[REDACTED]

9 Who are you answering on behalf of?

Organisation

10 Organisation name

INEOS Automotive

11 What best describes you or your organisation?

Industry

12 What sector do you represent?

Light road vehicles (cars, utes etc.)

13 What state or territory do you live in?

Outside Australia

14 Postcode

Not answered

15 What area best describes where you live?

City

16 1. Do you support the proposed guiding principles?

Yes

17 1.1 Please add details to your response.

These principles reflect INEOS' view that the path to Net Zero in the transportation sector requires a mix of different technologies. In particular, governments need to make it easy and attractive to both OEMs and customers to make the transition to zero emission vehicles. INEOS believes that the path is just that – a transition, not a cliff edge. For transportation, considering how many different applications that vehicles have to fulfil, it makes sense to encourage a range of different solutions and technologies.

Unlike Europe and the UK, where government policy has concentrated almost exclusively on battery electric vehicles as the sole answer to the problem of decarbonising the transport sector, we would urge the Australian government to adopt a balanced approach, taking into account different technologies and their relative suitability for different applications. Such approach would provide choice and value for money to the customer and government, foster innovation, encourage better and more efficient use of limited natural resources and help to avoid damaging trade wars with China and other nations with established battery electric vehicle industries.

**Maximising Emissions Reduction:** INEOS agrees on the need to reduce emissions at the earliest opportunity. However, we believe this requires a steep flight path, rather than a cliff edge. The sensible approach is to acknowledge where each technology is strong, and encouraging development in those sectors. For example, battery electric vehicles are very much suited to urban environments, where road space is limited, journeys are short and charging points are easily accessible. They are less well suited to rural areas, where journeys are longer and charging points are scarce. Conversely, range extender (REX) electric vehicles have no range issues and do not require an extensive charging infrastructure. While they are not zero emissions vehicles, they reduce tailpipe emissions by up to 80% and the technology is already proven. REX vehicles require a much smaller battery pack and, in countries without extensive renewable energy generation, they represent a strong alternative to pure electric vehicles for lifetime emissions efficiency. INEOS believes that encouraging technologies like REX would result in a more rapid reduction in real world emissions than concentrating solely on promoting battery electric vehicles.

**Value for Money:** As above, REX vehicles (which can cover a few hundred kilometres in pure electric mode and also have a very small and efficient internal combustion engine that can top up the battery when needed) could represent a cost-efficient opportunity to decarbonise mobility in remote areas. Rather than installing expensive fast chargers in the middle of nowhere that will likely have very low utilization rates, REX vehicles could drive in full electric mode in urban areas and rely on the existing liquid fuel infrastructure (with fossil fuels replaced by low carbon liquid fuels) to reach remote places. Alternatively, hydrogen is an easier and cheaper way to store renewable energy in remote locations disconnected from the grid. For example, small scale renewable energy generation schemes can be used to manufacture hydrogen at a local level in remote areas. In addition, the infrastructure needed to distribute hydrogen is a significantly more efficient and effective way to deliver renewable energy to refill vehicles. In comparison with electricity charging points, hydrogen infrastructure requires far fewer refuelling stations vs electric ones (see appendix 1 in the attached document).

Maximising economic opportunity: We would like to suggest that Australia is in a good position to leverage its geographical position and climate to become one of the key exporters of green energy by shipping it as green hydrogen and low carbon liquid fuel. Developing both a hydrogen infrastructure and the appropriate regulatory framework for hydrogen powered vehicles could attract foreign OEMs for testing and development of new vehicles and also be a leading market internationally for this type of vehicle. It could also create significant opportunities to develop hydrogen as a viable alternative to battery electric vehicles where the new Chinese OEMs seem set to dominate.

Inclusive and Equitable: we believe that customers should be able to choose the powertrain technology that best suits them according to where they live, what they do and their disposable income. For example, what we are now seeing in Europe and UK (and what could also be the impact of the New Vehicle Efficiency Standard regulation in Australia) is that OEMs are forced to sell a certain quota of EVs or effectively cap the number of hybrid and internal combustion engine vehicles – leaving behind people who live in rural or remote areas without charging infrastructure.

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

Yes

**19** 2.1 Please add details to your response.

We cannot comment in detail on the Avoid phase, except to state that this might be less effective if people and businesses are forced by law or regulation to avoid journeys. This should be encouraged, without being mandated.

