TE MANATŪ WAKA
MINISTRY OF TRANSPORT

OC231072

8 January 2023

[redacted]

Tēnā koe [redacted]

I refer to your email dated 19 December 2023, requesting the following under the Official Information Act 1982 (the Act):

> *"Draft Regulatory Impact Statement prepared for the incoming Minister of Transport, the Hon Simeon Brown, on the Land Transport (Clean Vehicle Discount Scheme Repeal) Amendment Bill.*
>
> *And all submissions that were received as part of the Consultation on Euro 6/VI vehicle emissions standards from non-private individuals (e.g. the vehicle industry, community groups, NGOs etc.)"*

There are 44 documents that fall within the scope of your request and these are detailed in the document schedule attached as Annex 1. The schedule outlines how the documents you requested have been treated under the Act.

Some information, including full submissions or full documents, has been withheld/refused under the following sections of the Act:

9(2)(a)	to protect the privacy of natural persons
9(2)(b)(ii)	to protect information where the making available of the information would be likely unreasonably to prejudice the commercial position of the person who supplied or who is the subject of the information
9(2)(ba)(i)	to protect information which is subject to an obligation of confidence or which any person has been or could be compelled to provide under the authority of any enactment, where the making available of the information would be likely to prejudice the supply of similar information, or information from the same source, and it is in the public interest that such information should continue to be supplied
18(d)	the information requested is or will soon be publicly available.

With regard to the information that has been withheld under section 9 of the Act, I am satisfied that the reasons for withholding the information at this time are not outweighed by public interest considerations that would make it desirable to make the information available.

You have the right to seek an investigation and review of this response by the Ombudsman, in accordance with section 28(3) of the Act. The relevant details can be found on the Ombudsman's website **www.ombudsman.parliament.nz**

The Ministry publishes our Official Information Act responses and the information contained in our reply to you may be published on the Ministry website. Before publishing we will remove any personal or identifiable information.

Nāku noa, nā

Nick Paterson
Manager Environment

Annex 1 - Document Schedule

Doc #	Document	Decision on request
1	Regulatory Impact Statement: Discontinuing the Clean Car Discount	Refused under Section 18(d) as it is already publicly available: https://www.transport.govt.nz/assets/Uploads/regulatory-impact-statement-terminating-the-CCD-FINAL-30-November-2023-REDACTED.pdf
2	Daimler Truck submission	Released with some information withheld under Section 9(2)(a).
3	Symonds Group submission	Released with some information withheld under Section 9(2)(a).
4	Ministry of Business, Innovation & Employment submission	Released with some information withheld under Section 9(2)(a).
5	Nelson Transport Strategy Group Nelson Inc submission	Released with some information withheld under Section 9(2)(a).
6	Scania submission	Released with some information withheld under Section 9(2)(a).
7	National Road Carriers Association submission	Released with some information withheld under Section 9(2)(a).
8	National Air Quality Working Group submission	Released with some information withheld under Section 9(2)(a).
9	Toyota submission	Released with some information withheld under Section 9(2)(a).
10	Fonterra submission	Released with some information withheld under Section 9(2)(ba)(i).
11	Greater Wellington Regional Council submission	Released with some information withheld under Section 9(2)(a).
12	Autohub submission	Released with some information withheld under Section 9(2)(a).

Doc #	Document	Decision on request
13	Paul Kelly Motor Company submission	Released with some information withheld under Section 9(2)(a).
14	Disabled Persons Association submission	Released in full.
15	Bay of Plenty Regional Council submission	Released with some information withheld under Section 9(2)(a).
16	Otago Regional Council submission	Released in full.
17	Living streets Aotearoa submission	Released with some information withheld under Section 9(2)(a).
18	Imported Motor Vehicle Industry Association Incorporated (VIA) submission	Released with some information withheld under Section 9(2)(a).
19	Dolphin Shipping submission	Released with some information withheld under Section 9(2)(a).
20	OTRS Rehabilitation Services submission	Released with some information withheld under Section 9(2)(a).
21	The International Council on Clean Transportation submission	Released with some information withheld under Section 9(2)(a).
22	Trafinz (NZ Traffic Institute submission	Released with some information withheld under Section 9(2)(a).
23	Harley Davidson submission	Released with some information withheld under Section 9(2)(a).
24	Healthy Auckland Together written submission	Released with some information withheld under Section 9(2)(a).
25	Te Whatu Ora Health NZ submission	Released with some information withheld under Section 9(2)(a).

Doc #	Document	Decision on request
26	Ford Motor Company of New Zealand Limited submission	Released with some information withheld under Section 9(2)(a).
27	Mitsubishi Motors New Zealand Limited submission	Released with some information withheld under Section 9(2)(a).
28	SOC NZ Ltd submission	Released in full.
29	Motor Trade Association (MTA) submission	Released with some information withheld under Section 9(2)(a).
30	Fast Track submission	Released with some information withheld under Section 9(2)(a).
31	Motor Industry Association submission	Released in full.
32	Spokes submission	Released in full.
33	Red Stag Trading Limited submission	Released with some information withheld under Section 9(2)(a).
34	Ia Ara Aotearoa Transporting New Zealand submission	Released with some information withheld under Section 9(2)(a) and 9(2)(ba)(i).
35	Japan Direct Limited submission	Released with some information withheld under Section 9(2)(a).
36	Cummins Inc submission	Released with some information withheld under Section 9(2)(a).
37	Healthy Auckland Together online submission	Released with some information withheld under Section 9(2)(a).
38	Isuzu submission	Released with some information withheld under Section 9(2)(a) and 9(2)(b)(ii).
39	Cycling Action Network submission	Released with some information withheld under Section 9(2)(a).
40	Vehicle Adaptions Ltd and Freedom Mobility Ltd submission	Released in full.

Doc #	Document	Decision on request
41	Hamilton City Council submission	Refused under Section 18(d) as it is already publicly available: https://hamilton.govt.nz/your-council/submissions-to-other-organisations/
42	Automobile Association submission	Refused under Section 18(d) as it is already publicly available: https://www.aa.co.nz/assets/Uploads/Land-Transport-Rule-Vehicle-Exhaust-Emissions-2007-Final.pdf?m=1687896494%22%20class=%22type:%7Bpdf%7D%20size:%7B215%20KB%7D%20file
43	Consumer submission	Refused under Section 18(d) as it is already publicly available: https://www.consumer.org.nz/articles/about-us-submissions
44	Submitter details withheld under Section 9(2)(ba)(i).	Withheld in full under Section 9(2)(ba)(i).

Response ID ANON-SA2H-UC2Z-J

Submitted to Consultation on Euro 6/VI vehicle emissions standards
Submitted on 2023-05-12 16:43:58

Your details

What is your name?

Name:
s 9(2)(a)

What is your email address?

Email:
s 9(2)(a)

What is your organisation?

Organisation:
Daimler Truck Australia Pacific

Details of the Proposal

Proposal one: Requiring a stronger emissions standard for light vehicles

1 Are you an importer of light vehicles?

No – I am not a vehicle importer

2 Do you consider the proposed timeframes to require stronger standards for harmful emissions from light vehicles should:

Proceed as proposed

3 Please explain your answer for question for question two.

Type your answer here :

As a consumer I would only purchase a newer emission vehicle, the fact these vehicles are currently available as a consumer already meets my demands

4 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Yes

If you said no, please explain why :

5 If you are a vehicle importer, what impact will this proposal have on your ability to supply light vehicles to Aotearoa?

Type your answer here :

6 Europe has agreed a stronger Euro 6e standard apply from September 2023. Euro 6e is anticipated to be harmonised into a global standard named UNECE Regulation 83 Series 08 around the middle of 2023, which countries can then adopt. Europe has drafted a proposal for Euro 7 to take effect from 2025 that would reduce diesel vehicle emissions significantly from Euro 6. The U.S. have proposed Euro 7-ambition requirements from 2027, and China from mid 2023. When should Aotearoa require the Euro 6e and UNECE R83/08, and Euro 7 standards on light vehicles, which would further reduce harmful emissions, and why?

Please explain in the box below. :

Japan Low Harm Standards

7 The proposed Amendment Rule includes the Japan emissions standard 5BA under the definition of Japan 2018 Low Harm. From your perspective, what would the impact on supply be if 5BA was included or excluded from the Amendment Rule?

Type your answer here :

8 The proposed Amendment Rule does not include the Japan emissions standard CBA under the definition of Japan 2005 Low Harm. From your perspective, what would the impact on supply be if CBA was included or excluded from the Amendment Rule?

Type your answer here :

9 Te Manatū Waka also notes that there may be inconsistencies if 5BA is included and not CBA, however 5BA is subject to stronger testing standards so the impacts are not clear. Do you foresee any inconsistencies if 5BA is included and CBA is not?

Type your answer here :

Proposal two: Requiring a stronger emissions standard for heavy vehicles

10 Are you an importer of heavy vehicles?

Yes – new heavy vehicles

11 Do you consider the proposed timeframes to require stronger standards for harmful emissions from heavy vehicles should:

Be pushed back

12 Please explain your answer for question for question two.

Type your answer here :

Industry requires extended time to implement product changes with supply chain delays only reason to not support earlier timeframe. I have selected Be Pushed Back because of the removal of ADR 80/04 and introduction of step E, step E has no improvement in emission targets or results, althought USA and JP emissions do no change while ADR 80/04 is removed and go from step C to E.
Allowing ADR 80/04 would still allow step E vehicle to be offered and make no change to emission value of new vehicles.

13 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Yes

If you said no, please explain why :

14 If you are a vehicle importer, what impact will this proposal have on your ability to supply heavy vehicles to Aotearoa?

Type your answer here :

Removal of ADR 80/04 will create administration burden for provided vehicles and increase in cost, will lose allignment with Au regulations and not provide any emission benefit although have a large expenditure in testing equipment to meet PEMS demand of UN-ECE
Must include ADR 80/04 as alternative emission standard

15 Europe has drafted a proposal for Euro VII to take effect from mid 2027 that would reduce diesel vehicle emissions significantly from Euro VI. The U.S. have enacted Euro VII-ambition requirements from 2027, and China from mid 2023. When should Aotearoa in principle require the Euro VII standard for heavy vehicles and why?

Please explain in the box below. :

At this time there is ambitious targets in emission, I believe a decission to move to EVII cannot be made until after it is implemented in other countries (EU), otherwise there is too much room for change/delay

Proposal three: Requiring motorcycles and mopeds to meet minimum exhaust emissions standard

16 Are you an importer of motorcycles and/or mopeds?

No – I import other vehicles

17 Do you consider the proposed timeframes to require stronger standards for harmful emissions from motorcycles and/or mopeds should:

Proceed as proposed

18 Please explain your answer for question for question two.

Type your answer here :

19 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Yes

If you said no, please explain why :

20 If you are a vehicle importer, what impact will this proposal have on your ability to supply motorcycles and/or mopeds to Aotearoa?

Type your answer here :

Proposal four: Provisions for disability vehicles

21 Are you an importer of disability vehicles?

No – I import other vehicles

22 Do you consider the proposed timeframes to require stronger standards for harmful emissions from disability vehicles should:

Proceed as proposed

23 Please explain your answer for question for question two.

Type your answer here :

24 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Yes

If you said no, please explain why :

25 If you are a vehicle importer, what impact will this proposal have on your ability to supply disability vehicles to Aotearoa?

Type your answer here :

Accepted standards from other jurisdictions

26 Do you agree with the comparison of other standards with Euro standards presented here?

No

27 If you answered "no", what would you change?

Type your answer here :

For Heavy Vehicles
Comparison with ADR 80/04 and statemnt on step E is completely incorrect!

Additionally this is mentioned against Japan 2016 and it is acceptabe!! however for ADR it is not acceptable!!

Response ID ANON-SA2H-UCKQ-2

Submitted to Consultation on Euro 6/VI vehicle emissions standards
Submitted on 2023-05-15 11:41:11

Your details

What is your name?

Name:
Ivan Chapple

What is your email address?

Email:
s 9(2)(a)

What is your organisation?

Organisation:
Symons Group

Details of the Proposal

Proposal one: Requiring a stronger emissions standard for light vehicles

1 Are you an importer of light vehicles?

No – I am not a vehicle importer

2 Do you consider the proposed timeframes to require stronger standards for harmful emissions from light vehicles should:

Proceed as proposed

3 Please explain your answer for question for question two.

Type your answer here :

I am not across light vehicle imports or market forces but in principle I like the concept providing vehicle lead times can handle the change i.e. if I was to need a new fleet vehicle, none were available in NZ, the lead time for a new vehicle was six months and the vehicle was key to the on-going survival of my business then the ability to source something 2nd hand must remain. As I say, I am not across light vehicle imports but a quick question to the big players to see current and future lead times throughout the proposed emission change implementation period will tell you if the period is achievable without businesses going under in the process. If quality second hand vehicle supply to NZ stops due to this proposal then this must be considered.

4 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Yes

If you said no, please explain why :

5 If you are a vehicle importer, what impact will this proposal have on your ability to supply light vehicles to Aotearoa?

Type your answer here :

NA

6 Europe has agreed a stronger Euro 6e standard apply from September 2023. Euro 6e is anticipated to be harmonised into a global standard named UNECE Regulation 83 Series 08 around the middle of 2023, which countries can then adopt. Europe has drafted a proposal for Euro 7 to take effect from 2025 that would reduce diesel vehicle emissions significantly from Euro 6. The U.S. have proposed Euro 7-ambition requirements from 2027, and China from mid 2023. When should Aotearoa require the Euro 6e and UNECE R83/08, and Euro 7 standards on light vehicles, which would further reduce harmful emissions, and why?

Please explain in the box below. :

As soon as possible but consideration must be given to the ability for vehicle manufacturers to supply to NZ. Our market share is such that we are not seen as a priority so we don't want to stifle our ability to compete in global markets because we can't source the transport required to run our country.

Japan Low Harm Standards

7 The proposed Amendment Rule includes the Japan emissions standard 5BA under the definition of Japan 2018 Low Harm. From your perspective, what would the impact on supply be if 5BA was included or excluded from the Amendment Rule?

Type your answer here :

Not sure sorry.

8 The proposed Amendment Rule does not include the Japan emissions standard CBA under the definition of Japan 2005 Low Harm. From your perspective, what would the impact on supply be if CBA was included or excluded from the Amendment Rule?

Type your answer here :

not sure sorry

9 Te Manatū Waka also notes that there may be inconsistencies if 5BA is included and not CBA, however 5BA is subject to stronger testing standards so the impacts are not clear. Do you foresee any inconsistencies if 5BA is included and CBA is not?

Type your answer here :

Not sure sorry

Proposal two: Requiring a stronger emissions standard for heavy vehicles

10 Are you an importer of heavy vehicles?

No – I am not a vehicle importer

11 Do you consider the proposed timeframes to require stronger standards for harmful emissions from heavy vehicles should:

Proceed as proposed

12 Please explain your answer for question for question two.

Type your answer here :

In principle I like the concept providing vehicle lead times can handle the change i.e. if I was to need a new fleet vehicle, none were available in NZ, the lead time for a new vehicle was six months and the vehicle was key to the on-going survival of my business then the ability to source something 2nd hand must remain. A quick question to the original equipment manufacturers to see current and future lead times throughout the proposed emission change implementation period will tell you if the period is achievable without businesses going under in the process. If quality second hand vehicle supply to NZ stops due to this proposal and new vehicles that meet emission standards are not available this would be a tragedy.
The organisation I work for generally does not import 2nd hand vehicles, our new units meet Euro 6 but this could force many other organisations to go under.

13 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Yes

If you said no, please explain why :

14 If you are a vehicle importer, what impact will this proposal have on your ability to supply heavy vehicles to Aotearoa?

Type your answer here :

NA

15 Europe has drafted a proposal for Euro VII to take effect from mid 2027 that would reduce diesel vehicle emissions significantly from Euro VI. The U.S. have enacted Euro VII-ambition requirements from 2027, and China from mid 2023. When should Aotearoa in principle require the Euro VII standard for heavy vehicles and why?

Please explain in the box below. :

When the suppliers can supply in the numbers we would require if 2nd hand imports are no longer available.

Proposal three: Requiring motorcycles and mopeds to meet minimum exhaust emissions standard

16 Are you an importer of motorcycles and/or mopeds?

No – I am not a vehicle importer

17 Do you consider the proposed timeframes to require stronger standards for harmful emissions from motorcycles and/or mopeds should:

Be pushed back

18 Please explain your answer for question for question two.

Type your answer here :

I don't know enough in this space but it seems pretty quick for a group of vehicles that had nothing to then go to a standard. If however most motorcycles and mopeds are already capable of meeting these standards then so be it. If not that a big change in production for OEMs to keep get ahead of.

19 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Yes

If you said no, please explain why :

20 If you are a vehicle importer, what impact will this proposal have on your ability to supply motorcycles and/or mopeds to Aotearoa?

Type your answer here :

NA

Proposal four: Provisions for disability vehicles

21 Are you an importer of disability vehicles?

No – I am not a vehicle importer and I do not purchase or use disability vehicles.

22 Do you consider the proposed timeframes to require stronger standards for harmful emissions from disability vehicles should:

Be pushed back

23 Please explain your answer for question for question two.

Type your answer here :

I don't know enough in this space but being a relatively niche market and many people who find themselves with a disability not having a huge amount of financial support I would not like to see people unable to move around because they are unable to afford new vehicles or have to wait for long periods for the vehicle to be supplied.

24 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Yes

If you said no, please explain why :

25 If you are a vehicle importer, what impact will this proposal have on your ability to supply disability vehicles to Aotearoa?

Type your answer here :

NA

Accepted standards from other jurisdictions

26 Do you agree with the comparison of other standards with Euro standards presented here?

Yes

27 If you answered "no", what would you change?

Type your answer here :

Response ID ANON-SA2H-UCKG-R

Submitted to Consultation on Euro 6/VI vehicle emissions standards
Submitted on 2023-05-15 13:54:44

Your details

What is your name?

Name:
Nick

What is your email address?

Email:
s 9(2)(a)

What is your organisation?

Organisation:
MBIE

Details of the Proposal

Proposal one: Requiring a stronger emissions standard for light vehicles

1 Are you an importer of light vehicles?

No – I am not a vehicle importer

2 Do you consider the proposed timeframes to require stronger standards for harmful emissions from light vehicles should:

Proceed as proposed

3 Please explain your answer for question for question two.

Type your answer here :

Timeline is sufficient to allow for new models to arrive in NZ to offset potential supply issues. giving our Importers surety in the requirements several years in advance can allow them to pre-plan factory allocations.

4 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Yes

If you said no, please explain why :

5 If you are a vehicle importer, what impact will this proposal have on your ability to supply light vehicles to Aotearoa?

Type your answer here :

6 Europe has agreed a stronger Euro 6e standard apply from September 2023. Euro 6e is anticipated to be harmonised into a global standard named UNECE Regulation 83 Series 08 around the middle of 2023, which countries can then adopt. Europe has drafted a proposal for Euro 7 to take effect from 2025 that would reduce diesel vehicle emissions significantly from Euro 6. The U.S. have proposed Euro 7-ambition requirements from 2027, and China from mid 2023. When should Aotearoa require the Euro 6e and UNECE R83/08, and Euro 7 standards on light vehicles, which would further reduce harmful emissions, and why?

Please explain in the box below. :

I would take the opportunity to continue the implementation plan rather than not include the Euro 7 standard now. If the standards for emissions raise consistently then a precedence can be set to say, meet the highest current standard within 18 months of publication.

Japan Low Harm Standards

7 The proposed Amendment Rule includes the Japan emissions standard 5BA under the definition of Japan 2018 Low Harm. From your perspective, what would the impact on supply be if 5BA was included or excluded from the Amendment Rule?

Type your answer here :

8 The proposed Amendment Rule does not include the Japan emissions standard CBA under the definition of Japan 2005 Low Harm. From your perspective, what would the impact on supply be if CBA was included or excluded from the Amendment Rule?

Type your answer here :

9 Te Manatū Waka also notes that there may be inconsistencies if 5BA is included and not CBA, however 5BA is subject to stronger testing standards so the impacts are not clear. Do you foresee any inconsistencies if 5BA is included and CBA is not?

Type your answer here :

Proposal two: Requiring a stronger emissions standard for heavy vehicles

10 Are you an importer of heavy vehicles?

No – I am not a vehicle importer

11 Do you consider the proposed timeframes to require stronger standards for harmful emissions from heavy vehicles should:

Proceed as proposed

12 Please explain your answer for question for question two.

Type your answer here :

13 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Yes

If you said no, please explain why :

14 If you are a vehicle importer, what impact will this proposal have on your ability to supply heavy vehicles to Aotearoa?

Type your answer here :

15 Europe has drafted a proposal for Euro VII to take effect from mid 2027 that would reduce diesel vehicle emissions significantly from Euro VI. The U.S. have enacted Euro VII-ambition requirements from 2027, and China from mid 2023. When should Aotearoa in principle require the Euro VII standard for heavy vehicles and why?