With regard to the Shift and Improve phases, we have already announced that we will launch our next model, the Fusilier, with both REX and battery electric options. We have also built a fully operational hydrogen fuel cell powered Grenadier as a demonstrator vehicle to prove how hydrogen could provide viable opportunities to decarbonise large/ commercial and offroad vehicles without significantly increasing their curb weight.

As noted above, we strongly believe that a mixed technology approach will achieve more rapid improvements to low carbon transport than concentrating on a single technology. Such a strategy will encourage significantly higher, and more rapid, take up of low carbon transport alternatives, and create an atmosphere of innovation at a crucial point in the development of the zero-carbon strategy.

- 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.  
We agree with the overall direction of the proposed net zero pathway for light road vehicles. However, we believe that over reliance on electric vehicles to meet the

ambitious targets amounts to putting all the eggs in one basket. This potentially creates risk if, for example, EVs fall out of favour in the market or infrastructure fails to keep up with demand. It also potentially misses opportunities to develop a broad-based approach to achieving net zero in the transport sector. Why, for example, would hydrogen fuel cell technology work in the heavy transport sector but not be worth the same level of government support in the light transport sector? With this in mind, we would like to put forward four recommendations (see below).

We welcome the recognition that a mix of technologies, each one with its own timeline, is needed to decarbonise the transport sector and fulfil all the different vehicle use cases across a wide range of different operational settings. We have four main suggestions:

Battery electric vehicles with range extender – a small internal combustion engine that can use petrol or other low carbon liquid fuels to top up the battery only when the charging infrastructure is not available – represent a valid alternative to decarbonise mobility during urban driving and to overcome the lack of charging infrastructure especially outside urban areas, eliminating range anxiety for drivers. We do believe this solution could work not only as bridge technology while the charging infrastructure is being deployed but also as a longer-term solution to access remote areas, where deploying a charging infrastructure does not make sense economic-wise. Vehicles with this type of powertrain usually have a smaller battery (thus making them lighter and more efficient) and can drive in pure electric mode for a few hundred kilometres covering most daily commuting needs and local errands. Today this type of vehicle is classified as a hybrid, a category that includes all sort of electrified powertrain technologies where an internal combustion engine can power the vehicle, but this is not the case for range extenders; we recommend recognizing the value of this solution and classifying it accordingly, separately from hybrids.

As highlighted in the paragraph “Electrification is the clear technology to decarbonise light vehicles”, there are huge differences between the carbon footprint of vehicles with different high voltage battery capacities and manufactured in different Countries. Given the high reliance of the Australian market on imported vehicles and that Europe has already mandated the evaluation of high voltage batteries carbon footprint, we would recommend adopting a similar approach in Australia, so customers can make informed decisions and effectively compare the carbon footprint of different powertrain technologies and favour more efficient vehicles with smaller batteries and produced using renewable energy.

Hydrogen in mobility is a technology that already works today; more and more OEMs are working on both fuel cell and hydrogen combustion engine vehicles. While we fully

understand the reasons of the proposed timeline for Light vehicles, we do recommend to start deploying a hydrogen infrastructure now, without delays, to allow OEMs to sell available products at scale and at the same time boost the relevance of Australia as a key market for hydrogen vehicles (including testing and development). Hydrogen also represents a great opportunity in terms of optimizing infrastructure investments, as hydrogen stations deliver power much more quickly than charging points – thus requiring less stations overall (see appendix 1) - and to avoid a dramatic increase in vehicle weight, especially for large SUVs and UTEs. For example, with our hydrogen fuel cell Grenadier, we are sure we could target and achieve the same vehicle weight as the diesel-powered version while assuring a WLTP range of more 550km; this would be simply impossible with a battery electric powertrain. In terms of sustainability, hydrogen powered vehicles also require significantly smaller batteries and therefore less critical raw materials that, besides the CO2 emissions associated with their processing, involve displacing incredible quantities of ore and consuming huge quantities of water.

Given the multitude of customer profiles and use cases for light duty vehicles, we recommend not to implement a blanket ban on internal combustion engine vehicles like we have seen in Europe and UK. Internal combustion engines will remain the best alternative in very specific situations: for example emergency services such as fire department and search and rescue vehicles, maintenance of infrastructure in remote areas, etc.

## 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?

We would like to highlight three different points that could further support the reduction on emissions from the transport sector: (1) infrastructure compatibility, (2) recognising synthetic and low carbon liquid fuels and (3) recycling.

(1) To maximise the value for money for the investments in charging and especially hydrogen infrastructure, we recommend the adoption of specific policies that ensure standards compatibility across different transport modes and to leverage all possible synergies. For example, when deploying hydrogen stations, we recommend that they will all be able to refill at 700bar (typical pressure for light duty vehicles) even if the stations are being deployed for heavy duty vehicles (usually operating at 350bar) to make sure

both types of vehicles can benefit from the same investment. Moreover, when using hydrogen to decarbonise rail and aviation, thus creating hydrogen storage facilities at train stations and airports, we recommend to also consider installing vehicles' refilling points there, leveraging the same hydrogen hub and supply chain.

(2) An additional point we would like to make is that a specific framework to properly recognise vehicles running on low carbon or synthetic liquid fuels needs to be put in place, for example in the New Vehicle Efficiency Standard regulation there are currently no benefits for vehicles using such fuels instead of fossil ones.

(3) We would like to highlight how, with the National Battery Strategy, Australia could not only be able to reduce the environmental impact of battery electric vehicles, but also become an exporter of critical raw materials not usually available in its territory.

**29** 8.2 How would these actions address the identified challenges and opportunities to reduce light vehicle emissions?

See 8.1

**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?

What the Australian Government has been doing with this consultation is a great example of how regulators and industry can work together to achieve a common target: reaching Net-Zero. We recommend to continue with this approach for new regulations.

- 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?

A good example of collaboration between countries aiming at decarbonising transport is the Critical Minerals Agreement between the United States and Japan, that allows critical raw materials and high voltage batteries sourced from Japan to benefit from the tax incentives defined by the US Inflation Reduction Act as they will be considered “local” under the sourcing requirement terms. Moreover, this agreement promotes fair competition and cooperation to ensure sustainable and equitable critical minerals supply chains.

- 59 25.2 What opportunities can Government leverage to show leadership in Australia and internationally?

Australia has the opportunity of making the energy transition more affordable for people when compared to Europe, UK and US and become a supplier of choice for companies in these Regions. These markets have all expressed the intention to impose tariffs, bans or incentives’ restrictions on products sourced from specific countries and this will determine a significant cost increase for both local OEMs sourcing components abroad and the public, as all duties and tariffs will be reflected in the pricing of vehicles. By remaining neutral in this tariffs escalation and by establishing both a raw material processing and a high voltage battery recycling industry, Australia could easily become a key exporter of critical raw materials with a significant price advantage when compared to other markets subject to import duties. This could not only be valid for raw materials extracted or refined in Australia, but also for all the elements resulting from the recycling of high voltage batteries.

- 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?

We welcome the adoption of annual reporting and revisions every three to five years – we believe that policy reviews and updates are crucial over time given the increasingly fast pace of technology innovation and the disruption that tariff wars and geopolitical tensions could determine.

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?

Hydrogen stations represent a more effective and cost-efficient way to deliver energy versus charging stations for mainly two reasons: (1) one hydrogen station is equivalent to tens of charging points in terms of energy supply and (2) hydrogen stations are easier to deploy in remote areas, disconnected from the grid.

(1) See Appendix 1 of attached document

(2) Hydrogen can not only be produced off on-site completely independently from the grid (with solar panels or wind turbines and an electrolyser) but also it can be stored and transported in tanks, this makes the infrastructure concept much more similar to petrol and diesel: green hydrogen can be produced in a certain location and transported by truck to refilling stations where it is stored in larger tanks, from which vehicles can refill. It is very different from a charging station, that either needs to be connected to the grid with significant investments due to the power required or it needs to have large and expensive batteries on site connected to solar panels or wind turbines to allow fast charging.

66 Would you like to upload a document?

Yes

67 Have you removed any identifying information from your submission?

Yes

68 Upload a submission

20240724 - INEOS Automotive Response to Australia - Net Zero Roadmap  
consultation.pdf

69 Upload a submission

Not answered

70 Upload supporting file

Not answered

71 Upload supporting file

Not answered

July 24<sup>th</sup>, 2024**Response to the Australian “Transport and Infrastructure Net Zero Consultation Roadmap”**

INEOS Automotive welcomes the publication of this Roadmap that, once finalised, will provide a long-term vision and certainty for the automotive industry in Australia, both of which are crucial for businesses to invest in researching and developing new products and innovative technologies.