Please explain in the box below. :

Proposal three: Requiring motorcycles and mopeds to meet minimum exhaust emissions standard

16 Are you an importer of motorcycles and/or mopeds?

No – I am not a vehicle importer

17 Do you consider the proposed timeframes to require stronger standards for harmful emissions from motorcycles and/or mopeds should:

Proceed as proposed

18 Please explain your answer for question for question two.

Type your answer here :

19 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Yes

If you said no, please explain why :

20 If you are a vehicle importer, what impact will this proposal have on your ability to supply motorcycles and/or mopeds to Aotearoa?

Type your answer here :

Proposal four: Provisions for disability vehicles

21 Are you an importer of disability vehicles?

No – I am not a vehicle importer and I do not purchase or use disability vehicles.

22 Do you consider the proposed timeframes to require stronger standards for harmful emissions from disability vehicles should:

Not be implemented at all

23 Please explain your answer for question for question two.

Type your answer here :

this is a matter of equity and ensuring out disabled community has the access to the vehicles required for them to equitably engage in society.

24 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Not Answered

If you said no, please explain why :

25 If you are a vehicle importer, what impact will this proposal have on your ability to supply disability vehicles to Aotearoa?

Type your answer here :

Accepted standards from other jurisdictions

26 Do you agree with the comparison of other standards with Euro standards presented here?

Yes

27 If you answered "no", what would you change?

Type your answer here :

Response ID ANON-SA2H-UCKT-5

Submitted to Consultation on Euro 6/VI vehicle emissions standards
Submitted on 2023-05-18 21:07:53

Your details

What is your name?

Name:
Peter Olorenshaw

What is your email address?

Email:
s 9(2)(a)

What is your organisation?

Organisation:
Nelson Transprt Strategy Group Nelsust Inc.

Details of the Proposal

Proposal one: Requiring a stronger emissions standard for light vehicles

1 Are you an importer of light vehicles?

No – I am not a vehicle importer

2 Do you consider the proposed timeframes to require stronger standards for harmful emissions from light vehicles should:

Be bought forward

3 Please explain your answer for question for question two.

Type your answer here :

I struggle to believe you are suggesting delaying the imposition of Euro6 mandates for so long when it is my understanding that they were introduced in Europe some nine years ago in 2014. We should be immediately implementing Euro6 for all new vehicles coming into the country and Euro5 for used with that ramping up to Euro 6 for them too, the following year. Additionally we should match European standards from next year on - ie when they bring in euro7 mandates so should we.
I understand this might result in lack of supply of fossil fueled vehicles. I think this is fine as we should be restricting them anyway - They will be on our roads polluting not just particles and NOx but also and just as importantly their carbon emissions. There really is very little excuse for bringing in new light fossil fueled vehicles anyway when there are so many zero tailpipe emission options. Very few of the people using 4WD utes and SUVs actually need the off road capability for their business. There might be a case for rural contractors and farmers to be allowed an exemption from these higher rules as the main effect of these pollutants is in built up urban areas. However they are still emitting CO2 and it won't be very long at all that zero emission 4WD utes will be available in NZ, they already are overseas. And there are multiple zero emission options for tradies, many of whom find vans better than utes anyway. And for pulling heavy loads there are multiple light truck EV options for that. There really is no excuse for urban based tradespeople to be using fossil fueled vehicles at all so there is no excuse not to have regulations for emissions for fossil fuel vehicles in NZ up the best in the world. I feel very strongly about this.

4 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Yes

If you said no, please explain why :

5 If you are a vehicle importer, what impact will this proposal have on your ability to supply light vehicles to Aotearoa?

Type your answer here :

6 Europe has agreed a stronger Euro 6e standard apply from September 2023. Euro 6e is anticipated to be harmonised into a global standard named UNECE Regulation 83 Series 08 around the middle of 2023, which countries can then adopt. Europe has drafted a proposal for Euro 7 to take effect from 2025 that would reduce diesel vehicle emissions significantly from Euro 6. The U.S. have proposed Euro 7-ambition requirements from 2027, and China from mid 2023. When should Aotearoa require the Euro 6e and UNECE R83/08, and Euro 7 standards on light vehicles, which would further reduce harmful emissions, and why?

Please explain in the box below. :

We should be in step with Europe: ie when they introduce Euro6e so should we. When they introduce Euro7 so should we.

Japan Low Harm Standards

7 The proposed Amendment Rule includes the Japan emissions standard 5BA under the definition of Japan 2018 Low Harm. From your perspective, what would the impact on supply be if 5BA was included or excluded from the Amendment Rule?

Type your answer here :

no comment

8 The proposed Amendment Rule does not include the Japan emissions standard CBA under the definition of Japan 2005 Low Harm. From your perspective, what would the impact on supply be if CBA was included or excluded from the Amendment Rule?

Type your answer here :

no comment

9 Te Manatū Waka also notes that there may be inconsistencies if 5BA is included and not CBA, however 5BA is subject to stronger testing standards so the impacts are not clear. Do you foresee any inconsistencies if 5BA is included and CBA is not?

Type your answer here :

no comment

Proposal two: Requiring a stronger emissions standard for heavy vehicles

10 Are you an importer of heavy vehicles?

No – I am not a vehicle importer

11 Do you consider the proposed timeframes to require stronger standards for harmful emissions from heavy vehicles should:

Be bought forward

12 Please explain your answer for question for question two.

Type your answer here :

Again as with light vehicles I struggle to believe that you are thinking of delaying bringing standards that were introduced in Europe in 2014 to some time in the future. There really is very little excuse for bringing in new lighter fossil fueled trucks anyway when there are so many zero tailpipe emission options for these. While there are fewer options for large heavy trucks, bringing in lax emission regulations will just mean more old second hand trucks and more old technology brand new trucks will be imported to pollute their way around our country for 19 years to come. We can do better than that - we can and should be shifting freight off road onto rail and coastal shipping that are hugely more efficient and lower polluting even if they are fueled by same fuel. And there are already battery swapping trucks on the road with higher range ones coming on stream all the time that have zero emissions, not just low emissions.

13 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Yes

If you said no, please explain why :

14 If you are a vehicle importer, what impact will this proposal have on your ability to supply heavy vehicles to Aotearoa?

Type your answer here :

15 Europe has drafted a proposal for Euro VII to take effect from mid 2027 that would reduce diesel vehicle emissions significantly from Euro VI. The U.S. have enacted Euro VII-ambition requirements from 2027, and China from mid 2023. When should Aotearoa in principle require the Euro VII standard for heavy vehicles and why?

Please explain in the box below. :

We should follow best practice ie we should instigate Euro 7 when the Europeans do.

Proposal three: Requiring motorcycles and mopeds to meet minimum exhaust emissions standard

16 Are you an importer of motorcycles and/or mopeds?

No – I am not a vehicle importer

17 Do you consider the proposed timeframes to require stronger standards for harmful emissions from motorcycles and/or mopeds should:

Be bought forward

18 Please explain your answer for question for question two.

Type your answer here :

Like with light motor vehicles there are really so many options now for zero emission mopeds and increasingly motorbikes too, that there there no reason not to go straight to Euro6 for all new imports

19 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Not Answered

If you said no, please explain why :

20 If you are a vehicle importer, what impact will this proposal have on your ability to supply motorcycles and/or mopeds to Aotearoa?

Type your answer here :

Proposal four: Provisions for disability vehicles

21 Are you an importer of disability vehicles?

No – I am not a vehicle importer and I do not purchase or use disability vehicles.

22 Do you consider the proposed timeframes to require stronger standards for harmful emissions from disability vehicles should:

Proceed as proposed

23 Please explain your answer for question for question two.

Type your answer here :

I understand there might be a lack of availability of lower polluting disability vehicles. And it really is almost irrelevant in the quantum of pollution - they must make up such a tiny proportion of km travelled by vehicles in NZ hence the need to restrict their emissions is almost irrelevant.

24 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Yes

If you said no, please explain why :

25 If you are a vehicle importer, what impact will this proposal have on your ability to supply disability vehicles to Aotearoa?

Type your answer here :

Accepted standards from other jurisdictions

26 Do you agree with the comparison of other standards with Euro standards presented here?

Yes

27 If you answered "no", what would you change?

Type your answer here :

Out of Scope

From: Alfons Reitsma s 9(2)(a)
Sent: Wednesday, 7 June 2023 11:29 am
To: Emissions; Out of Scope
Cc: Out of Scope
Subject: Euro VII report
Attachments: Euro VII is counterproductive to reach Climate goals and lower Co2.pdf; frontier-report-regulatory-costs-of-euro-7.pdf

Dear Emissions Team,

RE : Independent report Euro VII

Thank you for your time yesterday.

On your direct request for comments on Euro V11

From an E- Mobility point of view , it would definitely slow the process significantly down to finding the resources and implement / engineer future chassis and applications for New Zealand both at the same time i.e. Euro VII versus BEV or other future Zero Emission technologies and will come at a very high cost to end user and consumer with possible very little gain .

Both Martin Lundstedt " CEO " Volvo Group and Alexander Vlaskamp "CEO" MAN (Traton) have made similar statements that the intro will be counterproductive to reaching climate goals.

Scania NZ has recently made a submission on the nationwide charge strategy with the long term focus of decarbonisation of heavy transport 30 % 2030-2035 , introducing Euro V11 could well derail such strategy / ambitions.

In simple terms put the money, policy and effort where it is needed to decarbonise.

Yours Sincerely

Regards

Alfons Reitsma

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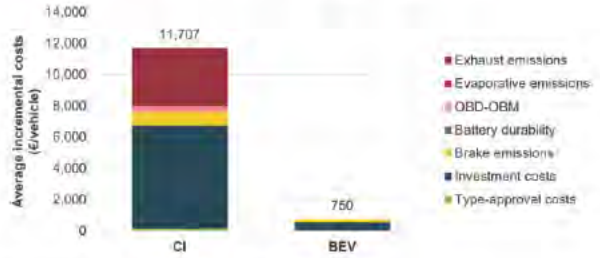
REGULATORY COSTS OF EURO 7 – FINDINGS FROM AN INDUSTRY SURVEY

Figure 6 Direct incremental costs of Euro 7 for buses/lorries



Source: Frontier Economics based on ACEA member data

Euro VII is counterproductive to reach Climate goals and lower Co2

Alexander Vlaskamp
CEO at MAN Truck & Bus SE
6 articles ✓ Following

June 2, 2023

Not only at @MAN Truck & Bus SE it will require further massive investments in electrification to comply with more ambitious CO2 targets. The Euro VII proposal would tie up significant financial and human resources for a comparably very small improvement of air quality. And even worse: EURO VII counteracts the path towards CO2-reduction, since it will lead to rising fuel consumption.

The newest Frontier economics study published by ACEA shows, that the proposed requirements would lead to an approximate increase of 3,5% fuel due to additional fuel amounts needed to warm up the catalyst from cold start. Consequently if you look for example at a long-haul truck with a mileage of around 1 million km and a fuel consumption of 25 l/100km, at a diesel price of 2 €/l, a 3.5 % fuel increase would result in 17,500 € added costs for our customers over the assumed milage of the truck. On top over it would lead to a significant rise in the emittance of CO2 in the range of several million tons over the European fleet. This is totally counterproductive.

Meeting the EURO VII requirements will thus not help much in achieving our climate goals, it will also be extremely costly and only bring a marginal improvement of air quality of 2% only as from 2038 when the effects of EURO VII would be reflected in the overall vehicle fleet.

For this marginal improvement, MAN Truck & Bus would have to invest up to 1bln € into the further development of new exhaust aftertreatment technology. Frontier economics shows that all OEMs would be faced with similar high investments sums.

According to Frontier, the average incremental direct costs of Euro VII vehicles are largely driven by equipment and investment costs and sum up to 12,000 € per diesel bus or truck. These estimates are over 4 times higher than the estimates reported in the EU Commission impact assessment (up to 2,800 € per diesel bus or truck).

We would love to see the money which and our customers would need to spend to comply with Euro VII unnecessarily rather in building up the necessary charging infrastructure instead. In order to comply with the proposed new CO2 target of -45% in 2030, transport providers need about 27.000 MCS charging points. AFIR is too less ambitious requesting only 2000-9000 across the TEN-T core network."

Our joint venture Milence will roll-out 1.700 MCS – with a planned investment of up to 500 million Euro. What could be done with all the billions spend by all manufacturers for Euro VII?

A significant gap remains so far in the e-infrastructure which needs to be bridged before 2030 in order to successfully electrify the long-haulage. Politicians needs to focus on decarbonization. Let's keep an eye on the ball and drive down CO2 by setting ambitious standards and by creating the necessary enabling charging infrastructure. Synchronize the different initiatives towards 2030! With the additional costs of EURO VII, we risk of tackling ourselves on the way to reach the Green Deal Targets.

https://www.frontier-economics.com/media/5883/frontier-report-regulatory-costs-of-euro-7.pdf

https://www.acea.auto/press-release/euro-7-direct-costs-4-to-10-times-higher-than-european-commission-estimates-new-study-reveals/

frontier economics

REGULATORY COSTS OF EURO 7 – FINDINGS FROM AN INDUSTRY SURVEY

23 MAY 2023

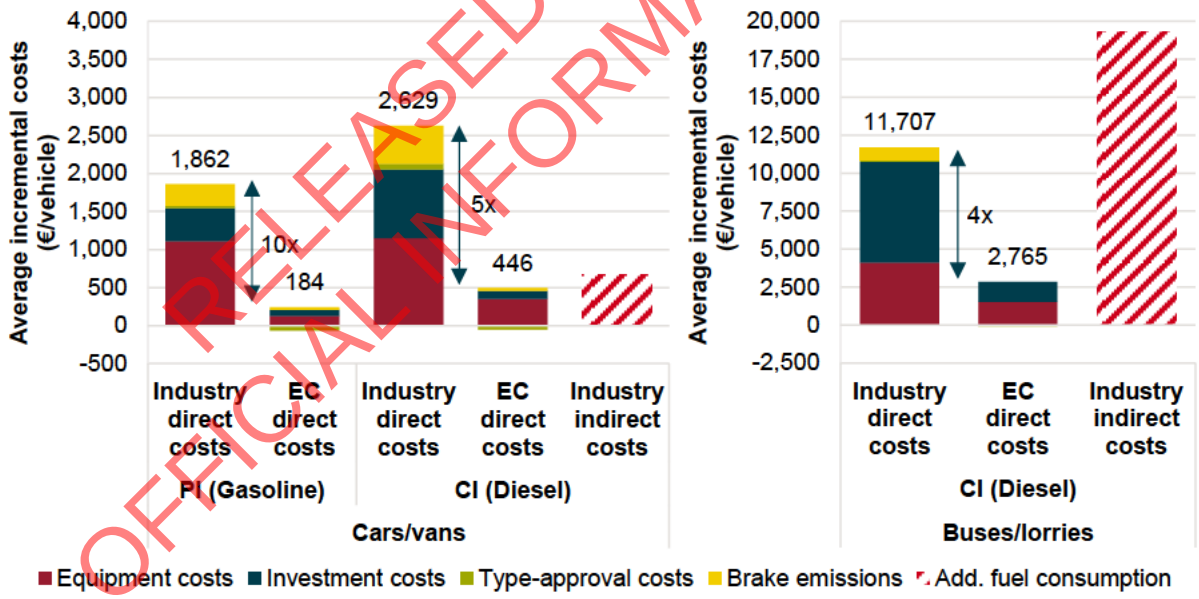
Executive summary

In the EU, emission standards for new vehicles set limits for the emission of gaseous and particle exhaust pollutants. In November 2022, the European Commission (EC) published a proposal for a new "Euro 7" regulation addressing passenger cars as well as light-duty and heavy-duty vehicles, which sets stricter emission limits and test conditions, replacing the existing "Euro 6 and Euro VI" standards. Compliance[1] with this proposed Euro 7 regulation will increase manufacturing costs of new Euro 7 vehicles. In addition, there are indirect costs such as increased fuel consumption which will add to the total costs of ownership for consumers.

The Euro 7 Impact Assessment (IA) by DG GROW estimates additional direct costs for vehicles in the order of 180-450 € for cars/vans and 2,800 € for buses/lorries. However, indirect costs to consumers and higher manufacturing costs for battery-electric vehicles (e.g. for battery durability) are not considered in the Euro 7 Impact Assessment.

The European Automobile Manufacturers Association (ACEA) has asked Frontier to provide an independent and compliant evaluation of incremental Euro 7 costs per vehicle based on estimates by industry experts and to compare these cost estimates with figures used in the Euro 7 Impact Assessment. Below we summarise our key findings:

Figure 1 Incremental costs of Euro 7: Industry vs EC IA estimates



Source: *Frontier Economics based on OEM data, EC Impact Assessment tables 21 and 23*

Note: *Indirect cost estimates reflect an illustrative example of undiscounted cost for additional fuel consumption over the lifetime of a Euro 7 vehicle. Such costs were not considered in the Euro 7 Impact Assessment.*

[1] In the following, compliance with the Euro 7 proposal is assumed. Truck/bus industry experts remain concerned whether the Euro 7 proposal is technically feasible at all. Cars/vans industry experts also noted that compliance and the ability to provide appropriate cost estimates includes, for example, that the on-road test boundary conditions focus on realistic scenarios and not over emphasize practically irrelevant extreme situations.

Industry experts estimate the direct cost increase from Euro 7 for vehicles with internal combustion engines (ICE) up to 10 times higher than the cost estimate in the Impact Assessment

Industry experts report average incremental direct costs of Euro 7 (compared to Euro 6 or Euro VI) – which are largely driven by equipment and investment costs – of **2,000 € per ICE car/van** and **12,000 € per diesel bus/lorry**. These estimates are between **four to ten times higher** than the estimates reported in the Euro 7 Impact Assessment (see Figure 1 above).

Unconsidered indirect costs to consumers from higher fuel consumption can exceed the total cost reported in the Euro 7 Impact Assessment (in particular for lorries)

In addition to direct costs, industry experts report an increase in fuel consumption to achieve the proposed Euro 7 requirements (e.g., additional fuel to warm up the catalyst from cold start). This leads to material additional indirect costs for consumers and logistic companies.

Take for example a long-haul truck with a mileage of around 1 million km and a fuel consumption of 25 l/100km. At a diesel price of 2 €/l, a 3.5 % fuel increase would result in **17,500 € over the assumed mileage of the truck**.[2] Similarly, the fuel cost increase of Euro 7 for passenger cars/vans would be around **700 € per vehicle**.

These indirect costs alone, which are **ignored in the Impact Assessment**, already exceed the total per vehicle cost of Euro 7 considered in the Impact Assessment (see Figure 1 above).

The Euro 7 Impact Assessment does not capture further effects, such as costs for reducing tyre abrasion emissions, a cost increase for battery-electric vehicles and likely limitations in entry model choice for consumers

In addition to direct and indirect costs for ICE vehicles, there are further costs from the proposed Euro 7 regulation which are not captured in the Euro 7 Impact Assessment:

- **Tyre emissions** – Euro 7 regulation includes tyre abrasion emissions for the first time.[3]
- **Higher costs for battery electric vehicles** – Industry experts report higher manufacturing costs in the order of about 180 €/vehicle for cars/vans and 750 €/vehicle for buses/lorries due to non-exhaust emission limits and battery durability requirements.
- **Limited consumer choice** – Consumers of more affordable entry-level cars might face substantially higher prices than today as a result of disproportionate costs increases or even terminated production of certain models in this vehicle segment. For instance, some passenger car manufacturers (OEMs) pointed out that meeting Euro 7 targets would require introducing automatic transmission not yet standard in entry level models. As a consequence, some customers may be forced to switch to more expensive models.

2 17,500 € = 3.5% * 1,000,000 km * 25 l/100km * 2 €/l. This rough calculation uses conservative and rounded assumptions.

3 Respondents to the questionnaire could not provide accurate cost estimates since tyre producers were not part of the study.

Introduction

In the EU, emission standards for new vehicles set limits for the emission of local pollutants including – among others – carbon monoxide, nitrogen oxides and particle matter.[4] The current standard for passenger cars/vans – Euro 6 – was introduced in 2014 and subsequently updated in 2017 and 2020 ("Euro 6d"). The latest standard for heavy-duty vehicles – Euro VI – was introduced in 2013 and subsequently updated to Euro VI-E in 2020.

In November 2022, the European Commission (EC) published a proposal for a new combined "Euro 7" standard which sets stricter emission limits than Euro 6 and Euro VI and also addresses non-exhaust particle emissions (from brake wear and tyre abrasion). The proposal aims for Euro 7 to be mandatory as of July 2025 for all new light-duty vehicles and as of July 2027 for all new heavy-duty vehicles.

Compliance with the proposed Euro 7 regulation would require OEMs to install additional hardware and invest in the development and roll-out of new technologies – which will affect manufacturing costs of new Euro 7 compliant vehicles. The European Automobile Manufacturers Association (ACEA) has asked Frontier to conduct a study in which we:

- Provide an independent and compliant[5] evaluation of incremental costs per new Euro 7 vehicle based on estimates by industry experts.
- Compare the industry estimates with the cost estimates from the Impact Assessment (IA) for the EC's preferred policy option 3a.[6]

Our analysis of incremental costs is based largely on data provided by ACEA member companies and, thus, reflects industry estimates. We have – to the extent possible to us – checked these industry estimates for consistency and have, where necessary, followed up with respondents for further clarifications.

In the following sections, we will describe our data collection process and analytical approach. We then present the results of our average incremental costs per vehicle separately for cars/vans and for buses/lorries. These results will be compared to the estimates reported by the EC in its Euro 7 Impact Assessment. Finally, we will briefly discuss indirect costs of Euro 7 for consumers which were not considered in the Impact Assessment. We will also provide an estimate for additional fuel costs as an example of such indirect costs. For further detail on the aforementioned sections, we have included an annex at the end of this report.

4 There is a separate regulation of CO_2 emissions, the so-called fleet targets (Regulation (EU) 2019/631 for cars/vans and Regulation (EU) 2019/1242 for heavy-duty vehicles).

5 OEMs act as competitors and are, therefore, prohibited to share sensitive information (e.g. on costs for vehicle components) under EU competition law.

6 The IA cost estimates refer to a study by CLOVE.

Empirical approach – Incremental Euro 7 costs are based on responses from industry experts representing major European vehicle manufacturers

Information gathered in compliant manner through questionnaire covering a broad set of vehicle and cost categories

Our analysis builds on an **industry questionnaire** that has been sent out to ACEA member companies (vehicle manufacturers, "OEMs"). We asked ACEA members to provide estimates for incremental costs under the proposed joint Euro 7 norm (scenario 3a) compared to the current Euro 6 and Euro VI norms. Cost data was provided in Euro per vehicle.

In designing our questionnaire, we consulted with ACEA industry experts on components for various categories of vehicles which are relevant for compliance with Euro 7. We asked respondents for their estimates for a range of different:

- **vehicle categories** (see Figure 2) – based on size and other technical attributes; and
- **cost categories** (see Figure 3) – also including relevant categories which were not considered in the Euro 7 Impact Assessment.

Figure 2 Vehicle categories in the questionnaire

Vehicle class	Cars/vans (M1 & N2)									Buses/lorries (M2, M3 & N2, N3)			
Engine type	PI (Petrol)			CI (Diesel)			BEV			CI (Diesel)[7]		BEV	
Segment	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large	Small	Large	Small	Large

Source: *Frontier Economics*

Note: *Please note that we asked for separate cost estimates for buses/lorries in our questionnaire. For the following analysis we combine both into a single vehicle class. For further details on our vehicle categorisation, please see our Annex A*

As vehicle categories for our analysis we only use vehicle class and engine type. We decided against a more granular approach where we differentiate our cost estimates further by segments for various reasons:

- **Compliance with confidentiality requirements** – to ensure that no OEM-specific information can be inferred from our findings in those segments with a low number of observations, it is necessary to keep our data aggregated.
- **Unsystematic difference between vehicle segments** – where cost estimates do not vary substantially among segments (in particular for PI cars/vans), further differentiation would not allow to deduce more information.

[7] We have not included the PI (Petrol) engine type for buses/lorries due to their insignificance in the market.

- **Comparability with the EC's estimates** – the EC's Impact Assessment also reports average cost figures across segments, we do the same to allow for a direct comparison with our cost estimates.

Figure 3 Cost categories in the questionnaire

Main cost category	Subcategories	Cost type	Relevant vehicle categories
Direct cost	Exhaust emission control	Recurrent costs	PI and CI vehicles
	Evaporative emission control and ORVR	Recurrent costs	PI (petrol) vehicles
	Onboard emission monitoring (OBM)	Recurrent costs	PI and CI vehicles
	Battery durability	Recurrent costs	BEVs
	Brake emission control	Recurrent costs	All vehicles
	Investment costs	Fixed one-off costs allocated per vehicle	All vehicles
	Type-approval costs	Recurrent costs	All vehicles
Indirect cost	Increased fuel consumption	Recurrent costs	PI and CI vehicles

Source: *Frontier Economics*

Note: *We initially asked OEMs for cost estimates related to tyre emissions but received feedback that these costs are particularly difficult to estimate and would mostly depend on tyre suppliers. We subsequently decided to exclude this cost category from our analysis. We have also given OEMs the possibility to add and describe custom categories of costs and to provide estimates for these additional 'other' costs. Only one respondent used this category and provided a marginal cost increase. We, therefore, decided to exclude the 'other cost' category from our analysis. For further details on our cost categorisation, please see our Annex A*

We mainly **focus on direct costs** (i.e. additional manufacturing costs of Euro 7 vehicles)[8] in our questionnaire but **also cover indirect costs** for consumers and the society, for example, increased fuel consumption that would result from the introduction of Euro 7.

Industry responses to our survey allow for an estimation of average incremental costs for different vehicle categories

In total, we received responses from ten OEMs – six manufacturers of LDVs (cars/vans) and four manufacturers of HDVs (buses/lorries).[9] To **ensure strict compliance** with EU competition law and confidentiality requirements, we anonymised OEM data. Therefore, we are only able to present aggregated information – such as averages – which does not allow to infer individual responses by OEMs.[10]

8 It should be noted that increases in manufacturing costs do not simply lead to equivalent changes in consumer prices (e.g. margin mark-ups have not been considered) but, actually, tend to increase prices even further. In this study, we do not attempt to quantify poss ble end price increments of Euro 7 vehicles. From the perspective of consumers, our incremental cost estimates should be seen as a lower-bound estimate of potential price increases.

9 We sent out our questionnaire to representatives of 16 OEMs of which 10 have responded (response rate of 63%).

10 For that reason, we exclude statistics which include individual values like minima, maxima or medians from our report.

The responses to our questionnaire cover all vehicle and cost categories, with varying data coverage by vehicle/cost category.[11] This provides sufficient information to calculate robust average cost estimates at an aggregated level (i.e. total incremental costs per vehicle category).

To obtain estimates for direct Euro 7 costs we proceed in two steps:

- We first calculate the average of all responses for each cost category and vehicle category (i.e. vehicle class and engine type) separately.
- We then sum up the averages of each cost category to obtain total incremental costs for a generic vehicle of a given category.[12]

For example, we averaged all industry estimates for each cost category (exhaust emissions, investment costs, etc.) corresponding to a certain vehicle category (e.g. PI cars/vans) and summed up these averages to obtain our total incremental cost estimate for that particular vehicle category.

Incremental Euro 7 costs for ICE cars/vans are about 2,000 €/vehicle and largely driven by costs for hardware, investment but also brake emissions

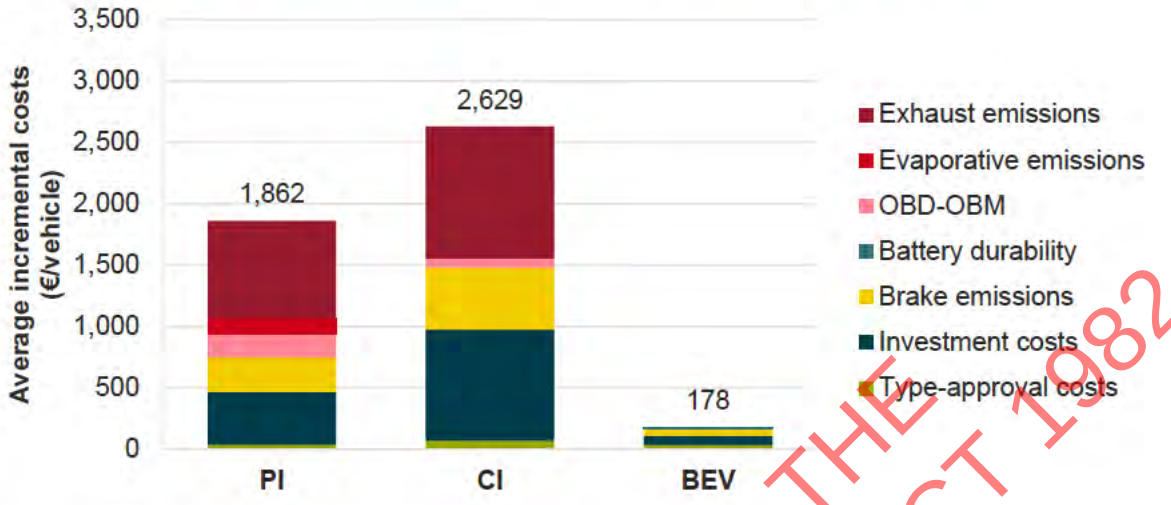
Figure 4 presents average direct costs for passenger cars/vans, broken down into seven cost categories, for the three vehicle categories: petrol cars/vans (PI), diesel cars/vans (CI) and battery electric cars/vans (BEV). We find average direct cost, ranging between c. 180 for BEV up to c. 2,600 € per CI vehicle:

- **Petrol cars/vans** – the reported total incremental costs for petrol cars/vans are about 1,900 €/vehicle. The individual responses of the OEMs on the total costs as well as on the different cost components can differ significantly. The provided cost estimates are rather independent from the size of the vehicles, showing similar values for small, medium or large cars/vans.
- **Diesel cars/vans** – the total incremental costs of diesel cars/vans are ca. 40 % higher than those for the corresponding petrol vehicles at total incremental cost of approx. 2,600 €/vehicle. The range of the responses is quite large. In contrast to the petrol cars/vans, the size of the vehicles correlates considerably with the reported total costs.
- **BEV cars/vans** – total incremental costs for BEV cars/vans are below 200 €/vehicle and lie substantially under the costs of the corresponding ICE vehicles. However, although BEV vehicles do not need exhaust emission control, evaporative emission control or onboard emission monitoring, the introduction of Euro 7 is associated with material costs. There are similar costs across all vehicle size segments.

11 For example, we have received only one response related to BEVs in the buses/lorries category.

12 We do not apply different weights to the responses of individual OEMs (e.g. based on their volumes/market shares) because we risk breaching confidentiality requirements if specific OEM responses can be inferred through their weights.

Figure 4 Direct incremental costs of Euro 7 for passenger cars/vans



Source: Frontier Economics based on ACEA member data

In Figure 5, we analyse the different cost components in detail, ranked from largest to smallest cost category.[13] As petrol and diesel vehicles show several commonalities, we consider them together (internal combustion engine vehicle, or "ICEV") and report BEV costs separately.

Figure 5 Detailed breakdown of cost categories for cars/vans

Cost categories	ICEV	BEV
Exhaust emission control	Largest single cost component with a value of about 800 € per petrol vehicle and about 1,100 € per diesel vehicle. Catalyst reformulation costs and the installation of an automatic gearbox are explicitly mentioned as relevant elements by some OEMs.	Not relevant
Investment	Investment for R&D, the development of new technologies and the upgrade of existing systems/facilities account for about 400 € per petrol vehicle and about 900 € per diesel vehicle. The values reported are usually estimated based on a five-year period[14] (if specified by the OEM).	Investment cost as largest single component make up about 80 €/vehicle.
Brake emissions	Costs for installing components to reduce brake emissions are a quite substantial cost component with	Brake emission costs lie in the range of 50 €/vehicle.

13 Our analysis includes the main cost components of Euro 7. However, tyre emissions are not included as the OEMs were not able to provide proper estimates here.

14 In this case, the investment costs per vehicle reported by the OEM's are the annual investments broken down from a five-year period and the predicted sales volumes.

	about 300 € per petrol vehicle and about 500 € per diesel vehicle.[15]	
OBD-OBM	Onboard emission monitoring costs which basically include the installation of additional sensors lie in the range of about 200 € per petrol vehicle and about 75 € per diesel vehicle.	Not relevant
Evaporative emission control	Costs for the upgrade to a ORVR system are about 150 € per petrol vehicle, while they are not relevant for diesel vehicles.	Not relevant
Type approval costs	Costs for testing and calibrating technologies for new vehicle models make up about 35 € per petrol vehicle and about 70 € per diesel vehicle.	Type approval costs are about 35 €/vehicle.
Battery durability[16]	Not relevant	Battery durable costs as costs to fulfilling battery durability requirements are reported to be about 20 €/vehicle.

Source: Frontier Economics

Incremental Euro 7 costs for buses/lorries are about 12,000 € per diesel vehicle and strongly depend on investment costs

Figure 6 reports the direct average incremental costs for buses/lorries, broken down into the same seven cost categories as for cars and vans, for the two vehicle categories: diesel buses/lorries (CI) and battery electric buses/ lorries (BEV).

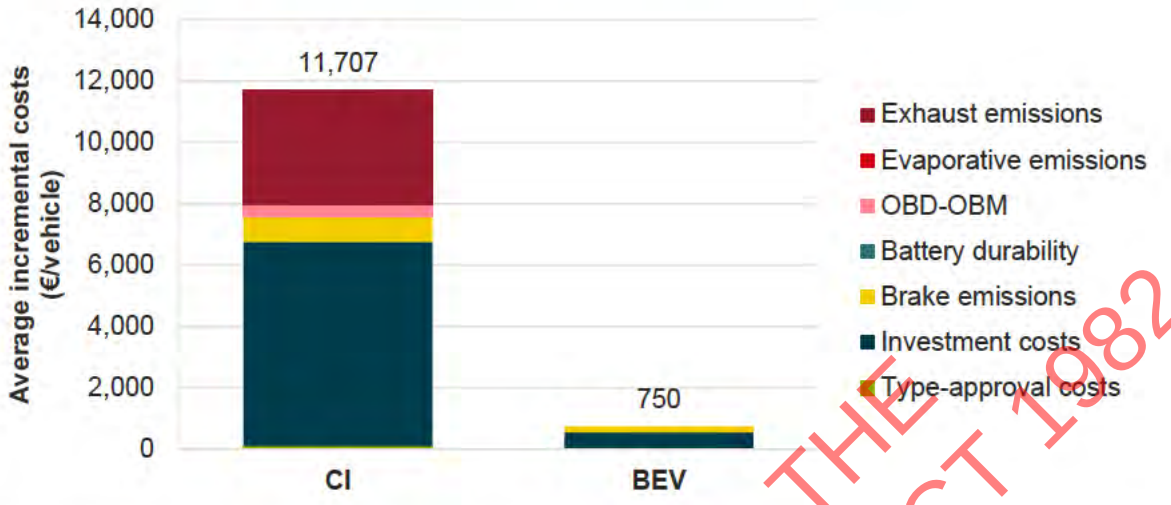
- **Diesel buses/lorries** – the reported total incremental costs for diesel buses/lorries are just short of 12,000 €/vehicle. According to respondents, buses/lorries generally require the same hardware changes to meet the new Euro 7 standard. However, total costs for buses are slightly higher than for lorries, as the lower volumes of buses drive up per vehicle costs compared to lorries. The variation in reported cost estimates differs for different interpretations of the Euro 7 requirements which are yet less clear for heavy-duty vehicles than for light-duty vehicles.[17] Smaller vehicles in this segment only show about half of the costs of their large counterparts.
- **BEV buses/lorries** – the total incremental costs of BEV buses/lorries amount to 750 €/vehicle. This accounts to 6% of the incremental costs of diesel-driven buses/lorries, which is comparable to the relation of BEV and diesel cars/vans.

15 As outlined before, cars/vans are split into petrol and diesel to ensure comparability with the EC's Euro 7 Impact Assessment. Industry experts noted that in the EU market, vans – for which brake emission costs are typically higher than for cars due to their higher weight – predominantly use diesel engines, which drives the differences between fuel types.

16 Battery durability requirements affect costs for both battery-electric vehicles as well as for hybrid vehicles (which are were not considered in this survey).

17 Some respondents in the heavy-duty vehicle segment even state that compliance with Euro 7 in its current proposed form is not achievable.

Figure 6 Direct incremental costs of Euro 7 for buses/lorries



Source: Frontier Economics based on ACEA member data

In Figure 7, we compare the different cost components for the two categories in detail, again ranked according to their size.

Figure 7 Detailed breakdown of cost categories for buses/lorries

Cost categories	Diesel (CI)	BEV
Investment	Investment control costs are the largest cost component with about 6,700 €/vehicle and most components are usually estimated based on a period of five years (if specified by the OEM).[18]	Investment cost as largest single component make up about 550 €/vehicle.
Exhaust emission control	Exhaust emission control costs make up about 3,800 €/vehicle. OEMs list the risk of a stronger electrification (48 V system) to onboard powertrain system, cold start requirements and measures to mitigate the fuel consumption increase generated by extra emission control systems and strategies as possible cost drivers.	Not relevant
Brake emissions	Brake emissions costs are about 840 €/vehicle. The exact brake emission control specifications are still unclear for some OEMs.	Brake emission costs lie in the range of 200 €/vehicle. The exact brake emission control specifications are still unclear for some OEMs.
OBD-OBM	Onboard emission monitoring costs lie in the range of about 400 €/vehicle. Some OEMs report that it is still unclear which broadcasting technology will be used in the future given the rather long lifetime of the vehicle.	Not reported

[18] As for cars/vans, the investment costs per vehicle reported by the OEM's are the annual investments broken down from a five-year period and the predicted sales volumes.

Type approval costs	Type approval costs are about 100 €/vehicle.	Reported as negligible
Battery durability	Not relevant	Reported as negligible if existing battery technologies are used.

Source: Frontier Economics

Direct incremental Euro 7 cost estimates from industry experts are four to ten times higher than in the European Commission's Impact Assessment

In the following section, we compare our average incremental cost findings with those presented in the EC's Impact Assessment. We can only compare those vehicle categories for which we have overlapping cost estimates. For this reason, we do not consider comparisons of estimates for BEVs (which are absent from the Euro 7 Impact Assessment) and Petrol (PI) buses/lorries (which we excluded from our questionnaire).

To compare the incremental cost estimates from our industry survey with those from the Euro 7 Impact Assessment, we have combined components into broader categories. Figure 8 shows how we aggregated cost categories to ensure comparability between both sources.

Figure 8 Cost categories for comparison: Industry vs EC Impact Assessment

Aggregated cost category	Industry survey conducted by Frontier Economics	EC Impact Assessment	
Equipment costs	Exhaust emission control	Hardware costs (part of the EC's 'equipment costs')	
	Evaporative emission control/ORVR		
	Onboard emission control (OBM)		
Investment costs[19]	Investment costs	R&D and related calibration costs including facilities and tooling costs (part of the EC's 'equipment costs')	
Type-approval costs	Type-approval costs	Testing costs	Costs during implementation phase
		Witnessing costs	
		Type-approval fees	
		Administrative costs	
Brake emissions	Brake emission control	NAO brake pads for ICE and MHEV	

Source: Frontier Economics & EC Impact Assessment

Note: For the EC's brake emission control estimate we used costs for non-exhaust components from table 21 in the Impact Assessment (part 2, page 62). Please note that these cost figures are only available for cars/vans.

[19] It should be noted that these aggregated cost categories are not perfectly comparable. The Euro 7 Impact Assessment extrapolates costs for R&D over a relatively long period until 2050. Investment cost estimates provided by the industry, however, are based on five-year amortisation period which is deemed more appropriate by the industry in light of an increasing phase-out of new ICE vehicles on the European market by the mid-2030s.

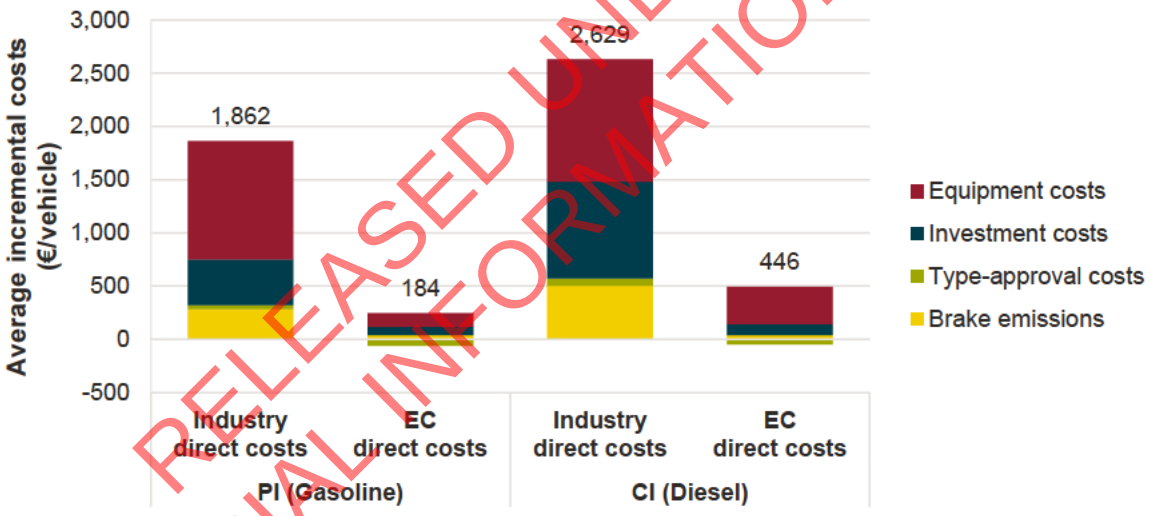
Passenger cars/vans – Industry estimates exceed Euro 7 Impact Assessment cost by factor of five to ten

As shown in Figure 9, average incremental cost for petrol cars/vans estimated by industry experts **exceeds the EC** cost estimate (c. 184 €/vehicle) **by a factor of ten**.[20] Similarly, for diesel cars/vans we also observe a large difference (**a factor of five**) between our cost average and that by EC of about 446 €/vehicle.[21]

These large differences are mostly driven by significant differences in equipment costs for both PI and CI vehicles. Our costs for brake emission control are also significantly higher than the EC's estimates but have relatively less impact on the overall result.