By way of background, INEOS Automotive is a new OEM (part of INEOS Group, a leading company in the chemical and energy sector) that started delivering vehicles to customers in 41 countries at the end of 2022. Our Grenadier and Quartermaster, specialised and durable offroad vehicles, are produced in Europe and have been extremely well received by the Australian market, where INEOS Automotive’s APAC headquarter office is based.

Our first two vehicles are powered by BMW petrol and diesel engines and we have already announced that our third vehicle line, the Fusilier, will be available with a battery electric powertrain with optional range extender to alleviate range anxiety where charging infrastructure is not possible.

In addition to this, we believe that hydrogen powered vehicles need to be in the mix of technologies if we want to reach net-zero in the transport sector. To prove this, we have built a fuel cell version of Grenadier as a proof of concept and we hope to bring this to Australia to demonstrate its suitability during 2025.

Please find here our feedback to specific points of the consultation where INEOS Automotive expertise is relevant:

1. INEOS agrees with the five guiding principles proposed.
  - 1.1. These principles reflect INEOS’ view that the path to Net Zero in the transportation sector requires a mix of different technologies. In particular, governments need to make it easy and attractive to both OEMs and customers to make the transition to zero emission vehicles. INEOS believes that the path is just that – a transition, not a cliff edge. For transportation, considering how many different applications that vehicles have to fulfil, it makes sense to encourage a range of different solutions and technologies.

Unlike Europe and the UK, where government policy has concentrated almost exclusively on battery electric vehicles as the sole answer to the problem of decarbonising the transport sector, we would urge the Australian government to adopt a balanced approach, taking into account different technologies and their relative suitability for different applications. Such approach would provide choice and value for money to the customer and government, foster innovation, encourage better and more efficient use of limited natural resources and help to avoid damaging trade wars with China and other nations with established battery electric vehicle industries.

*Maximising Emissions Reduction:* INEOS agrees on the need to reduce emissions at the earliest opportunity. However, we believe this requires a steep flight path, rather than a cliff edge. The sensible approach is to acknowledge where each technology is strong, and encouraging development in those sectors. For example, battery electric vehicles are very much suited to urban environments, where road space is limited, journeys are short and charging points are easily accessible. They are less well suited to rural areas, where journeys are longer and



charging points are scarce. Conversely, range extender (REX) electric vehicles have no range issues and do not require an extensive charging infrastructure. While they are not zero emissions vehicles, they reduce tailpipe emissions by up to 80% and the technology is already proven. REX vehicles require a much smaller battery pack and, in countries without extensive renewable energy generation, they represent a strong alternative to pure electric vehicles for lifetime emissions efficiency. INEOS believes that encouraging technologies like REX would result in a more rapid reduction in real world emissions than concentrating solely on promoting battery electric vehicles.

Value for Money: As above, REX vehicles (which can cover a few hundred kilometres in pure electric mode and also have a very small and efficient internal combustion engine that can top up the battery when needed) could represent a cost-efficient opportunity to decarbonise mobility in remote areas. Rather than installing expensive fast chargers in the middle of nowhere that will likely have very low utilization rates, REX vehicles could drive in full electric mode in urban areas and rely on the existing liquid fuel infrastructure (with fossil fuels replaced by low carbon liquid fuels) to reach remote places. Alternatively, hydrogen is an easier and cheaper way to store renewable energy in remote locations disconnected from the grid. For example, small scale renewable energy generation schemes can be used to manufacture hydrogen at a local level in remote areas. In addition, the infrastructure needed to distribute hydrogen is a significantly more efficient and effective way to deliver renewable energy to refill vehicles. In comparison with electricity charging points, hydrogen infrastructure requires far fewer refuelling stations vs electric ones (see appendix 1).

Maximising economic opportunity: We would like to suggest that Australia is in a good position to leverage its geographical position and climate to become one of the key exporters of green energy by shipping it as green hydrogen and low carbon liquid fuel. Developing both a hydrogen infrastructure and the appropriate regulatory framework for hydrogen powered vehicles could attract foreign OEMs for testing and development of new vehicles and also be a leading market internationally for this type of vehicle. It could also create significant opportunities to develop hydrogen as a viable alternative to battery electric vehicles where the new Chinese OEMs seem set to dominate.

Inclusive and Equitable: we believe that customers should be able to choose the powertrain technology that best suits them according to where they live, what they do and their disposable income. For example, what we are now seeing in Europe and UK (and what could also be the impact of the New Vehicle Efficiency Standard regulation in Australia) is that OEMs are forced to sell a certain quota of EVs or effectively cap the number of hybrid and internal combustion engine vehicles – leaving behind people who live in rural or remote areas without charging infrastructure.