For costs in the context of type-approval, we found marginal cost increases according to industry expectations, whereas the EC expects cost savings from the Euro 7 introduction.[22] Overall, this category only has a relatively small impact on total incremental costs.

Figure 9 Direct costs of Euro 7 for cars/vans: Industry vs Euro 7 IA estimates



Source: Frontier Economics based on ACEA member data, EC Impact Assessment tables 21 and 23

20 We obtained these figures by adding costs for brake emission control components of 37.5 €/vehicle for ICE and MHEV cars to EC's average regulatory cost figures for PI and CI cars/vans (146.8 and 408 €/vehicle respectively).

21 Even when using the lowest reported values of the OEMs in the relevant segment, we receive values that lie well above the values of the Euro 7 Impact Assessment.

22 According to the EC, these cost decreases result from simplified testing and witnessing due to more advanced onboard emission monitoring.

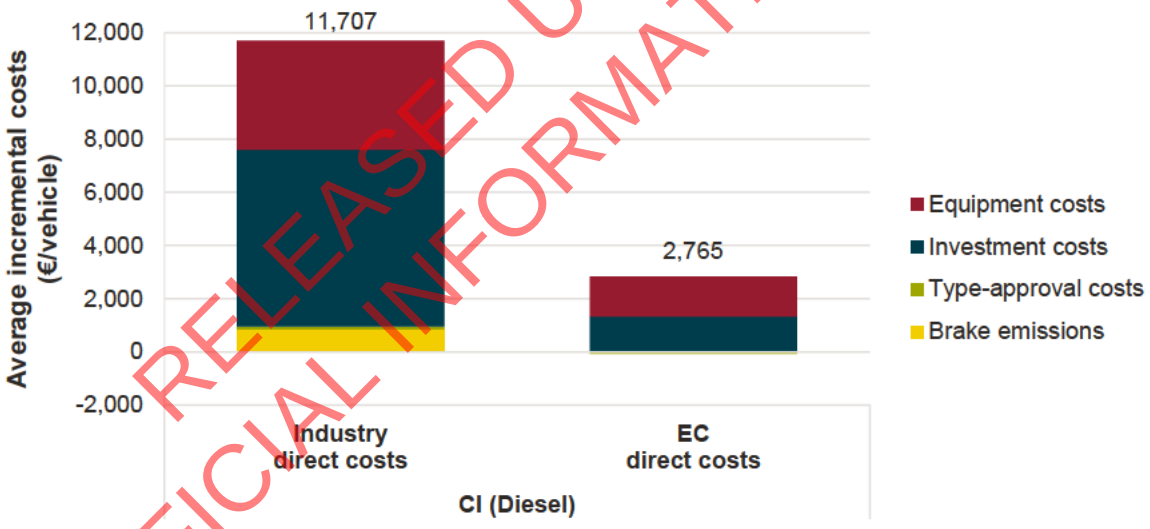
Buses/lorries – Industry estimates exceed Euro 7 Impact Assessment cost by a factor of four

In the heavy-duty category of diesel buses/lorries we find significantly higher incremental costs than the EC. Our average estimate exceeds that of the EC of 2,765 €/vehicle by the factor four (see Figure 10).

Again, our cost differences are mainly driven by different estimates for equipment and investment costs. Unlike for passenger cars/vans, the EC does not provide any cost information about components for brake emission control in the HDV segment. We, therefore, did not consider this cost category in the EC's total cost estimate. Our estimate, on the other hand, includes average industry costs for brake emission controls. This difference further contributes to the gap between both findings, although brake emissions make up a relatively small share of total incremental costs.

Similarly to cars/vans, we find that costs for type-approval have a marginal positive impact on our estimate and a small negative impact on the EC's estimate.

Figure 10 Direct costs of Euro 7 for buses/lorries: Industry vs EC IA estimates



Source: *Frontier Economics based on ACEA member data, EC Impact Assessment table 23*

Note: *Due to the low relevance of petrol ("PI") buses/lorries we did not consider this category. Brake emissions are missing from EC estimate because no cost information is given for buses/lorries in the Impact Assessment.*

Possible reasons for differences between Industry and EC's estimates

The large gap between Industry and EC Impact Assessment estimates clearly raise questions on possible explanations that we have discussed with industry experts. The following issues have been brought forward:

- **Different starting point** – The starting point for the calculation of the cost increment between an existing Euro 6 or Euro VI vehicle and a future Euro 7 vehicle might differ between both approaches. The question is which Euro 6 or Euro VI vehicle is used as a benchmark for the comparison with a Euro 7 vehicle. Currently available Euro 6 or Euro VI vehicles (cars in particular) have widely different technical features across manufacturers, some of which may make it easier to reach compliance with Euro 7. Moreover, there seems to be a significant underestimation of retrofitting costs for smaller passenger cars in the EC's estimates. Unlike manufacturers of upper medium or premium models, many OEMs of smaller, affordable vehicles will have to introduce more updates to their engines, cooling systems and electrification.[23] Industry experts mention that the EC focuses heavily on the exhaust aftertreatment system and neglects additional changes to the fuel system[24] necessary to reduce evaporative emissions.
- **Different end point** – The final products as Euro 7 compliant vehicles assumed under the industry and the EC's cost estimations may also differ. The EC seems to focus on what is needed at minimum to reach compliance. OEMs, on the other hand, have to focus on engineering targets that are well below the limits to address risks – as for example covering any issues regarding public liability – which is likely to result in higher costs.
- **Possible underestimation of total costs in the Euro 7 Impact Assessment** – The EC's Impact Assessment and the CLOVE study, on which it is based, also provide individual cost information for relevant components such as OBM sensors, ORVR and brake pads, which not always appears consistent. A simple sum over these components would suggest higher total costs than those reported by the EC.[25] This raises at least questions about how exactly the EC derived its average cost figures.

Overall, it should be stressed that significant uncertainty around the precise requirements of the current proposal for Euro 7 makes it difficult for both manufacturers and regulators to assess incremental costs precisely at the moment. Rather than focussing on a single number intended to explain incremental costs of Euro 7 compliance, a determination of a cost range might be more appropriate to represent the real conditions and implications.

Additional indirect cost to consumers alone, which are not covered by the Impact Assessment, exceed the estimated total cost of the EC substantially

Apart from direct regulatory costs which we understand as additional costs for manufacturers in the production process of compliant vehicles, the Euro 7 regulation may create further

23 Some specific hardware updates mentioned in our expert discussions were replacement of MPI engines with larger GDIs to reduce average load, installation of compressed air intercoolers, stronger electrification of 48V to onboard the powertrain system, and introduction of automatic transmission instead of manual gearboxes.

24 Such as the introduction of pressurised fuel systems.

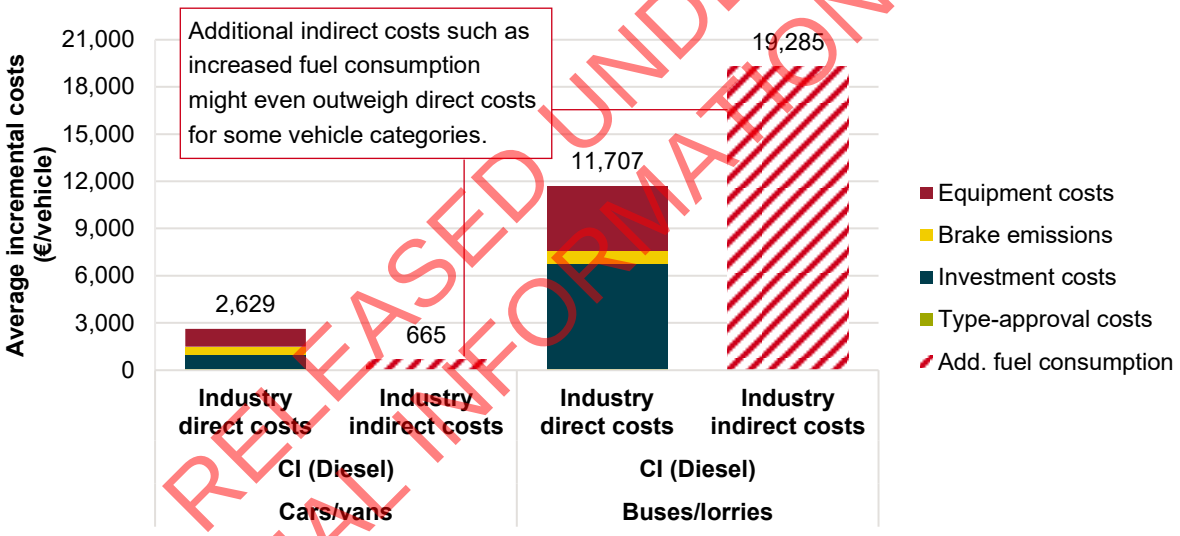
25 For instance, the Euro 7 Impact Assessment reports costs for ORVR (16 €/vehicle) on page 61 and for NAO brake pads (37.5 €/vehicle) on page 62. The underlying CLOVE study also contains cost figures for multi-gas sensors (200 €/vehicle) and OTA data transmission (40 €/vehicle) on page 289. Summing up the costs for these components yields significantly higher total costs than the reported 184 €/vehicle (including regulatory costs for exhaust emissions and costs for brake emission control).

indirect costs borne by consumers or society at large. Such indirect costs components may include (but not be limited to):

- **Limited consumer choice** – consumers of more affordable entry-level cars might face substantially higher prices than today as a result of disproportionate costs increases or even terminated production of certain models in this vehicle segment under Euro 7. As a consequence, some customers may be forced to switch to more expensive models.
- **Additional fuel consumption** – Euro 7 compliant vehicles will likely consume more fuel[26] which, in turn, will result in additional fuel costs for consumers and businesses.

The responses we have received via our questionnaire do not allow to properly quantify the implications of limited consumer choice. However, feedback from ACEA members suggests that a limitation of consumer choice caused by discontinuation of low volume or entry-level models that would otherwise need substantial and costly upgrades (with disproportionate price effects)[27] is a serious possibility for end customers.

Figure 11 Indirect costs of Euro 7: Additional lifetime fuel cost



Source: Frontier Economics based on ACEA member data

Several OEM's provided information about expected increases in fuel consumption. Based on their estimates, Euro 7 would increase fuel consumption by 3.5% on average for both, cars/vans and buses/lorries. According to the OEM's, an increase in back pressure in the exhaust system or the use of cooled exhaust gas recirculation penalising the thermodynamic cycle efficiency through pumping losses are possible drivers of this additional costs.

26 For example, more fuel will be consumed to address cold start emissions and engine/catalyst warm-up.

27 For instance, several car/van OEMs pointed out, that meeting Euro 7 would require a degree of control over the powertrain, which would require a switch to automatic transmission. Particularly, more affordable vehicles are expected to phase out – effectively limiting consumer's choice.

We approximated additional fuel costs over the lifetime of a Euro 7 vehicle, the assumptions summarised in Annex B. Based on our simplified calculation, we estimate **additional fuel costs** for **cars/vans of around 650 € per vehicle** and for **long-haul trucks up to 20,000 € over the entire lifetime of the vehicle** (see Figure 11). Please note that these values are undiscounted and based on historical fuel prices which we assume to stay constant. Considering that final fuel prices for consumers are expected to increase in the next couple of years[28] and that additional AdBlue consumption is not taken into account, our figures are rather a conservative estimate.

28 This is driven by an expected rise of oil prices (see for example the World Energy Outlook (2020) in the stated policies scenario) and higher taxes on fossil fuels. An increasing shift to e-fuels would also cause higher fuel costs from today's perspective.

Annex A – Details on the questionnaire

All cost figures in this paper are derived from cost estimates provided by industry members through a questionnaire designed by Frontier. In this section we provide further details on:

- Vehicle categories for which we differentiate cost estimates,
- Cost categories which make up our total cost estimate,
- Open questions which we ask in addition to cost estimates.

Vehicle categories

For the purpose of this survey, we distinguish between different vehicle categories based on vehicle size and other technical attributes. Similarly to the approach taken by the EC in its Impact Assessment, we group vehicles into **three vehicle categories**:

- **Cars/vans** – encompasses low-duty vehicles (LDV) typically used for passenger transport. Under the UNECE vehicle classification system[29], M1 and N1 vehicles would fall into this category.
- **Buses** – we include large vehicles for mass transportation of passengers (i.e. more than eight seats) in this class. This includes both M2 and M3 vehicles.
- **Lorries** – heavy-duty vehicles (HDV) carrying large volumes of goods are grouped in this class. N2 and N3 vehicles (exceeding 3.5 tonnes) are grouped in this class.

The broader vehicle classes above are further subdivided into different **engine types** based on the vehicle's fuel technology:

- **PI (Petrol engines)** – we only apply this engine type to our cars/vans class. We decided to exclude it for larger HDVs (buses/lorries) as Petrol engines make up a negligible share of the European market for these vehicles.
- **CI (Diesel engines)** – this engine type applies to all of our vehicle classes.
- **BEV (battery-electric vehicles)** – includes vehicles powered by electric batteries rather than combustion engines. This engine type applies to all of our vehicle classes.

Within in each class and engine type we differentiated further between **vehicle segments** which reflect different ratios of engine power to vehicle mass. We have chosen two different approaches to our segmentation for cars/vans as well as for buses/lorries.

- To ensure comparability, we closely follow the segmentation used by the EC in its Euro 7 Impact Assessment for our **cars/vans** class.[30]

29 For further detail see: https://alternative-fuels-observatory.ec.europa.eu/general-information/vehicle-types

30 This segmentation, in turn, is based on an ICCT report and aggregates the segments used there into larger groups.[30] Similarly to the Impact Assessment, we distinguish between **small, medium and large segments**. We group the ICCT's

- For **buses/lorries** we use a segmentation by vehicle mass based on the UNECE vehicle classes. For these categories of vehicles we only distinguish between **small and large segments.** Small buses include M2 vehicles (with a mass of up to 5 tonnes) while large buses are M3 vehicles (exceeding 5 tonnes). Similarly, small lorries consist of N2 vehicles (up to 12 tonnes) and large lorries of N3 vehicles.

Cost categories

In our analysis, we distinguish between direct costs – on which this survey mainly focuses[31] – and indirect costs of the Euro 7 norm. Under **direct costs** we group any incremental costs for the manufacturer that are incurred in the production of Euro 7 compliant vehicles. Please note that the direct costs we estimate are not necessarily reflective of prices paid by consumers as they exclude the margins on top of production costs. Therefore, the increase of consumer prices would likely be higher than our incremental cost estimates.

As **indirect costs** we understand those costs that may affect consumers or society at large outside of the direct effect on vehicle prices (which we do not estimate here). Examples of indirect costs may include (but are not limited to):

- Costs of **increased fuel consumption** – potential Euro 7 compliant vehicles are expected to consume more fuel for a variety of reasons[32] which will result in higher fuel costs for consumers. We have calculated an approximate estimate for average additional costs for each vehicle class borne by customers over the lifetime of a Euro 7 vehicle based on industry expectations for the average increase in fuel consumption (see page 14).
- Costs arising from **limited consumer choice** – If compliance with Euro 7 will require costly upgrades to hardware components, the production and sale of certain car segments may no longer be economically viable. More affordable entry-level vehicle models will see proportionately larger cost (and price) increases. These vehicles are more at risk of being discontinued in favour of high-end models which may already be equipped with some of the necessary components or for which additional equipment would have relatively smaller cost impact. In this survey, we have not attempted to quantify these potential costs.

Direct costs are broken down in different cost categories (see Figure 12) which we developed under consideration of feedback from industry experts:

"Small" and "Mini" segments into our small segment. Our medium segment includes the "Lower medium", "Medium" and "SUV/Off-road" segments. The large segment consists of the ICCT's "Upper medium", "Sport" and "Luxury" segments.

31 Whenever we refer to costs in this report without specifying whether we mean direct or indirect costs, it is implied that we are referring to direct costs.

32 Most importantly additional fuel consumed to address cold start warm-up of the engine/catalyst system.

Figure 12 Detailed direct cost categories in our questionnaire

Cost category	Description	Relevant vehicle categories
Exhaust emission control	Recurrent costs for installing components required for reducing exhaust emissions, costs related to fulfilling relevant durability requirements, this includes components such as optimised coated GPF, anti-spit back/vapour valves, high flow purge valves, pump or OBD leak checks, OTA data transmission, etc.	PI and CI vehicles
Evaporative emission control and ORVR	Recurrent costs for installing components required for reducing evap. emissions, recurrent costs for installing onboard refuelling vapour recovery systems (ORVR), costs related to fulfilling relevant durability requirements	PI (petrol) vehicles
Onboard emission monitoring (OBM)	Recurrent costs for installing sensor technology required for continuous on-board emission monitoring (OBM), this component is specifically required in the Impact Assessment's Policy Option 3a	PI and CI vehicles
Battery durability	Recurrent costs related to fulfilling battery durability requirements (applies only to BEVs)	BEVs
Brake emission control	Recurrent costs for installing components required for reducing brake emissions	All vehicles
Investment costs	Aggregated costs for investments in research & development of new technologies or upgrades to existing systems, investments in new facilities, costs for tooling at suppliers'/own facilities, logistics, etc.	All vehicles
Type-approval costs	Recurrent costs for testing and calibrating technologies for new vehicle models, costs for testing and witnessing in the context of type-approval, fees for granting type-approval paid to authorities, costs for reporting and to fulfil other information provision obligations	All vehicles

Source: Frontier Economics

Open questions

We also asked OEMs **open questions** with the aim to gather **information related to indirect costs** of Euro 7. In particular, we were interested about industry expectations for the level of additional fuel consumption – which we used in our estimation of additional lifetime fuel costs for consumers – and for potential cost increases due to limitation of consumer choice.[33]

[33] However, we did not receive sufficient information on this issue to analyse it quantitively.

Annex B – Details on the indirect cost estimation

Figure 13 Assumptions for the indirect cost estimations of the additional fuel consumption

Parameter	Value [unit]	Source
Additional fuel consumption of Euro 7	■ 3.5 [%] for cars/vans ■ 3.5 [%] for buses/lorries	Questionnaire
Vehicle lifetime	■ 200,000 [km] for cars/vans ■ 1,116,000 [km] for buses/ lorries	■ EC's proposal for a new Euro 7 regulation from November 10, 2022 (table 2 for option PO3a, p. 27/28) ■ Impact Assessment for CO_2 Standards (p. 149) defines lifetime as mileage equal to that of 10 years of driving with the mileage specified for the specific vehicle and use case in the Regulation (EU) 2019/1242 (table 4) for the subgroup 5 Long-Haul vehicle: 10 a * 116,000 km/a
Average fuel consumption of Euro 7 vehicle	■ 5 [l/100km] for cars/vans ■ 25 [l/100km] for buses/lorries	Own rough approximation assuming an about 20 % lower consumption as today's average fuel consumption for the corresponding segments
Fuel price	■ 1.9 [€/l] for petrol/diesel	EC Weekly Oil Bulletin (average of weekly data for Apr22-May23)

Source: Frontier Economics

Out of Scope

From: James Smith s 9(2)(a)
Sent: Monday, 19 June 2023 2:18 pm
To: Emissions
Subject: Requiring Euro VI for heavy vehicles

National Road Carriers Association supports the proposal to move to Euro VI-c (as that aligns with ADR 80/04), but we don't support the subsequent proposal to adopt Euro VI-e and drop ADR 80/04 from Nov 2026.

The only difference between steps c and e is the in-service conformity testing.

There is no difference in harmful emissions, so there is no gain.

Getting ahead of Australia means a loss of models (which is hard to quantify), which means less choice/competition, possible loss of brands, higher cost (if OEMs re-engineer models), and operators not replacing their current fleet as a result.

NZ should align with Australia and retain ADR 80/04 as many OEM's supply NZ as part of their AU operation.

Our other concern is lack of consistent in service validation that emission control devices are still operational.

Regards
James

James Smith
COO | National Road Carriers Assn
s 9(2)(a) www.natroad.co.nz
'Supporting those who choose to make a living in the Road Transport Industry' Since 1936

Te Uru Kahika Regional and Unitary Councils Aotearoa

20 June 2023

Ministry of Transport
PO Box 3175
WELLINGTON 6140

Email: emissions@transport.govt.nz

Submission on the proposed amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007

Thank you for the opportunity to submit on the proposed amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007. Attached is the submission from the National Air Quality Working Group (NAQWG).

NAQWG is made up of air quality practitioners from regional councils and unitary authorities across New Zealand. The NAQWG is part of a wider network of special interest groups in the regional sector under the umbrella of Te Uru Kahika

The regional council members of NAQWG are generally supportive of the proposed amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007 as it should result in gradual improvements in air quality, especially in urban areas close to busy transport corridors. The improvements in air quality will result in significant social costs savings that will more than outweigh the implementation costs and could also have a positive impact on climate change.

As further detailed below, NAQWG are supportive of these proposed amendments but encourage the Ministry of Transport to bring forward the proposed timeframes for implementation wherever it is feasible and to include proposed timeframes for introducing Euro 7/VII emission standards as well.

Key submission points on the proposed amendments

1. We support the introduction of stronger emissions standards equivalent to or better than the Euro 6/VI emission standards for light and heavy vehicles
2. We support the introduction of emission standards equivalent to or better than the Euro 5 emission standards for motorcycles and mopeds
3. We support the proposal to include provisions for disability vehicles

Te Uru Kahika Regional and Unitary Councils Aotearoa

4. We recommend that implementation timeframes are brought forward wherever is feasible to reduce the impacts of poor air quality on health as rapidly as possible
5. Consideration needs to be given to the impacts of fuel quality and any future introduction of biofuel use in NZ on the ability to meet the improved emission standards
6. We recommend that an implementation timeframe for requiring stronger emissions standards equivalent to or better than the Euro 7/VII emission standards for light and heavy vehicles is set under this current amendment with a date of no later than 1 January 2030.

We do not wish to be heard in regard to this submission. The officer for contact purposes will be Jonathan Caldwell s 9(2)(a)

Yours sincerely,

Nāku iti noa, nā

Michael McCartney
CONVENOR
Regional and Unitary Chief Executives' Group
Te Uru Kahika

pp

Executive Policy Advisor

Submission on the proposed amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007

From: Regional Council members of the National Air Quality Working Group on behalf of Te Uru Kahika

To: Minister of Transport

1. Context

There are several national and international guidelines and standards that set the minimum requirements for air quality to protect human health and the environment. Of relevance are the Resource Management (National Environmental Standards for Air Quality) Regulations 2004 (NESAQ) made under the Resource Management Act 1991, which include five standards for ambient (outdoor) air quality.

In 2020, the Government announced proposed amendments to the NESAQ to include a standard for ambient fine particulate ($PM_{2.5}$) concentrations in New Zealand.[1] These amendments are still pending finalisation but the recent release in 2021 of updated World Health Organisation air quality guidelines and the Health and Air Pollution in NZ study (HAPINZ 3.0)[2] in 2022 has highlighted the importance of reducing $PM_{2.5}$ and NO_2 emissions from sources such as home heating and transport in order to reduce the harmful effects on human health.

The climate effects of fine particulates are also of concern with black carbon particles known to contribute to climate warming.[3] Other hazardous air pollutants such as carbon monoxide and oxides of nitrogen can also have an indirect impact on climate warming by boosting the generation of tropospheric ozone which is a greenhouse gas.[4]

2. Specific Comments

Vehicles are a significant source of air pollution, particularly in the most densely populated areas in New Zealand. Air pollution can cause significant health effects, in particular for the respiratory system, and lead to premature death. While any population exposed to air pollution may experience health effects, the greatest impact is likely to be borne disproportionately by lower socio-economic groups which are more likely to live close to busy transport corridors.

We therefore support the proposed changes to the Land Transport Rule: Vehicle Exhaust emissions 2007 with regards to graduated introduction of Euro 6/VI emission standards (or equivalent) for light and heavy vehicles and Euro 5 emission standards (or equivalent) for motorbikes and mopeds. These proposed changes will result in a significant reduction in

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[1] Ministry for the Environment, *Proposed amendments to the NES AQ*: https://www.mfe.govt.nz/publications/air/proposedamendments-national-environmental-standards-air-quality-particulate-matter

[2] Health and air pollution in New Zealand 2016 (HAPINZ 3.0): Findings and implications | Ministry for the Environment

[3] Climate and Clean Air Coalition, *Black carbon*: https://www.ccacoalition.org/en/slcps/black-carbon

[4] Ananthaswamy A., Smoke Signal, New Scientist, 20 February 2010, p38 – 42.

harmful air pollutants such as $PM_{2.5}$ and NO_2. However, we have concern that the Japan 2005 and Japan 2018 emission standards are weaker than the Euro standards even with exclusion of codes 5BA and CBA which lowers the requirement for reduced harmful emissions from 75% to 50%. At the very least these two codes should be excluded.

While page 9 of the consultation document incorrectly states that Stats NZ's research has shown that NZ's air quality is getting worse (evidence over the long-term actually indicates improving air quality[5]), it is relevant that exposure to hazardous air pollutants is increasing due to increased population growth in urban areas.

Although an under-researched area, evidence indicates that a significant portion of exposure is likely to occur during your commute to work or school (including during active modes of transport like cycling) due to there being higher concentrations of NO_2 in the city compared to residential neighbourhoods[6][7]. It is therefore critical that emission sources of hazardous air pollutants from vehicle exhaust emissions are reduced as rapidly as possible by fast tracking the transition of the country's vehicle fleet to low or zero emitters.

The social costs savings of more than $6 billion to 2050 expected from the proposed changes to the vehicle emissions standard against costs of less than $200 million offer a sizable cost-benefit ratio. Furthermore, the benefits will be enjoyed by the wider population, while the costs are incurred by owners of vehicles responsible for emissions.

Buses used for public transport are already required to meet Euro VI, with more stringent zero carbon emission changes to be introduced. By requiring other heavy vehicles to meet a lower emission standard ensures a more equitable approach to the management of transport emissions.

It is also recommended that the timeframes for implementation of these emission standards also includes a future date for requiring used and new vehicles (light and heavy-duty diesel) to meet Euro 7/VII or equivalent emission standards. It is noted that the emission reductions of transitioning to Euro 7/VII from Euro 6/VI is not as great as the emission reductions gained from transitioning from Euro 5/V to Euro 6/VI. However, the proposed Euro 7/VII standards do include additional requirements around emissions that are not included in Euro 6/VII standards such as methane and ammonia exhaust emissions and brake PM_{10} emissions for some of the vehicle categories which will provide additional benefits such as addressing non-exhaust emissions from EVs. The proposed Euro VII for heavy-duty diesel vehicles also requires a more robust test cycle methodology for emission testing which should hopefully provide more alignment with real life driving emissions. Countries such as Europe, the US and China, which have a large influence on vehicle manufacturers, have already set dates for requiring alignment with this standard (2023 to 2027). It is therefore recommended that NZ set a date

[5] Our air 2021 | Ministry for the Environment

[6] Johansson et al., Impacts on air pollution and health by changing commuting from car to bicycle, Science of the Total Environment 584-585 (2017) 55-63.

[7] Kuschel G., Public Health Risks associated with Transport Emissions in NZ – Part 1 Stocktake and Gap Analysis as at 30 June 2021. Report prepared for ESR by Emission Impossible Ltd, 23 March 2022 for Ministry of Health.

for meeting this standard by 1 January 2030 when there should be sufficient supply of vehicles meeting this standard.

The US's bold introduction of the Corporate Average Fuel Economy (CAFE) standards in 1975, which required a doubling of passenger-vehicle fuel efficiency by 1985, indicates that vehicle suppliers and manufacturers can adapt rapidly to changes in regulation[8].

It is also important that there is a particular focus on reducing emissions from diesel vehicles which emit greater quantities of hazardous air pollutants than petrol vehicles. Diesel emissions typically have a greater impact on localised air quality, causing increased ambient concentrations of hazardous air pollutants such as NO_2, CO and $PM_{2.5}$ (including black carbon).

Black carbon is an air pollutant with both human health and climate effects. Black carbon exists as ultra-fine soot particles, generated as a result of combustion processes, particularly diesel. The ultra-fine size and dark colour of this black carbon soot absorbs sunlight, acting as a powerful short-term climate-forcing agent. Areas of New Zealand where diesel vehicle emissions are concentrated, such as Auckland's City Centre, have recently been shown to have significant concentrations of black carbon in the ambient air, with significant risks to human health and the climate.[9]

Combustion gases such as carbon monoxide and nitrogen oxides are precursors to ozone formation which is a greenhouse gas. As such, the reduction of CO and NO_2 through improved emission standards will have a beneficial impact not only on human health but also climate change.

In addition to this, vehicles that meet a higher exhaust emissions standard such as Euro 6/VI will not only generate lower emissions of hazardous air pollutants but will also have higher fuel efficiency and therefore lower CO_2 emissions. This proposal should therefore also contribute towards the successful achievement of the transport targets set under the Ministry for the Environment's Emissions Reduction Plan[10].

To ensure future co-benefits for both health and climate are achieved, decisions around reducing our impacts on climate change need to be made with consideration to impacts on localised air quality. For example, previous decisions by governments around the world to favour diesel vehicles over petrol vehicles has proven flawed over time. The initial assumption that diesel vehicles produce less CO_2 emissions and therefore will have less impact on climate change, has resulted in higher levels of harmful pollutants and poorer local air quality.

It will also be important that any future proposals to introduce a transition away from fossil fuels to biofuels takes into consideration the impact of such decisions on the ability for vehicles to meet the proposed improved emission standards. For example, studies tend to indicate that in most cases, biodiesels produce more NOx emissions than diesel.[11] It is noted that fuel

[8] history-of-fuel-economy-clean-energy-factsheet.pdf (pewtrusts.org)
[9] Davy & Trompetter (2018), *Black Carbon in NZ*: https://www.mfe.govt.nz/sites/default/files/media/Air/black-carbon-in-new-zealand.pdf
[10] Aotearoa New Zealand's first emissions reduction plan (environment.govt.nz)
[11] NOx emission of biodiesel compared to diesel: Higher or lower? - ScienceDirect

quality and fuel type were not specifically discussed in the consultation document apart from reference to issues with introducing improved standards in Australia due to the need for fuel quality improvements.

The NAQWG also recommends that consideration be given to providing financial support for lower socio-economic urban areas that have old high emitting fleets to transition more quickly to lower emitting fleets e.g., clean car subsidies for people with lower income. It's important that the new emission standards are introduced in a way that doesn't result in New Zealand and particularly the lower socio-economic urban areas becoming a dumping ground for old high emitting vehicles.

3. Key points

The key points of this submission are:

1. We support the introduction of stronger emissions standards equivalent to or better than the Euro 6/VI emission standards for light and heavy vehicles
2. We support the introduction of emission standards equivalent to or better than the Euro 5 emission standards for motorcycles and mopeds
3. We support the proposal to include provisions for disability vehicles
4. We recommend that implementation timeframes are brought forward wherever is feasible in order to reduce the impacts of poor air quality on health as rapidly as possible
5. Consideration needs to be given to the impacts of fuel quality and any future introduction of biofuel use in NZ on the ability to meet the improved emission standards
6. We recommend that an implementation timeframe for requiring stronger emissions standards equivalent to or better than the Euro 7/VII emission standards for light and heavy-duty vehicles is set under this current amendment with a date of no later than 1 January 2030.

Prepared by Regional Council representatives:
Jonathan Caldwell, s 9(2)(a) Tamsin Mitchell, Joao Paulo Silva and Clare Pattison
(on behalf of the National Air Quality Working Group of Te Uru Kahika

Out of Scope

From: s 9(2)(a)
Sent: Tuesday, 20 June 2023 4:16 pm
To: Emissions
Subject: RE: Information Sessions: The impacts of implementing the Euro 6/VI emissions standards on equity

Hi Matthew,

Thank you for providing the Euro 6 information workshops. I have found them useful and enlightening. However, I believe that the cost assumptions presented in the most recent workshop regarding new vehicles are not accurate, in fact we believe they are quite seriously understated and the cost-up would be much higher.

As a distributor for Toyota in New Zealand, we primarily take products that are destined for the Australian market due to our alignment with their regulatory and compliance aspects. As Australia is considered a relatively small market globally, and NZ is much smaller than them, it is difficult for us to dictate unique manufacturing requirements for our part of the world unless Australia require those changes as well, therefore, aligning with Australia is crucial.

The proposal to introduce Euro 6D ahead of Australia puts us out of step with the planned development, production and allocation for our part of the world. While it may seem straightforward for a global company to source the necessary product to fulfil our needs, the reality is very different. Sourcing vehicles from Europe is not viable as the market is predominantly left-hand drive and does not share many of the models we need in New Zealand. Additionally, the adoption of Euro 6D in the production processes of our traditional supply markets (Japan, Thailand, US) is complex and expensive, and we do not have sufficient volume to offset the per-unit cost of implementation. As a result, our cars will incur additional costs to build, which cannot be absorbed by either the manufacturer or distributor and will ultimately be passed on to the consumer.

We expect that the vehicle cost will increase three to four times the assumptions presented in the workshop for both gasoline and diesel variants if the vehicle requires additional development to achieve the requisite standard. Most vehicles that currently meet Euro 5 will require a change to the exhaust after-treatment, as well as major redevelopment of the engine control system to comply. In some instances, the vehicle may require a powertrain change if the engine architecture cannot be adapted to comply. In either example, the vehicle will need to be re-homologated to satisfy the compliance standards necessary for importation and sale in New Zealand. The complexity and cost means that some models will drop from our line-up. In our case, we know that three models will need to be discontinued.

While we understand and support the need to implement current emissions standards, the proposed timeline and associated costs present significant challenges for the industry and may actually have a paradoxical effect of decreasing air quality by increasing the average age of the vehicle fleet.

Regards

s 9(2)(a)
Manager - Product Planning & Accessories, Product Planning | Toyota New Zealand Limited
s 9(2)(a) | toyota.co.nz
29 Roberts Line, Palmerston North 4414 | PO Box 46, Palmerston North Central, Palmerston North 4440, New Zealand

Fonterra submission on Euro 6/VI vehicle emissions standards consultation

June 2023

Fonterra welcomes the opportunity to comment on proposed changes to the Land Transport Rule: Vehicle Exhaust Emissions 2007 with respect to Euro 6/VI vehicle emissions standards. We trust this submission will provide constructive feedback to enable the implementation of effective regulations.

Fonterra is a dairy co-operative owned by around 9,000 New Zealand farming families with 27 manufacturing sites spread across the country, making us the country's largest exporter and a major supplier of dairy products to the domestic market.

Fonterra operates 462 milk collection tankers 24 hours per day at our busiest time of the year. We have a fleet of 37 additional contingency tankers to allow for servicing, repairs and to ensure we can always collect our farmers' milk. In addition, we also operate 4 higher productivity (HPMV) bulk units on dedicated routes.

To support the movement of bulk liquid between our manufacturing sites, we manage around 150 contractor road movements across the country and a twice-daily train, transporting milk between Longburn and Whareroa.

Our tankers will travel approximately 95 million kilometres per annum. During peak milk season, our 499-strong tanker fleet is on the road day and night, picking up a vat of milk every nine seconds around the country.

Fonterra continues to invest and develop ways to reduce the environmental footprint of our fleet. We are doing this through driver training, a focus on fuel efficiency, optimising tanker routing, moving to higher productivity vehicles (HPMV) and purchasing Euro 6 emission standard vehicles. We currently have 156 HPMV tankers in our current fleet, with 35 meeting Euro 6/VI emissions standards. From the next financial year, all new tankers coming into our fleet will meet Euro 6/VI emissions standards.

With our seven-year turnover of trucks, we are contributing to the second-hand truck market in New Zealand and our early shift to Euro 6/VI emissions standards will help the wider uptake of these vehicles over the coming decade.

Fonterra has also begun transitioning our heavy vehicle fleet, with New Zealand's first electric milk tanker launched last year and a smaller electric truck operating within our Fonterra Brands New Zealand (FBNZ) fleet. The tanker, named Milk-E, uses drop-in electric batteries which take six minutes to switch, so we aren't reliant on charging stations beyond our depots.

Initial results from both trials are encouraging and in the case of Milk-E, we're now confident that we will be able to integrate electric tankers into our fleet successfully. We're considering further electrification of our heavy vehicle fleet and expect to trial alternative truck configurations and charging models soon.

Comment on proposals

Fonterra supports the proposals requiring stronger emission standard for heavy vehicles that aligns with the Euro 6/VI standard. We consider that the proposed timeframes for moving to Euro 6/VI are reasonable,

particularly as there are likely to be other operators who need more time to manage supply chain constraints before shifting to Euro 6/VI.

We are concerned about the utilisation of equipment to remove emissions controls that can enable heavy vehicles to meet the Euro V & VI standards and recommend officials continue to look at this. s 9(2)(ba)(i)

We would support a change to the Land Transport Rule: Vehicle Exhaust Emissions 2007 to ensure that vehicles imported continue to maintain the standard and the gaps are closed.

We would be happy to share further information with officials if that would be beneficial.

By email

21 June 2023

Te Manatū Waka—Ministry of Transport
Email: emissions@transport.govt.nz

Tēnā koutou

RE: Submission on the Land Transport Rule: Vehicle Exhaust Emissions 2007 – the 'Vehicle Exhaust Emissions Amendment Rule'

Greater Wellington Regional Council (Greater Wellington) would like to thank Te Manatū Waka—Ministry of Transport for the opportunity to provide feedback on the proposed changes to the Land Transport Rule: Vehicle Exhaust Emissions 2007, the 'Vehicle Exhaust Emissions Amendment Rule' (the Amendment Rule).

Greater Wellington welcomes the four proposals set out in the Amendment Rule. Motor vehicle emissions are a significant source of air pollution in our region, estimated to have social costs of $852 million per year arising not only from direct health system costs but also from loss of life, lost quality of life, and lost productivity.[1] We support bringing stronger vehicle emissions standards to Aotearoa New Zealand that will in turn improve health outcomes and air quality.

By phasing in the shift from Euro 5/V to Euro 6/VI vehicle emissions standards, the proposals in the Amendment Rule complement strategic objectives and activities that are already in motion in the region:

1. The Wellington Regional Land Transport Plan 2021-31 (the RLTP) sets a headline target of reducing transport-generated emissions in the Wellington region by 35 percent within the next ten years.
2. The RLTP sets the objective of minimising the impact of transport and travel on the environment. Achieving this objective includes advocating for and supporting initiatives that contribute to the ongoing improvement of the vehicle fleet to reduce greenhouse gas emissions and improve air quality, including uptake of electric vehicles, alternative fuel options and improved fuel efficiency.

[1] Kuschel et al (2022). *Health and air pollution in New Zealand 2016 (HAPINZ 3.0): Volume 1 – Finding and implications.* HAPINZ-3.0-Findings-and-implications.pdf (environment.govt.nz)

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3. Decarbonising the public transport vehicle fleet is one of the priority investment areas in the RLTP. Activities include the conversion of double-decker diesel buses used to deliver Metlink public transport services to electric vehicles (currently underway), and to grow the electric vehicle bus fleet between now and 2031. Greater Wellington's policy is for all new buses purchased post-2021 to be zero-emissions vehicles.

Greater Wellington agrees that the Amendment Rule marks an important step to improve air quality and reduce the overall social costs caused by vehicle fleet emissions. Although the improvements in air quality from the Amendment Rule will be gradual, improving emission standards can have a large local impact. Air monitoring along our inner-city bus corridor demonstrated substantial improvement in air quality as Euro 3/III and Euro 5/V buses have been progressively replaced by electric vehicle buses.[2]

In noting the Amendment Rule's proposed lead times that phase in Euro 6/VI between the end of 2024 and the beginning of 2028, we would also encourage the Ministry of Transport to consider bringing forward the implementation of Euro 7/VII vehicle emissions standards. As noted by the Ministry of Transport in the consultation document, Euro 7/VII is the next generation of stronger standards that are the focus of auto-markets in China, Europe, and the United States between now and 2027. Given the impact that the standards of the vehicle fleet can have on the emissions reduction target, Greater Wellington sees great environmental and social benefits in bringing forward the implementation of the stronger vehicle emissions standards of Euro 7/VII.

We appreciate this opportunity to provide feedback on the Amendment Rule. For future discussion, please contact:

Grant Fletcher, Manager, Regional Transport
s 9(2)(a)

Ngā mihi

Luke Troy
General Manager, Strategy | Kaiwhakahaere Matua, Rautaki

[2] Greater Wellington Regional Council (2022). *Metlink bus fleet emissions 2021/22: Environmental impacts annual summary*. https://www.gw.govt.nz/assets/Documents/2022/10/Metlink-bus-emissions-annual-report-2021_22.pdf

Out of Scope

From: Andrea Davies s 9(2)(a)
Sent: Wednesday, 21 June 2023 11:05 am
To: Emissions
Subject: Support for VIA's submission on proposed Amendments to Vehicle Exhaust Emissions Rule

Dear Sir/Madam,

I am writing to express my support for the Imported Motor Vehicle Industry Association (VIA)'s submission on the proposed amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007. I understand and support the government's efforts to reduce noxious emissions and minimise harm caused by vehicles. I believe it is essential to consider the points raised by VIA to achieve these objectives.