2. INEOS agrees with the *avoid-shift-improve* framework outlined in the Consultation Roadmap.
  - 2.1. We cannot comment in detail on the *Avoid* phase, except to state that this might be less effective if people and businesses are forced by law or regulation to avoid journeys. This should be encouraged, without being mandated.

With regard to the *Shift* and *Improve* phases, we have already announced that we will launch our next model, the Fusilier, with both REX and battery electric options. We have also built a fully operational hydrogen fuel cell powered Grenadier as a demonstrator vehicle to prove how



hydrogen could provide viable opportunities to decarbonise large/commercial and offroad vehicles without significantly increasing their curb weight.

As noted above, we strongly believe that a mixed technology approach will achieve more rapid improvements to low carbon transport than concentrating on a single technology. Such a strategy will encourage significantly higher, and more rapid, take up of low carbon transport alternatives, and create an atmosphere of innovation at a crucial point in the development of the zero-carbon strategy.

3. Not INEOS Automotive area of expertise
4. Not INEOS Automotive area of expertise
5. Not INEOS Automotive area of expertise
6. Not INEOS Automotive area of expertise
  
7. We agree with the overall direction of the proposed net zero pathway for light road vehicles. However, we believe that over reliance on electric vehicles to meet the ambitious targets amounts to putting all the eggs in one basket. This potentially creates risk if, for example, EVs fall out of favour in the market or infrastructure fails to keep up with demand. It also potentially misses opportunities to develop a broad-based approach to achieving net zero in the transport sector. Why, for example, would hydrogen fuel cell technology work in the heavy transport sector but not be worth the same level of government support in the light transport sector? With this in mind, we would like to put forward four recommendations (see below).
- 7.1. We welcome the recognition that a mix of technologies, each one with its own timeline, is needed to decarbonise the transport sector and fulfil all the different vehicle use cases across a wide range of different operational settings. We have four main suggestions:

Battery electric vehicles with **range extender** – a small internal combustion engine that can use petrol or other low carbon liquid fuels to top up the battery only when the charging infrastructure is not available – represent a valid alternative to decarbonise mobility during urban driving and to overcome the lack of charging infrastructure especially outside urban areas, eliminating range anxiety for drivers. We do believe this solution could work not only as bridge technology while the charging infrastructure is being deployed but also as a longer-term solution to access remote areas, where deploying a charging infrastructure does not make sense economic-wise. Vehicles with this type of powertrain usually have a smaller battery (thus making them lighter and more efficient) and can drive in pure electric mode for a few hundred kilometres covering most daily commuting needs and local errands. Today this type of vehicle is classified as a hybrid, a category that includes all sort of electrified powertrain technologies where an internal combustion engine can power the vehicle, but this is not the case for range extenders; we recommend recognizing the value of this solution and classifying it accordingly, separately from hybrids.

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powertrain technologies and favour more efficient vehicles with smaller batteries and produced using renewable energy.

**Hydrogen** in mobility is a technology that already works today; more and more OEMs are working on both fuel cell and hydrogen combustion engine vehicles. While we fully understand the reasons of the proposed timeline for Light vehicles, we do recommend to start deploying a hydrogen infrastructure now, without delays, to allow OEMs to sell available products at scale and at the same time boost the relevance of Australia as a key market for hydrogen vehicles (including testing and development). Hydrogen also represents a great opportunity in terms of optimizing infrastructure investments, as hydrogen stations deliver power much more quickly than charging points – thus requiring less stations overall (see appendix 1) - and to avoid a dramatic increase in vehicle weight, especially for large SUVs and UTEs. For example, with our hydrogen fuel cell Grenadier, we are sure we could target and achieve the same vehicle weight as the diesel-powered version while assuring a WLTP range of more 550km; this would be simply impossible with a battery electric powertrain. In terms of sustainability, hydrogen powered vehicles also require significantly smaller batteries and therefore less critical raw materials that, besides the CO<sub>2</sub> emissions associated with their processing, involve displacing incredible quantities of ore and consuming huge quantities of water.

Given the multitude of customer profiles and use cases for light duty vehicles, we recommend not to implement a blanket ban on internal combustion engine vehicles like we have seen in Europe and UK. Internal combustion engines will remain the best alternative in very specific situations: for example emergency services such as fire department and search and rescue vehicles, maintenance of infrastructure in remote areas, etc.