VIA's submission emphasises the need to prioritise total harm reduction, maintain a fair market, and address the transport needs of New Zealanders. I fully support VIA's position on these matters. It is crucial to reduce noxious emissions and their detrimental effects on public health. As responsible members of industry, it is our duty to supply vehicles that minimise total harm.

I understand that VIA supports most of the proposed policy but has concerns about certain factual errors. VIA has offered corrections, particularly regarding the equivalency between Euro and Japanese standards. VIA has provided a quantified model that compares the equivalency of standards and argue that policies should be adjusted accordingly. I urge the government to carefully consider these corrections and make the necessary adjustments to ensure a fair market and equity.

VIA has also offered a more radical redesign of the proposed standard that would lead to even more harm reduction. This approach prioritises harm reduction by proportionally restricting vehicles based on the amount of harm they cause. I believe that this approach would be beneficial in achieving a greater reduction in overall harm and facilitating a smooth transition to the strategies used in Euro 7.

In conclusion, I believe that the objectives of reducing noxious emissions and minimising harm caused by vehicles are of utmost importance. I encourage the government to consider VIA's suggestions, make the necessary adjustments to ensure effective legislation that achieves its objectives.

Thank you for considering my views on this matter.

Yours sincerely,
Andrea Davies

Andrea Davies
Chief Financial Officer
AUTOHUB NEW ZEALAND LTD

s 9(2)(a)

WWW.AUTOHUB.CO.NZ

Out of Scope

From: Jason Wood s 9(2)(a) >
Sent: Wednesday, 21 June 2023 3:05 pm
To: Emissions
Subject: Support for VIA's submission on proposed Amendments to Vehicle Exhaust Emissions Rule

Dear Sir/Madam,
I am writing to express my support for the Imported Motor Vehicle Industry Association (VIA)'s submission on the proposed amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007. I understand and support the government's efforts to reduce noxious emissions and minimise harm caused by vehicles. I believe it is essential to consider the points raised by VIA to achieve these objectives.
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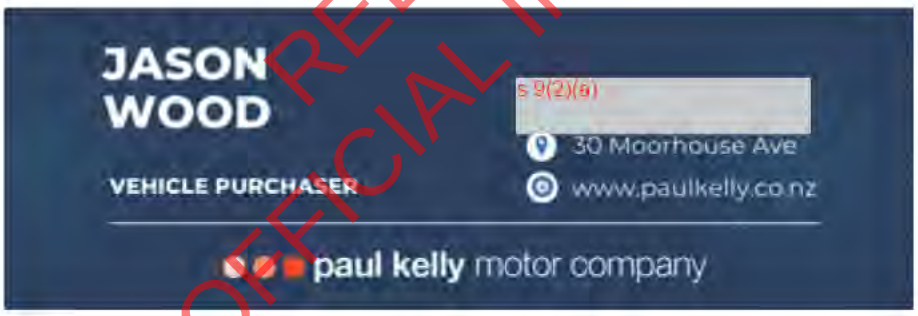
In conclusion, I believe that the objectives of reducing noxious emissions and minimising harm caused by vehicles are of utmost importance. I encourage the government to consider VIA's suggestions, make the necessary adjustments to ensure effective legislation that achieves its objectives.
Thank you for considering my views on this matter.
Yours sincerely,



XX June 2023

To Te Manatū Waka Ministry of Transport

Please find below DPA's submission on the Consultation on Euro 6/VI vehicle emissions standards.

For any further inquiries, please contact:

policy@dpa.org.nz

Introducing Disabled Persons Assembly NZ

We work on systemic change for the equity of disabled people

Disabled Persons Assembly NZ (DPA) is a not-for-profit pan-impairment Disabled People's Organisation run by and for disabled people.

We recognise:

- Māori as Tangata Whenua and Te Tiriti o Waitangi as the founding document of Aotearoa New Zealand;
- disabled people as experts on their own lives;
- the Social Model of Disability as the guiding principle for interpreting disability and impairment;
- the United Nations Convention on the Rights of Persons with Disabilities as the basis for disabled people's relationship with the State;
- the New Zealand Disability Strategy as Government agencies' guide on disability issues; and
- the Enabling Good Lives Principles, Whāia Te Ao Mārama: Māori Disability Action Plan, and Faiva Ora: National Pasifika Disability Plan as avenues to disabled people gaining greater choice and control over their lives and supports.

We drive systemic change through:

- **Leadership:** reflecting the collective voice of disabled people, locally, nationally and internationally.
- **Information and advice:** informing and advising on policies impacting on the lives of disabled people.
- **Advocacy:** supporting disabled people to have a voice, including a collective voice, in society.
- **Monitoring:** monitoring and giving feedback on existing laws, policies and practices about and relevant to disabled people.

United Nations Convention on the Rights of Persons with Disabilities

DPA was influential in creating the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD),[1] a foundational document for disabled people which New Zealand has signed and ratified, confirming that disabled people must have the same human rights as everyone else. All state bodies in New Zealand, including local and regional government, have a responsibility to uphold the principles and articles of this convention. There are a number of UNCRPD articles particularly relevant to this submission, including:

- **Article 9: Accessibility**
- **Article 19: Living independently and being included in the community**
- **Article 20: Personal mobility**
- **Article 25: Health**

New Zealand Disability Strategy 2016-2026

Since ratifying the UNCRPD, the New Zealand Government has established a Disability Strategy[2] to guide the work of government agencies on disability issues. The vision is that New Zealand be a non-disabling society, where disabled people have equal opportunity to achieve their goals and aspirations, and that all of New Zealand works together to make this happen. It identifies eight outcome areas

[1] United Nations. (2006). *United Nations Convention on the Rights of People with Disabilities.* Retrieved from: https://www.un.org/disabilities/documents/convention/convoptprot-e.pdf
[2] Office for Disability Issues. (2016). *New Zealand Disability Strategy.* Retrieved from: https://www.odi.govt.nz/nz-disability-strategy/

contributing to achieving this vision. There are a number of Strategy outcomes particularly relevant to this submission, including:

- **Outcome 3 – Health and wellbeing**
- **Outcome 5 – Accessibility**

The Submission

Whilst DPA agrees that Aotearoa New Zealand needs to reduce the harmful emissions emitted by motor vehicles, we do not believe that disabled people, who are amongst the most transport disadvantaged in our population, should be further marginalised through regulations that will make it more expensive to purchase disability adapted vehicles.

Whilst we accept that Aotearoa New Zealand still permits Euro 5/V for new vehicle imports and Euro 4/IV for used vehicle imports (and is therefore falling two to three generations behind other major markets), we can't accept that disabled people should pay for this lack of timely emissions regulation.

We understand that requiring vehicle imports to meet a stronger emissions standard is a key tool in reducing the health impacts from domestic motor vehicle pollution, but again we argue that disabled people should not pay the price of Aotearoa New Zealand's failure to regulate sooner.

Key Issues for disabled People

The moving to a stronger emisions standard for vehicles adapted for disabled people in 2028 will increase the anomaly between adapted vehicles paid for by ACC and

those self-funded, often using Lottery Grants. By 2028 no second hand vans of the type use at present for self-funded Lotteries grant clients will be allowed into the country. At this point only new low emission vans, or vans less than 4 years old with low emissions profiles will be allowed to be imported.

This will mean that by 2028 MoH funded clients will likely have no affordable options to own their own adapted vans. Transport options for disabled people not funded through ACC are severely limited, compared to the OECD countries to which we are being compared in the area of vehicle emissions.

- MOT compared Aotearoa to: The UK, where disabled people are funded a new vehicle through Motability every 5 years, as of right. And public transport options are plentiful and accessible in most urban areas.
- The USA, where veterans receive a new vehicle every 2 years and others get a vehicle according to their health insurance and any litigation taken against those who have caused their injury. On top of this, urban areas have Paratransit: accessible minivans which can be booked at short notice. Depending on the urban area local public transport can also be plentiful and accessible.
- Australia, where 20% of all taxi fleets must be accessible to wheelchair passengers, and NDIS gives people the option to fund their own vehicle.
- Europe – where some of the most innovative personal transport options are available.

It is Incorrect for MoT and Waka Kotahi to assume disabled New Zealanders have similar options to those mentioned above. Instead, for people who receive disability support services funded through Whaikaha who need to travel in their wheelchair NZ has:

- Very limited accessible public transport, eg in recent times there was *no accessible bus* from Wellington airport into the city, and the local accessible taxi service is unreliable.
- Public transport in NZ is unreliable. Due to a lack of suitable drivers at present, thousands of journeys per day are being cut.
- Trains within Auckland on certain lines have been stopped for over a year, while Kiwirail upgrades the tracks.
- There is no official legal requirement for NZ Taxi Companies, or Companion Driving Services to have a certain proportion of their fleet accessible to passengers who use wheelchairs. Eg There is just one wheelchair taxi available in the whole of the Southern Lakes area.
- Where taxi companies do have mobility taxis, these are most often run on a contract model. Ie the contractor owns the mobility van, they choose whether they want the particular job, they cancel whenever they wish, and they have no obligation to work all or any of the jobs. (This is the nature of being a

Contractor, but it provides no certainty or trust for wheelchair users.) It is not uncommon for Christchurch wheelchair users to book a taxi from Christchurch airport to home when they fly in from overseas. Then when they arrive at midnight they find, after repeated phonecalls, that the contract taxi driver has decided not to fulfil that booking, or they say they 'can't drive because they have already done too many hours today'.

- Often NZ wheelchair taxis provide regular school run services or services taking other disabled people to day programmes. Because of this, many wheelchair users can only book rides between 10am and 2pm. The DPA MRCagney Waka Kotahi research highlighted that wheelchair users often struggle to book rides after 5pmin the evening, as this is when the contractor taxi drivers choose to stop being available.
- Disability Vehicle Rental Companies provide temporary hire vehicles driven by family / caregivers for those without their own transport. (Especially if they need to travel out of their immediate locality.) However, the ESC importation laws have severely curtailed the ability of these companies to find suitable fleet vehicles, where the daily rental rate is affordable. Recent scarcity of vehicles have led to companies carrying out vehicle adaptations to for example gut campervans to rent them as disability adapted vans.
- Wheelchair users who do not drive can apply to the Lotteries board for funding for a wheelchair van of their own. There are decisions made on the applications every 2 months. Only a third of the applications are successful. In a successful application one of the strongest criteria is to look to see whether the applicant is highly involved in their community and 'giving back'. This is, of course, a 'chicken and egg situation'. (How can the wheelchair user get out into the community to 'give back' when they have little to no transport to do so?)
- Lotto/Enable funded van applicants were for 20 years given $31 000. For the last ten years this has not covered the cost of a base vehicle and the modifications needed. Applicants would resort to 'give a little' pages, asking Service clubs for help, or getting a bank loan in order to raise the amount needed for an adapted van. In order to almost fit the available funds, Lotto/Enable base vans are often 10-12 years old and under 150km. When the ESC importation rules kicked in, base vans became very scarce and difficult to procure. strong applications to the Ministry of Internal Affairs were made and the base amount was put up to $41 000. Howeverwe understand that , this proved still not enough to cover the costs for an adapted van, or to make the modifier/importer even a tiny profit. There was an importation exemption for MoH funded wheelchair van users, however the time taken to process these exemptions by NZTA was so long as to be in reality unaffordable, so, all the small businesses involved in importing these vans stopped doing this type of work. To our knowledge, there is only one major mobility van importer still bringing vans into the country.

As explained in the previous paragraph, adapted vehicles for disabled people who receive disability support services through Whaikaha have become much less plentiful and affordable in the last 4 years since Government ESC import restrictions changed the landscape. Wheelchair users are more disadvantaged than they have been, say, 10 years ago.

We do not believe that the model of needing to import 10-12 year old base vans for these vehicle modifications will be feasible in 2028, when, in theory, Euro 6

emissions requirements will begin. NZ will not be able to import 10-12 year old Japanese vans (as their emissions standards are weaker) and at $41 000, including aftermarket LVVTA modifications, it will be unaffordable to bring in new or several-year-old vans.

Phase In Dates

DPA acknowledges that Te Manatū Waka Ministry of Transport have set the date for new and used vehicles adapted for disabled people to meet the Euro6 standard to the latest point of their phased in dates, however we do not believe that this is sufficient to prevent further transport disadvantage to disabled people.

Whilst it is probably not a major issue for new disability adapted vehicles most often funded by ACC, it will be a significant barrier to those who have to self-fund such vehicles. It will make it more expensive to bring such vehicles into the country.

Alternative Approach

Rather than making disabled people pay more for adapted vehicles (the stick), DPA supports an approach that would provide rebates and grants to disabled people who buy or change to less polluting vehicles (the carrot). This is an approach that would reduce the transport disadvantage faced by some disabled people rather than widen it.

As part of this approach we urge the Ministry to set up a group including disabled people and our organisations and industry experts, to work out the best incentives and levers to incentivise disabled people to purchase less polluting vehicles; and to import and adapt less polluting vehicles at the most affordable price and with minimum waiting times.

21 June 2023

Dear Sir/Madam

Bay of Plenty Regional Council's submission to proposed amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007

Thank you for the opportunity to comment on the above submission. The Bay of Plenty Regional Council does not wish to be heard on this submission.

For matters relating to this submission, please contact s 9(2)(a)

Our Organisation

The Bay of Plenty Regional Council is responsible for the sustainable management of resources within the Bay of Plenty region. Our role is determined by Central Government through statutes such as the Local Government Act and the Resource Management Act, and is different from that of territorial authorities (district and city councils). Some of our key roles are:

- Regional planning for land, water quality and air quality;
- Setting environmental management policies for the region;
- Allocation of natural resources;
- Flood control;
- Natural hazard response;
- Soil conservation;
- Pest control / biosecurity;
- Public transport;
- Strategic transport planning;
- Regional economic development; and
- Strategic integration of land use and infrastructure.

Summary

Our submission (**attached**) has been prepared by staff from the Bay of Plenty Regional Council who have made specific comments on the consultation document, focussing on the significant benefits for air quality by reducing vehicle emissions and consequently improving human health in our region. We trust you find them constructive.

Yours sincerely

Stephen Lamb
Environmental Strategy Manager

Objective ID: A4401685

Submission on the proposed amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007

Bay of Plenty Regional Council supports the intent of the proposed changes to the Land Transport Rule: Vehicle Exhaust Emissions 2007 with regards to introduction of Euro 6/VI emission standards (or equivalent) for light and heavy vehicles and Euro 5 emission standards (or equivalent) for motorbikes and mopeds.

In addition, Bay of Plenty Regional Council is in support of any initiative that reduces transport emissions, as it achieves the following objective from the Bay of Plenty Regional Land Transport Plan 2021-2031:

> *Objective 2 - The health damaging effects of transport are minimised, such as noise, air pollution and stormwater run-off.*

Furthermore, the release of updated World Health Organisation air quality guidelines in 2021, and the Health and Air Pollution in NZ study (HAPINZ 3.0) in 2022 has highlighted the importance of reducing $PM_{2\,5}$ and NO_2 emissions, particularly from transport. Vehicle emissions are noted as being the leading source of anthropogenic NO_2 in New Zealand.

The consultation document notes that New Zealand's emission standards are currently less stringent than other advanced economies. Given that such standards are generally formulated in conjunction with World Health Organisation data, it seems advisable for this country to be aligned as closely as possible to countries with which we compare ourselves to maximise health benefits for New Zealanders.

Bay of Plenty Regional Council has a limited ability to manage transport emissions, so staff appreciate the opportunity to submit on this proposal with its estimates of substantial reductions in harmful emissions and associated social cost savings.

Based on figures cited in the Euro 6/VI evaluation study, the proposed amendments look likely to result in substantial improvements for fine particulate matter (PM_{10} and $PM_{2.5}$) as well as for NO_2, SO_2 and CO, which are other contaminants subject to the National Environmental Standards for Air Quality (NESAQ) due to their health impacts.

Vehicles are a significant source of air pollution, especially in the most densely populated areas of New Zealand. As the consultation document notes, air pollution can cause significant health effects, notably to the respiratory system, and lead to premature death. Contaminants such as NO_2 are becoming recognised as being particularly hazardous.

Bay of Plenty Regional Council is proposing to install several NO_2 monitors in residential locations in the Mount Maunganui area as it is considered vital to monitor and manage harmful contaminants within the Mount Maunganui Airshed (MMA), which has a long history of air quality complaints, and has a polluted status for PM_{10} under the NESAQ.

HAPINZ 3.0 notes that the Bay of Plenty region alone experienced 130 premature deaths for people aged 30+ from NO_2 in 2016, and that the social cost in financial terms from vehicle emissions of $PM_{2.5}$ and NO_2 totalled $678,560,884.

A quick summary of Waka Kotahi-collected NO_2 data (Figure 1 & 2) highlights that for some locations within the Bay of Plenty region levels are well above the latest WHO air quality guideline levels.

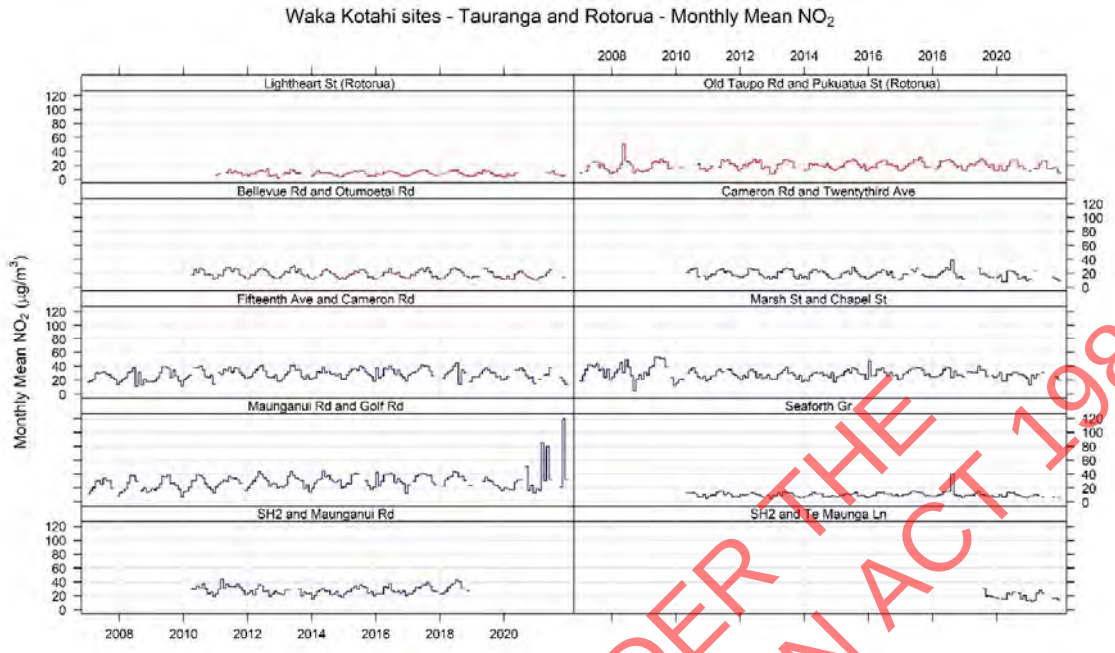


Figure 1. Monthly NO_2 data from Bay of Plenty Waka Kotahi monitoring sites.

Figure 2. Annual NO_2 data from Bay of Plenty Waka Kotahi monitoring sites, with WHO guideline values.

Fine particulate matter ($PM_{2.5}$) data from one of the Bay of Plenty Regional Council sites at Mount Maunganui (Figure 3) shows an influence of transport emissions with a bimodal diurnal pattern which aligns well with traffic volume patterns.

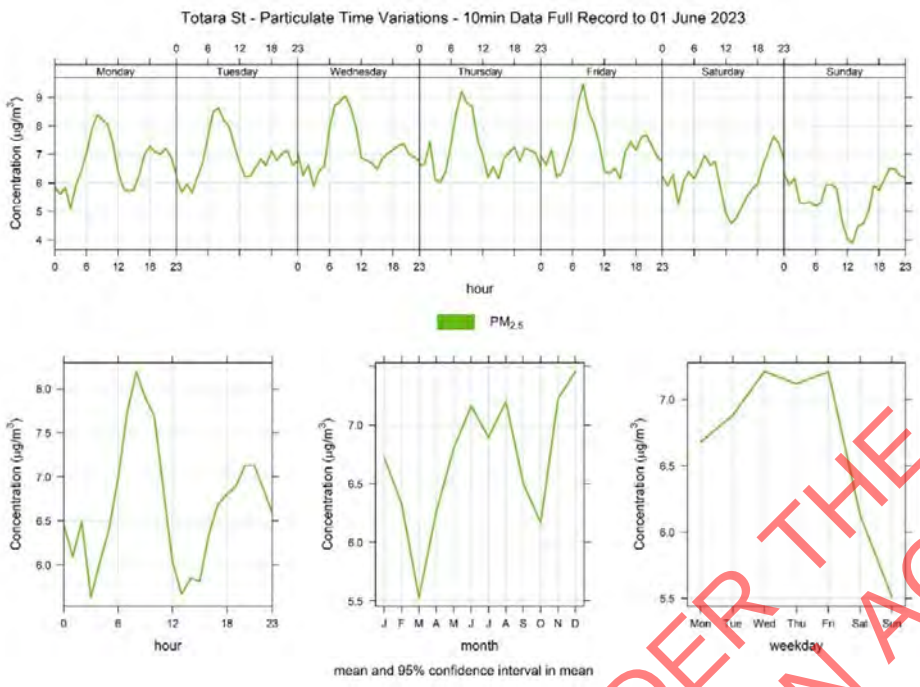


Figure 3. Time variation plot for $PM_{2.5}$ dataset at Totara Street monitoring site, Mount Maunganui.

$PM_{2.5}$ reductions are an important part of Council management strategies as levels at all monitoring sites (Figure 4) are above the WHO annual guideline (although Edmund Road and Moses Road are dominated by emissions from domestic heating).

Figure 4. Annual $PM_{2.5}$ values for Bay of Plenty monitoring sites.

While any population exposed to air pollution may experience health effects, the greatest impact is likely to be borne disproportionately by lower socio-economic groups which are more likely to contain vulnerable members and live close to busy transport corridors. The residents

of marae near busy transport routes, due to their connection with ancestral land, have few options to relocate from their whenua, and so are exposed to air pollution on a near-constant basis.

Non-residents such as students and teaching staff, and the employees and customers of businesses along these corridors may also exposed to emissions for extended periods. Sporting facilities, both local and those which hold international fixtures such as the Tauranga Hockey Centre and the Bay Oval, can host hundreds or thousands of players and spectators. They then are exposed to the vehicle emissions from nearby busy roads for many hours at a time. Furthermore, main transport corridors are frequently multi-modal with cycleways and footpaths situated besides the road, meaning pedestrians and cyclists must travel very close to vehicles and their emissions.

In 2022, Bay of Plenty Regional Council commissioned an emission inventory to assess quantities and sources of discharges to air across the Bay of Plenty region. The inventory included key contaminants and the contribution made by various leading sources of emissions to the estimated total annual volume of each contaminant.

Table 1. Contaminants from motor vehicle emissions as a percentage of Bay of Plenty total volume, per annum

Contaminant	**% of annual volume emitted by motor vehicles**
PM_{10}	6%
CO	17%
SO_2	<1%
NO_x	53%

The figures in Table 1 show that vehicle emissions make varying contributions to the annual regional total of the identified contaminants. However, every contribution of an emission to an overall total can be significant, especially when the emission is a harmful contaminant and cumulative contaminant exposures are not well understood. This is also true when the scenario of a polluted airshed, such as the MMA, is considered, with its strictly observed threshold concentrations. The Bay of Plenty Regional Council is undertaking various efforts to reduce particulate matter emissions from industrial sources in the MMA, so any reductions to PM_{10} and $PM_{2.5}$ volumes from motor vehicles are a valuable contribution to efforts to improve the overall air quality.

The social costs savings of more than $6 billion to 2050 expected of the proposed changes to the vehicle emissions standard against costs of less than $200 million offer a sizable cost-benefit ratio. Furthermore, the benefits will be enjoyed by the wider population, while the costs are incurred by owners of vehicles responsible for emissions.

Buses used for public transport are already required to meet Euro VI, with more stringent zero carbon emission changes to be introduced. By requiring other heavy vehicles to meet a lower emission standard ensures a more equitable approach to the management of transport emissions.

Bay of Plenty Regional Council strongly supports the introduction of these proposed amendments due to the reduction in harmful emissions that they look likely to deliver to the wider population. Consequently, it would be advantageous to introduce the amendments as soon as is practicable to deliver air quality improvements as quickly as possible.

Furthermore, to ensure ongoing reductions in vehicle emissions, it would be advisable for future standards such as Euro7/VII (or equivalent) to be included on an implementation timeframe to ensure a pathway for their accession in New Zealand.

Finally, Bay of Plenty Regional Council submits in favour of the proposed amendments excluding standards 5BA and CBA from the Japanese emission standards, which impose a lesser requirement to reduce harmful emissions. Given that Japan is a leading exporter of vehicles to New Zealand, the benefits of lower vehicle emissions are maximised if all emission standards are aligned as closely as possible to the current Euro (or equivalent) standards.

Ref: A1801752

Otago Regional Council

Ministry of Transport Te Manatu Waka
Ministry of Transport
3 Queens Wharf
Wellington 6011

20 June 2023

Via EMAIL: emissions@transport.govt.nz

Otago Regional Council submission on the Ministry of Transport's Land Transport Rule Vehicle Exhaust Emissions Amendment 2023

Introduction
Otago Regional Council (ORC) understands the Ministry of Transport's (the Ministry) proposed changes are promoted to reduce emissions from motor vehicles of particulate matter (PM2.5) and nitrogen oxides (NOx). Exposure to these harmful emissions has been linked as a cause of significant harm to human health and have been found to contribute to premature deaths. Within Otago, health modelling identifies Dunedin as having some of the highest numbers of premature deaths due to human made particulate matter and NO_2 in New Zealand.

Emissions from vehicles are also a greenhouse gas source (as carbon dioxide) which contributes to adverse climate change impacts.

The proposed changes to the vehicle exhaust emissions rules will align New Zealand with all other developed countries who have already moved to more stringent standards, including Australia, to address adverse impacts on human health and the environment.

Alignment with ORC's strategic direction and policy framework
Otago Regional Council is responsible for sustainably managing Otago's natural resources of land, air and water on behalf of our community, and for taking a lead role in responding to issues that affect Otago and our communities' well-being.

The council's vision for Otago includes:
- Our environment supports healthy people and ecosystems; and
- Our communities are resilient in the face of climate change.

As part of this strategic direction, the council has committed to:

- Lead a regional approach to climate to enable climate change mitigation and meeting New Zealand's emission targets.

In our notified Regional Policy Statement 2021, we have identified as an integrated management objective:

- ***IM-O3 - Environmentally sustainable impact***
  Otago's communities carry out their activities in a way that preserves environmental integrity, form, function, and resilience, so that the life-supporting capacities of air, water, soil, ecosystems, and indigenous biodiversity endure for future generations.

This objective is supported by the following policies:

- ***IM–P9 – Community response to climate change impacts***
  By 2030 Otago's communities have established responses for adapting to the impacts of climate change, are adjusting their lifestyles to follow them, and are reducing their greenhouse gas emissions to achieve net-zero carbon emissions by 2050.

- ***IM-P10 - Climate change adaptation and mitigation***

  Identify and implement climate change adaptation and mitigation methods for Otago that: (1) minimise the effects of climate change processes or risks to existing activities,
  (2) prioritise avoiding the establishment of new activities in areas subject to risk from the effects of climate change, unless those activities reduce, or are resilient to, those risks, and
  (3) provide Otago's communities, including Kāi Tahu, with the best chance to thrive, even under the most extreme climate change scenarios.

Conclusion
ORC recognises the proposed amendment will require a transition period to enable the vehicle industry time to prepare and adjust for new standards. We would ask the Ministry if there are other options to implement system improvements to support efforts to reduce the impacts of vehicle emissions.

ORC requests the Ministry to consider if New Zealand's vehicle warrant of fitness programme has a greater ability to ensure vehicles maintain the emission standard they are designed to while warranted for use on New Zealand's roads noting there may be appropriate exemptions (i.e. farmland vehicles, certain classifications of vintage or classic cars).

ORC supports the overall objective of the Ministry's proposed Land Transport Rule Vehicle Exhaust Emissions Amendment 2023 to reduce harmful levels of PM2.5 and NOx emissions from New Zealand's vehicle fleet. ORC strategic directions and proposed regional policy framework align with the Ministry's reasons for shifting to

the Euro 6/VI standard and we recognise the shift will better align New Zealand with the standards adopted by other developed countries.

A reduction in PM2.5 and NOx levels will assist in improving the protection of Otago communities' health and safety and contribute to increasing their resilience and adaptation to climate change, and social and environmental well-being.

If there is an opportunity, ORC would like to be heard in support of our submission.

Yours sincerely

Gretchen Robertson
Chairperson

Living Streets Aotearoa

www.livingstreets.org.nz

Proposed changes to the Land Transport Rule: Vehicle Exhaust Emissions 2007

Living Streets Aotearoa is the New Zealand organisation for people on foot, promoting walking-friendly communities. We are a nationwide organisation with local branches and affiliates throughout New Zealand.

We want more people walking and enjoying public spaces be they young or old, fast or slow, whether walking, sitting, commuting, shopping, between appointments, or out on the streets for exercise, for leisure or for pleasure.

Our submission covers the general intent of proposed changes to the Land Transport Rule relating to Vehicle Exhaust Emissions.

We acknowledge that the overview for this consultation highlights the significant impacts of emissions on human health. In addition, poor air quality can also reduce the amenity of walking and is likely to affect transport mode choice.

The proposed changes will assist in reducing the negative externality of private car use for people walking and enjoying public spaces.

Living Streets Aotearoa therefore **supports the proposed changes to make the emissions standards more stringent** for both used vehicles and new vehicles, **and supports a rapid shift to stronger emissions standards to improve air quality.**

Thank you for the opportunity to comment on this proposal.

Name: Robin Rawson
Organisation: Living Streets Aotearoa
Email: s 9(2)(a)

Submission to:

Ministry of Transport

on:

Proposed Amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007

Whakahoutanga kua Tāpaetia ki te Ture Kawenga Whenua: Tukuwaro Hau Kino Waka 2007

Prepared: 18 June 2023

Submitted: 22 June 2023

Email: emissions@transport.govt.nz

About VIA

The Imported Motor Vehicle Industry Association Incorporated ("VIA") is the business association that represents the interests of the wider trade involved in importing, preparing, wholesaling, and retailing used vehicles imported from Japan, UK, and other jurisdictions.

Our members include importers, wholesalers, Japanese auction companies and exporters, shipping companies, inspection agencies, KSDPs[1], ports companies, compliance shops and service providers to the trade, as well as retailers.

We provide legal and technical advice to the trade, and liaise closely with the relevant government departments, including New Zealand Transport Agency, Ministry of Transport, New Zealand Customs Service, Ministry for Primary Industries (MPI), Ministry of Consumer Affairs, Commerce Commission, EECA, MfE etc.

Contact

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s 9(2)(a)

s 9(2)(a)
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Official Information Act 1982:

VIA has no objection to the release of any part of this statement of support under the Official Information Act 1992.

Privacy Act 1993:

VIA has no objection to being identified as the submitter.

[1] KSDP - key service delivery partner, organisations that are contracted or appointed by the Transport Agency to delivery regulatory products or services and who have sufficient market share and/or are of sufficient size and standing within an industry segment to be able to represent and influence the customer expectation of that industry segment.

Contents

Executive Summary:

The Imported Motor Vehicle Industry Association (VIA) commends the Ministry of Transport for its proposed amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007. VIA acknowledges the importance of reducing noxious emissions and shares the goal of minimising harm caused by vehicles.

In this document, we present comprehensive feedback that focuses on light vehicles while advocating for a methodology that should be applied across all vehicle types. This submission will outline VIA's position, emphasising the need to prioritise harm reduction, maintain a fair market, and address the needs of New Zealanders.

VIA fully supports the objective of reducing noxious emissions and acknowledges the industry's duty to supply vehicles that minimise harm. The detrimental effects of noxious emissions on public health are undeniable, and it is our responsibility to contribute to their mitigation.

Unfortunately, while VIA supports most of the policy as proposed, there are several factual errors that we must address. We have offered corrections, specifically around the equivalency between Euro and Japanese standards. We have provided a quantified model that compares the equivalency of standards, and we argue that policies should be adjusted accordingly. Otherwise, we support the proposed timeline and are open to discussing further strategies to reduce harm from emissions.

Should the government proceed with currently assigned standard equivalencies, which seem arbitrary and biased towards EU standards, we must object to the current policy on grounds of market fairness and equity.

VIA supports the proposed timeline for transitioning to Euro 5 and Euro 6 standards, providing the government corrects their stated equivalencies between European and Japanese standards before proceeding with the policy.

Finally, in addition to offering a methodology for comparing standards, we offer a more radical suggestion. VIA proposes a redesign of the proposed standard that would lead to even more harm reduction in both the short and long term while maximising options for the public to transition to less harmful options.

The modified standard we propose would proportionally restrict vehicles based on the amount of harm they cause. Diesel vehicle emissions, known to cause more harm than petrol emissions, should be subject to stricter restrictions. By prioritising harm reduction, we can remove a higher percentage of more harmful vehicles, allowing consumers to opt for less harmful alternatives, for which there should remain a wider range of options. This approach ensures a greater reduction in overall harm and a smooth transition to the strategies used in Euro 7.

While our response primarily focuses on light vehicles, we firmly believe that the proposed methodology and arguments should be applied across all vehicle types. The goal of harm reduction should guide our decisions, ensuring that changes implemented yield the greatest benefit for the general public.

Introduction

The Ministry of Transport has invited submissions on proposed amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007. The Imported Motor Vehicle Industry Association (VIA) acknowledges the importance of reducing noxious emissions for the public good and expresses general agreement with the government's proposal and its intent. However, VIA raises concerns regarding the methodology used to compare emission standards. We also offer the blueprint of a more rational approach which would maximise the reduction in harm while minimising the negative impacts to car buyers.

We have based our arguments on logic, the desire for a fair market, and the needs of New Zealanders.

The policy as proposed contains several logical inconsistencies, such as references that do not necessarily support conclusions and standards that have not been applied evenly across importers. ***We would also like to note that although the used import industry is currently required to meet the Euro 4 standard, that does not necessarily mean that the vehicles we are currently importing only meet EU4 standards.*** **VIA understands that the majority of imported used vehicles already exceed Euro 5 standards.**

It is important to mention this logic because discussions with Ministry officials throughout the development of this policy strongly suggest that their priority is to create the ***appearance*** of improvement. We have real concerns that this approach; when paired with the lack of a well-developed methodology for comparing standards, simply reinforced biases and has led to unfounded conclusions.

As the rest of our submission will demonstrate, most used vehicles currently being imported from Japan not only meet but exceed requirements for Euro 5 and arguably even Euro 6.

The need to maintain a fair market is another crucial aspect of policy creation. Over the past decade, the new industry has been required to meet Euro 5. During this time, Euro 5 has been defined as equivalent to the baseline Japan 2005 standard. There was no mention of Japan 2005 Low Harm criteria.

The proposed amendment to the Vehicle Exhaust Emissions Rule, which is supposed to bring the used import industry up to the standard the new importers have been at is imposing a significantly more stringent standard. To quantify this, ***the standard that used importers are being asked to meet is in some cases over 35% more stringent than the one new car importers have been required to meet for the last decade.***

When considering the needs of New Zealanders, affordability and quality are essential factors. Adopting the standards as proposed far exceeds the stated intent. This would have the effect of increasing standards more quickly and while this might seem beneficial at first glance, the real-world outcomes would be less optimal. Moving standards too rapidly can lead to affordability constraints, limiting consumer choices to higher mileage or lower quality vehicles, or forcing them to simply keep their older vehicles longer. ***It is necessary to achieve the goal of reducing noxious emissions and the associated harm that a supply of cleaner and less polluting vehicles continue to replace the dirtier vehicles already in the fleet.***

It is worth noting that New Zealand is a low-income economy; this is especially concerning for the near future when we are in a cost-of-living crisis and a recession. The cost of vehicles is a significant factor in determining whether that supply of cleaner vehicles continues or if New Zealanders simply

retain their gross emitters because that is the only option they can afford. Increased costs and reduced options for buyers will have the inevitable consequence of further aging the fleet, not only negating the effort to reduce noxious emissions, but leading to increase harm from the inevitable degradation of older vehicles.

Furthermore, we would like to highlight the importance of providing a reasonable transition period for compliance with new emission standards. This will allow the industry and consumers to adjust to the new requirements and facilitate a smoother transition. We have in the past recommended a phased approach that considers the availability of compliant vehicles, technological advancements, and affordability for consumers.

Unfortunately, implementing stricter standards than were agreed upon, by requiring 35% more stringent standards than the phased approach demands, nullifies the benefits of that judicious transition period. ***The fact that most used imports already exceed Euro 5 and arguably Euro 6 requirements does not justify the application of standards that are both unfair and will limit options for the transition to less harmful vehicles.***

VIAs final disposition to this proposal will depend upon the final draft of the government's proposal.

If government accepts our quantified equivalency of standards and adjusts their policies appropriately, then we accept the current timeframes and would even be open to discussing accelerating them.

If the government proceeds with their currently assigned standard equivalencies which seem to us to be arbitrary and the result of a significant and unjustified bias toward the supremacy of European standards, then we would be forced to object to the current policy on the grounds of market fairness. Even though we recognise the importance of reducing emissions, we do have to represent our constituency and must, at minimum, demand fair consideration and treatment.

We believe that our argument, although intended to advocate for the used vehicle import industry, also advocates for lower income car buyers who need quality imports at a price they can afford.

This submission outlines our recommended changes to the proposed amendments, including offering the methodology and results of our harm-based modelling. This modelling quantifies and shows the equivalency between emission standards. Because we assume that the government has the intention of following the evidence, we offer two approaches to using the evidence we have provided:

The first is to implement the standard as proposed, with modifications focused on more accurately harmonising EU and Japanese standards. The majority of the submission focuses on this solution.

The second option is outlined in a counter proposal. This option offers a more aggressive application of harm reduction, increased social welfare, and a logical and pragmatic transition.

VIA's modelling

Over the past year, VIA has actively engaged with the Ministry, providing suggestions and feedback on the early thinking behind these proposed amendments.

During some of these discussions, we explored ways to ensure the effective comparison between standards. We hoped to see a quantified comparison in the discussion document, unfortunately, this was not provided. As a result, VIA has been forced to develop its own methodology to compare

emission standards, so we can provide honest and well researched responses to the governments proposal.

Our methodology involves applying harm ratings from the HAPINZ 3.0 report to emissions caps for specific gases specified by each standard (as shown in Table 1). This enables us to obtain a single comparand harm rating for each standard.

Pollutant	NZD/tonne	NZD/kg	NZD/g	Base Value Date	Source
PM2.5	$ 382,524.00	$ 382.52	$ 0.38	2022	HAPINZ 3.0
NOx	$ 186,037.00	$ 186.04	$ 0.19	2022	HAPINZ 3.0
SO2	$ 22,413.00	$ 22.41	$ 0.02	2022	HAPINZ 3.0
VOC	$ 880.00	$ 0.88	$ 0.00	2022	HAPINZ 3.0
CO2	$ 88.00	$ 0.09	$ 0.00	2021	NZ Treasury (2021)
CO	$ 2.78	$ 0.00	$ 0.00	2022	HAPINZ 3.0
NMHC					
HC+NOx					
THC					
THC-NOx					
NH3	$ 382,524.00	$ 382.52	$ 0.38		Converts to PM2.5

Table 1: Harm values used in VIA's modelling.

Then, we apply an emission test normalisation based on the normalisation equations specified by the ICCT for CO_2. These equations are currently used within the Clean Car Programme to normalise the ratings to the WLTC. This allows our model to account for the improvements in the emissions tests as they improve over time even if the emission caps do not change across different standards.

We do acknowledge the limitations of this method as the methodology it is based upon was focused specified on CO_2. Since the emissions are all a by-product of burning fuel, however, it is logical that a specific increase in CO_2 would see a similar increase in other gases produced by the burning of fuel. This is true for all gases except NO_x. The ICCT normalisation method may not be the best proxy for NO_x because NO_x is a byproduct of exposing the atmosphere to high temperatures, not a direct waste product of burning fuel. Nonetheless, we feel the potential margin of error falls within an acceptable range and at worst, slightly overestimates the harm from NO_x.

At present our model is the only quantification of standards that allows for comparison between them that we have seen. VIA is committed to working with the government to improve this methodology.

The role of harm in comparing standards

The purpose of emission standards is to cap the emission of noxious emissions. We want to limit noxious emissions because they cause harm to the public, as well as road users. Therefore, the ultimate purpose of emission standards is specifying a cap on harm.

We can conclude the correct way to compare emission standards from multiple jurisdictions that each have very different designs and strategies, is to compare that cap on harm. The higher the cap, the less effective the standard; the lower the cap, the more harm is limited.