8. N/A

8.1. We would like to highlight three different points that could further support the reduction on emissions from the transport sector: (1) infrastructure compatibility, (2) recognising synthetic and low carbon liquid fuels and (3) recycling.

- (1) To maximise the value for money for the investments in charging and especially hydrogen infrastructure, we recommend the adoption of specific policies that ensure standards compatibility across different transport modes and to leverage all possible synergies. For example, when deploying hydrogen stations, we recommend that they will all be able to refill at 700bar (typical pressure for light duty vehicles) even if the stations are being deployed for heavy duty vehicles (usually operating at 350bar) to make sure both types of vehicles can benefit from the same investment. Moreover, when using hydrogen to decarbonise rail and aviation, thus creating hydrogen storage facilities at train stations and airports, we recommend to also consider installing vehicles' refilling points there, leveraging the same hydrogen hub and supply chain.
- (2) An additional point we would like to make is that a specific framework to properly recognise vehicles running on low carbon or synthetic liquid fuels needs to be put in place, for example in the New Vehicle Efficiency Standard regulation there are currently no benefits for vehicles using such fuels instead of fossil ones.
- (3) We would like to highlight how, with the National Battery Strategy, Australia could not only be able to reduce the environmental impact of battery electric vehicles, but also become an exporter of critical raw materials not usually available in its territory.



8.2. See 8.1

9. Not INEOS Automotive area of expertise
10. Not INEOS Automotive area of expertise
11. Not INEOS Automotive area of expertise
12. Not INEOS Automotive area of expertise
13. Not INEOS Automotive area of expertise
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22. Not INEOS Automotive area of expertise
23. Not INEOS Automotive area of expertise
24. Not INEOS Automotive area of expertise

25. What the Australian Government has been doing with this consultation is a great example of how regulators and industry can work together to achieve a common target: reaching Net-Zero. We recommend to continue with this approach for new regulations.

25.1. A good example of collaboration between countries aiming at decarbonising transport is the Critical Minerals Agreement between the United States and Japan, that allows critical raw materials and high voltage batteries sourced from Japan to benefit from the tax incentives defined by the US Inflation Reduction Act as they will be considered “local” under the sourcing requirement terms. Moreover, this agreement promotes fair competition and cooperation to ensure sustainable and equitable critical minerals supply chains.

25.2. Australia has the opportunity of making the energy transition more affordable for people when compared to Europe, UK and US and become a supplier of choice for companies in these Regions. These markets have all expressed the intention to impose tariffs, bans or incentives’ restrictions on products sourced from specific countries and this will determine a significant cost increase for both local OEMs sourcing components abroad and the public, as all duties and tariffs will be reflected in the pricing of vehicles. By remaining neutral in this tariffs escalation and by establishing both a raw material processing and a high voltage battery recycling industry, Australia could easily become a key exporter of critical raw materials with a significant price advantage when compared to other markets subject to import duties. This could not only be valid for raw materials extracted or refined in Australia, but also for all the elements resulting from the recycling of high voltage batteries.

26. N/A

27. We welcome the adoption of annual reporting and revisions every three to five years – we believe that policy reviews and updates are crucial over time given the increasingly fast pace of technology innovation and the disruption that tariff wars and geopolitical tensions could determine.

28. N/A

29. See appendix 1



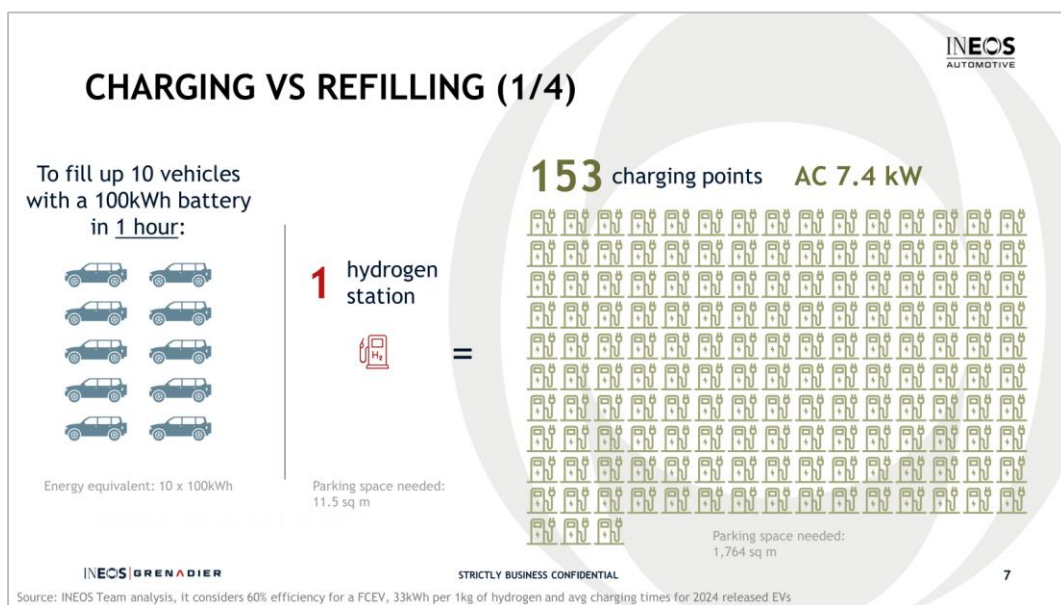
**Appendix 1**

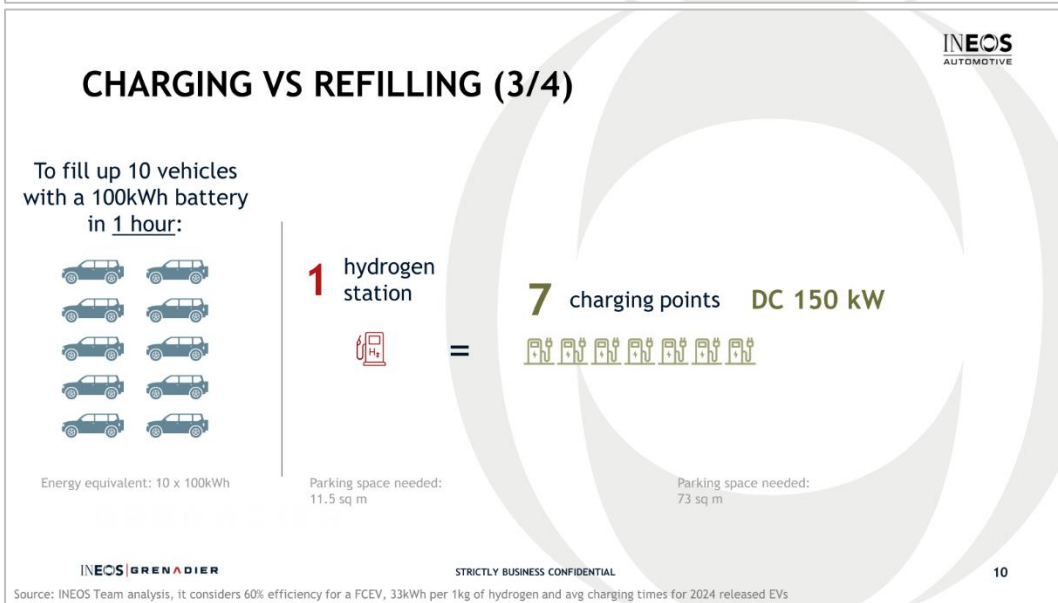
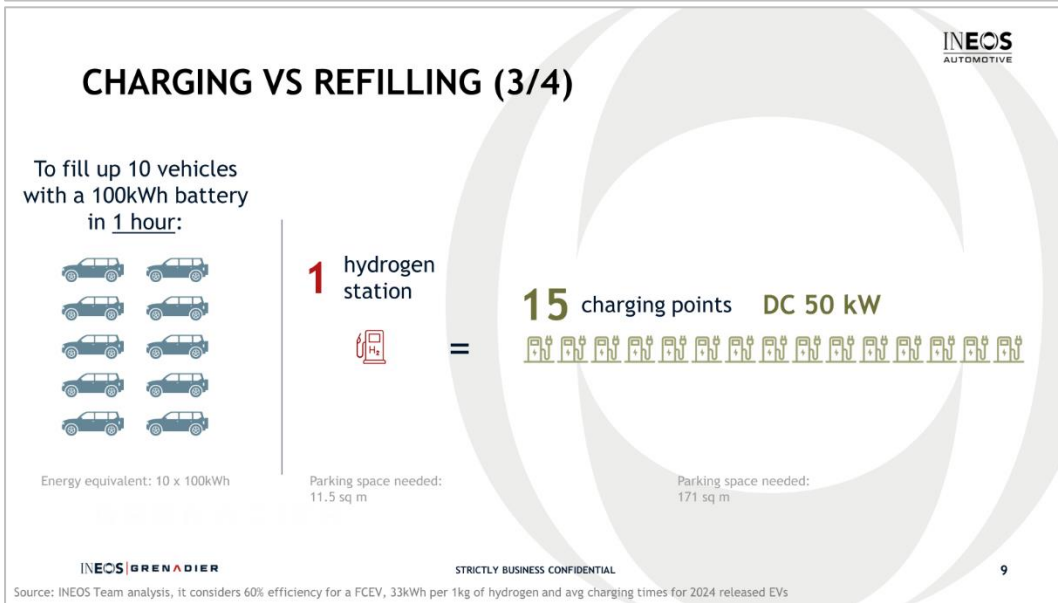
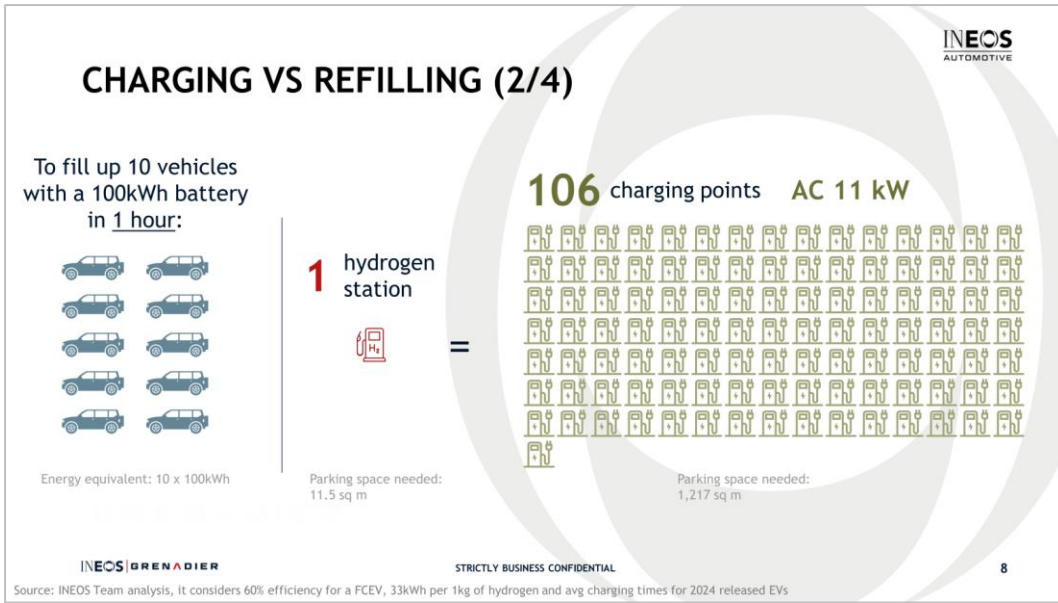
Hydrogen stations represent a more effective and cost-efficient way to deliver energy versus charging stations for mainly two reasons: (1) one hydrogen station is equivalent to tens of charging points in terms of energy supply and (2) hydrogen stations are easier to deploy in remote areas, disconnected from the grid.

(1) Considering:

- a. 1kg of hydrogen contains 33kWh of energy.
- b. fuel cell systems have 60% efficiency.
- c. Average charging times of battery electric vehicles announced in 2024 by different OEMs with a 100kWh battery.
- d. Hydrogen refilling time is 4 mins for 6kg of hydrogen at 20 degrees Celsius.
- e. H2 refilling assumes +3 minutes to drive in, pay, connect, disconnect and drive off.
- f. EV refilling assumes +4 minutes to drive in, pay, connect, disconnect and drive off.

Then the following equivalences are true:





- (2) Hydrogen can not only be produced off on-site completely independently from the grid (with solar panels or wind turbines and an electrolyser) but also it can be stored and transported in tanks, this makes the infrastructure concept much more similar to petrol and diesel: green hydrogen can be produced in a certain location and transported by truck to refilling stations where it is stored in larger tanks, from which vehicles can refill. It is very different from a charging station, that either needs to be connected to the grid with significant investments due to the power required or it needs to have large and expensive batteries on site connected to solar panels or wind turbines to allow fast charging.