Why we developed our own model

We developed the model because it was necessary to provide a fair and honest comparison between standards; it is crucial to adopt a methodology that allows for effective comparison. This is important

to assure the fair application of standards from multiple jurisdictions, important for both industry and public health.

During our discussions with the Ministry, we emphasised the importance of quantifying the quality and efficacy of international emission standards in a way that allows for effective comparison. Unfortunately, the consultation document did not provide the results of these discussions or a quantified comparison between standards. As a result, we were not supplied with the official means to compare the standards, nor are we provided with the methodology used by the government in its decision-making process. This is even after explicitly requesting such information on several occasions.

We assume, however, based upon the claims made by the government within the consultation document that their methodology for comparing standards was less accurate than ours and based largely upon the bias for policy makers for European standards. To illustrate, we note that at one point in the consultation document a claim is made about the quality of European standards versus Japanese standards,

> *"However, Euro VI (particularly later stages) is stronger due to real-world emissions testing and compliance requirements."*

This is followed by a reference to a supporting document, a report that presents the findings of a retrospective assessment of Euro 6/VI vehicle emission standards[2]. Interestingly, the only relevant comparison we could find in the document said the opposite:

> *"Korea and Japan have identical or more relaxed limits that{sic} the EU when it comes to CI vehicles but more stringent limits for PI vehicles, especially for NO_x."*

Elsewhere it also makes the point that Japan's emission testing does not include extra-high-speed cycle, but that's it for this document comparing the efficacy of standards between the EU and Japan. At best the reference document is moot on supporting the conclusion, at worst it actually suggests the opposite.

The quote above from the EU report does, however, support our modelling by suggesting that Japanese standards for diesels are equal or less than EU standards and that Japanese standards for petrol vehicles are actually more stringent than EU standards, especially when it comes to NO_x. This is exactly what we have seen in our modelling and analysis.

We had hoped that the government would work with us to develop a single source of truth when it comes to comparing emission standards. Unfortunately, this was never realised, even though we submitted our early modelling to the government on several occasions in an attempt to be transparent with our efforts and get them interested in our methodology.

While our model did spark some interest and at one point the Ministry suggested it should be put on rIghtcar.govt.nz to help inform the public, we never saw interest in developing it further nor do the standard equivalency proposed in this policy reflect the result of our model.

The need for transparency and collaboration

While we understand that the Ministry has its own considerations and methodologies, we urge more transparency and collaboration in the decision-making process. It is crucial that all stakeholders have

[2] Euro 6/VI evaluation study - Publications Office of the EU (Europa.eu)

access to the information and rationale behind the decisions being made. Similarly, it is important that the government have access to all relevant information and details when developing policy.

The importance of a robust methodology for comparing emission standards

A robust methodology for quantifying international emission standards would not only provide clarity but also ensure that the selected standards effectively address New Zealand's unique environmental and health challenges and vehicle supply. We encourage the Ministry to share its methodology and engage in further discussions to develop a comprehensive and widely accepted approach. Or, if the government would prefer, we offer our model as a foundation they can build upon as we strive toward a low-harm transport system.

Further development

We are enthusiastic about working with the government to improve the methodology for comparing emission standards from different jurisdictions. We acknowledge that there are areas where our current model can be improved. For instance, we use default values where a standard does not limit a particular pollutant. Our default values reflect two goals, one to penalise incomplete standards and the other to represent vehicles' likely real-world emissions. We are open to refining these defaults based on expert feedback.

Other points of discussion with the policy as proposed

Concerns with consultation

VIA has concerns with several aspects of the consultation for this policy.

We are dubious that submissions can be read and seriously considered within the ten days allowed before the new rules get gazetted.

We would also argue that the workshops/seminars were so lacking in detail to be largely irrelevant.

For example, a question asked in every seminar was "how soon should we move to Euro 7?" Unfortunately, the presenters neglected to mention what parts of Euro 7 would be included and what it would mean for New Zealanders to adopt it. Euro 7 includes a durability requirement that the government has suggested they neither want, nor can feasibly facilitate, but it is quite logical that some stakeholders might demand Euro 7 because of this component.

Increased standards are an ideal, but most New Zealanders would not realise the impact a specific change will have on considerations such as affordability. It is impossible for the public to offer educated advice to government without being educated. In this case, we would argue that providing that education before asking for advice was the duty of the presenters -- a duty that was not fulfilled.

The difference in design between European and Japanese standards

To provide context, the most basic difference between the design of European and Japanese emission standards is the way they progress in achievement; Japanese standards do not necessarily progress linearly whereas European standards do. Comparisons based solely on European standards may not capture the full potential of Japanese standards, which have demonstrated significant achievements even before the introduction of the latest European standards.

When comparing European and Japanese standards, it is important to consider the specific characteristics of each. European emission standards are binary, pass or fail, with progressive improvement (reduction in harm) over time. Even where the emissions caps do not change across

iterations, improvements are found in the supplementary processes such as the way the emissions are tested. As such, when it comes to European emission standards, newer ones are always better.

Japanese standards on the other hand, are built upon a very different strategy. Japanese standards are built to last longer but they have different levels of achievement built into them from the beginning. This allows even early vehicles to be recognised for exceeding the base standards, something that it not possible for European standards. Because of this design, it is quite possible for vehicles with exemplary achievement in an earlier standard to be significantly less harmful than a vehicle that is a low performer to a later standard.

This is illustrated by a diagram in Appendix A.

The consultation document suggests that the European standards have progressed more rapidly, but it is crucial to consider that the Japanese standards have also been evolving, although at a different pace and with a different approach. The Japanese standards have focused on reducing harmful emissions such as NOx and PM. The European standards, on the other hand, have placed more emphasis on reducing CO_2 emissions and promoting electrification.

The results of having different strategies are exactly why it is absolutely necessary to quantify the cap on harm created by each standard. Otherwise, we would be forced to rely upon guesses and biases about which strategy is better.

The consultation document illustrates a fundamental ignorance of how Japanese standards work by trying to match Japanese standards to European standards chronologically.

This approach is defended on page 10 of the consultation document by referencing a retroactive study that showed the benefits of moving from Euro 5 to Euro 6 in Europe. While this is a great outcome for Europe, it is ultimately an uninteresting truism; European standards are, as we have described, binary and are designed to be progressive over time – of course a retroactive review will confirm this fact.

In addition, this is irrelevant to achievement in Japan. In Japan, many vehicles tested to early standards (e.g., Japan 2005) met the threshold for significant achievement, up to 75% better than the base standard in key pollutants[3], which could arguably exceed even the achievement demanded by Euro 6.

Similarly, on page 21 of the consultation document, a European study is referenced that shows that European emission tests were not accurate until RDE was implemented. This seems to be used as evidence that Japanese emission tests are inaccurate. The independent study referenced, however, did not use real world data from Japanese vehicles and only specified an assumed equivalency between EU and Japanese standards without justification on how that equivalency was determined.

While we acknowledge the benefits of RDE on the accuracy of European emission tests we conclude that this says more about early European standards than Japanese standards.

The design of KPIs – based upon absolute harm rather than relative harm

In our goal to reduce emissions, we will want to setup ways to review the efficacy of our efforts. ***We strongly recommend any KPIs measure the reduction in absolute harm rather than relative harm.***

[3] 'Super Ultra-Low Emission Vehicles' Account for Over 80% of Nissan Sales in Japan | Japan for Sustainability (japanfs.org)

The concern is that relying on percentages or derivative metrics make it too easy to mask ineffectiveness or create excuses to not change as we should.

Using Border Check date

We commend the government for applying the standard at the time the vehicle is Border Checked and entered into the Landata system. This is the proper place to assess whether a rule should apply.

Date of Importation versus Date of Manufacture

It is noted in the released cabinet paper that VIA supported the idea of shifting the onus for compliance of new standard based to use the "date of manufacture" (as argued elsewhere, this would need to be "date of first registration").

We would like to note, however, that our support was in the context of it replacing the more traditional format of standards.

For example, instead of all passenger vehicles being required to meet Euro 6 standard from 2028, we support simply saying all passenger vehicles first registered after 2025 must meet Euro 6 standard.

We did not and do not support implementing both in tandem.

The absurdity of continuing to subsidise diesel vehicles

It is absurd to continue to allow harmful diesel vehicles while removing options for cleaner petrol vehicles. This is exactly what is happening when we decide to limit less harmful petrol vehicles while continuing to allow more harmful diesels.

We find it unjustifiable to tell buyers of petrol vehicles that they are only allowed to cause a limited amount of harm, while those who purchase diesel vehicles are allowed to cause significantly more harm.

Since no one is paying a real-world rate for the harm from their emissions, all that harm is subsidised. Diesel vehicles cause much more harm than petrol vehicles, and it is illogical that we continue to allow them at all. That we intend to try to "balance" the market impact of less harmful petrol vehicles and more harmful diesels, which will have the effect of reducing options for those who want or need to transition from a diesel to a less harmful petrol vehicle is hard to logically justify.

The proposed definition of "Higher standard" – Draft Amendment Rule 2.6(5)

> *"Higher standard means an approved vehicle emissions standard that would have applied to the vehicle if the vehicle was certified for entry into service during a later period."*

This definition illustrates the bias the government has for the way European standard work.

The definition of "Higher Standard" should be changed to reflect the desire for improved level of achievement of a standard (as defined by an increased reduction in harm) as opposed to the chronological order of implementation.

On the need to harmonise with Australia

At present, the import industry is limited on what jurisdictions we can source vehicles from. The primary factor in determining what jurisdictions are allowed is how well the standards for that jurisdiction align with New Zealand's.

New Zealand's policies should be based on recognised public good within our own context.

If a previously unallowed jurisdiction's standards move into alignment with New Zealand's, then we would hope that the government would allow vehicles to be imported from that jurisdiction. The opposite should also be true for jurisdictions that fall out of alignment with New Zealand.

If a source jurisdiction does not or will not meet New Zealand's requirements, importers of vehicles from other jurisdictions that do align will fulfil any unmet demand.

On using Date of manufacture

When purchasing vehicles to import into New Zealand, importers do not always have access to "date of manufacture", they do, however, have the "date of first registration".

VIA recommends the proposed policy be modified to reflect this, ***every reference to "date of manufacture" for import requirements or application of a standard should be changed to "date of first registration in any jurisdiction".***

Moving away from 10/15 mode by creating an age ban

The government has on several occasions announced their hope to move away from an old Japanese emissions test called 10/15 mode. The primary reason to do this is that this emission test was less accurate that the more modern emission tests.

It is our understanding that this is the real intent for banning vehicles manufactured prior to 2012 when we move to Euro 5.

As we have access to normalisation formulas which allow us to adjust our harm ratings to account for the poorer performance of earlier emission tests, VIA does not see the need to move away from those earlier emission tests unless justified by the adoption of a standard harm value that excludes all standards that utilised that test.

The requirement that vehicles be made after (or as we have already mentioned, first registered after) 2012 is not necessary and is potentially counterproductive to the need for users of more harmful vehicles to have affordable less harmful option to transition to.

Managing the in-service fleet

VIA notes that this standard only applies to imported vehicles at the time of importation; it is not intended to be applied retrospectively to the current fleet. As a result, increasing the turnover of the fleet by removing more harmful vehicles will greatly reduce harm by forcing the transition to lower harm vehicles.

VIA has several ideas for how to accomplish this. While our preferred solution would fall under the Clean Car Programme, it would still have the positive effect of reducing harm by promoting that transition to vehicles being filtered by this standard.

VIA hopes to engage government outside the scope of this project on how that can be accomplished.

Adopting Euro 7 and the harm from ammonia

Euro 7 has several distinct features that make it different and arguably better than all previous vehicle emission standards.

Euro 7 is the first vehicle emission standard to put a cap on ammonia emissions. Ammonia is harmful, but a large portion of it ends up becoming PM2.5. It is estimated that in the US, 30% and in

the EU 50% of PM2.5 comes from ammonia pollution[4]. As such, in our model we have assigned ammonia the same harm rating as PM2.5. We have also assigned defaults values based upon the estimated average of vehicle ammonia emissions[5].

In addition, in our modelling, we have assumed a 20% improvement when moving between Euro 6 (WLTP) and Euro 7 based upon assumed improvements in emission tests, this reflects similar rate of improvement that was realised when moving from NEDC to WLTP.

The points above illustrate some of the benefit of adopting Euro 7, but there are many other aspects that will not be realised in New Zealand.

Because of this, we object to other claims about the benefits of Euro 7, such as those on page 20 of the consultation document – Quite simply, the other benefits are not relevant to NZ. For instance, a big part of Euro 7 is improved testing to assure emission accuracy in extreme temperatures of up to 45C. Another improvement is an inclusion of base speeds from 145 to 160 km/h. Finally, there is a double durability requirement which the government has already stated they are not interested in. None of these are relevant to New Zealand.

That said, we do think that we should harmonising with the intent of Euro 7 as soon as possible by removing subsidies for diesels and relatively more harmful vehicles realised as unfairly high harm caps compared to other vehicles. In other words, ***we should start reducing the harm cap for diesel vehicles at a faster rate until they harmonise with petrol standards.***

An outline of how we could do that follows in our counterproposal.

[4] Ammonia emissions from agriculture and their contribution to fine particulate matter: A review of implications for human health - ScienceDirect

[5] Evaluating the ammonia emission from in-use vehicles using on-road remote sensing test - ScienceDirect

VIA's alternative

Introduction

In our response to the proposed amendments to the emission rule, we have primarily focused on light vehicles, whilst acknowledging that the methodology and arguments we present should be applied consistently across the entire vehicle fleet. Among those arguments is the application of restrictions relative to the among of harm a vehicle causes.

This is at odds with the amendments under consultation which are being applied across the fleet and market groups evenly. That means the government is proposing to restrict already low harm vehicles with as much ambition as applied to high harm vehicles.

We argue, however, that the goal of this endeavour should be a reduction in absolute harm, and thus the amount of restriction applied should be directly proportional to the amount of harm caused.

For example, heavily restricting diesel vehicles, which cause significant harm, would be more beneficial than imposing restrictions to get proportional improvements on both more harmful vehicles and less harmful vehicles.

In addition, to prevent people from buying and using high harm vehicles, we want to maximise options for lower harm vehicles. This will improve the chance that the user of a specific high harm vehicle will be able to identify a low harm option they can transition to.

Applying the standard equally across market segments looks ambitious on paper, but ends up reducing options for transition, which in turn will reduce the speed and efficiency of the initiative.

This counter proposal is not intended to seek special treatment for less harmful vehicles; It is intended to seek extra restrictions for more harmful vehicles while increasing the chance that buyers have the option to choose less harmful alternatives.

An explanation of the counter proposal

Our counter proposal adopts the same strategy that underlies Euro 7 does by moving toward fuel agnostic limits. There is no reason we could not or should not do this now. While it is not feasible to move all in one step, we propose a transition that would promote incremental steps toward the goal. This has the added benefit of removing the risk of having to make the "one step" later when we do adopt Euro 7.

We would recommend either adopting a harm limit similar to our modelling or basing the decision of what standards will be allowed on their absolute levels of harm. While there might initially need to be allowances for different fuels and/or market segments, we should trend as much as feasible toward a single fuel agnostic harm limit.

This is a much more pragmatic approach than the one in the consultation document because the improvements and hence reduction in harm for petrol vehicles is negligible across Euro 5 – Euro 7, especially when compared to the harm from diesels. Yet, we are considering adopting standards for petrol vehicles which will have a drastic effect on vehicle affordability, options for buyers, and perhaps more importantly, options to transition to less harmful alternatives.

The greatest harm reductions will be found by drastic improvements in requirements for diesels culminating with the fuel neutrality of Euro 7. Once all imports are achieving a single limit, then we can look at reducing that limit to affect all imports fairly.

Conclusion

VIA supports the government's objective to reduce vehicle emissions. VIA emphasises the need for harm reduction, fair market considerations, and addressing the needs of New Zealanders. By adopting a pragmatic approach that prioritises harm reduction, harmonisation between standards, and ensuring consumers have access to less harmful alternatives, New Zealand can effectively minimise the harmful effects of vehicle emissions, create a method for continual improvement, and contribute to a cleaner and healthier environment for all.

Answers to specific questions:

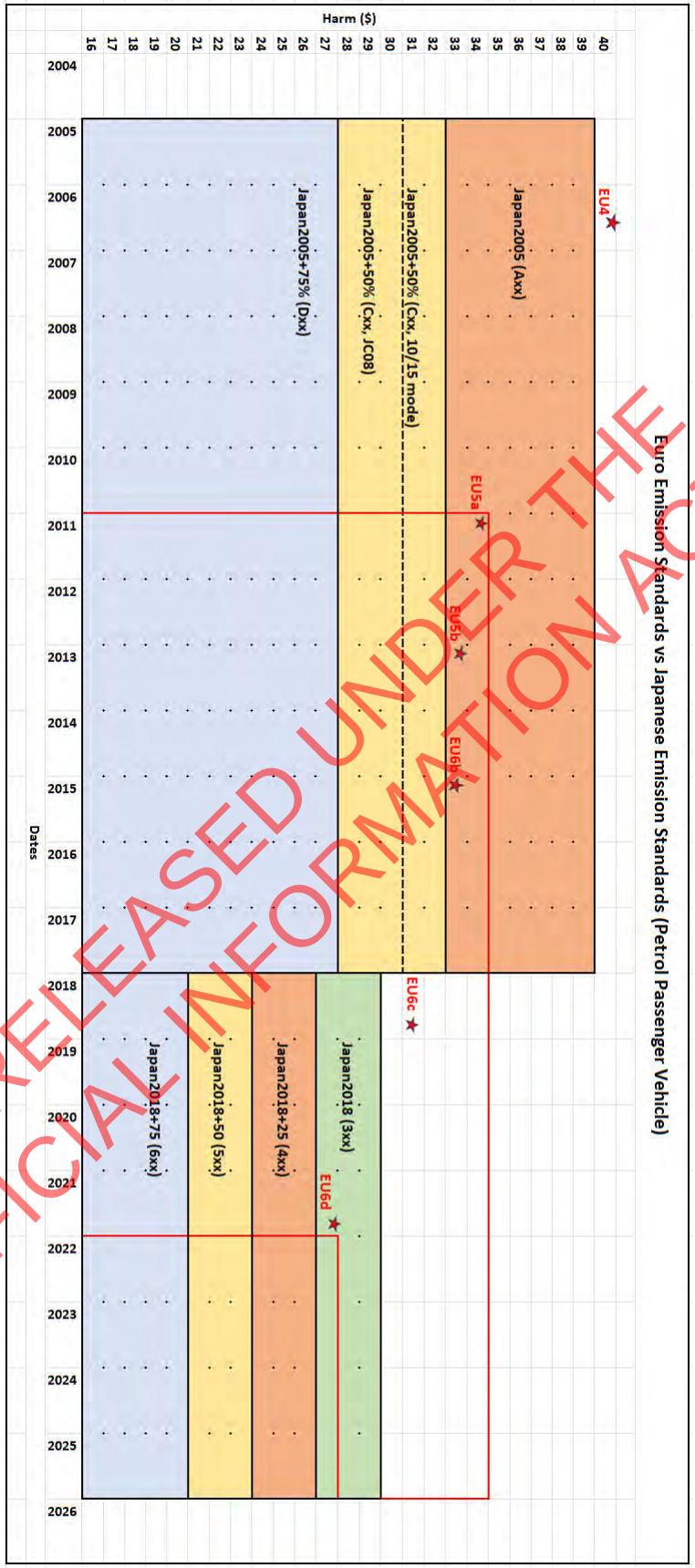
1. VIA represents the interests of vehicle importers, usually focused on used cars from Japan, including light vehicles. We do not represent the interests of vehicle manufacturers.
2. The options are too simple:
    a. If, the government accepts and harmonises with our harm metric then we accept the current timeframe and would even be open to discussions about accelerating it, especially if there is appetite to actually reduce harm in a pragmatic way as opposed to simply checking a box labelled “Harmonised”.
    b. If the government decides to proceed with the arbitrary and unjustified equivalencies defined in this document, then the standards should be pushed back because they are unfairly forcing used importers to meet standards well beyond what the new car industry has had to meet for the last decade.
    c. In addition, it will likely be noted that VIA previous expressed support for the idea of using manufacture date as a criterion for application of the standard. Unfortunately, in every case in which we discussed that idea and offered support; it was in isolation. We supported either using date or manufacture or date of import, not both. In this case, we have not had time to model the impact of combining the two approaches, but it is disappointing to see it applied in ways we did not support.
3. There is a lot of room for discussion between these two options, but the question did not allow for it and the timeframe between suggests a lack of interest.
4. We do not agree with how the standards have been grouped. It does not match any quantifiable results we been able to model. Even if we arbitrarily set Japan 2005 equal to EU4 or Japan 2018 to Euro 5, the Japanese standards perform much better than assigned in the consultation document ***(this can be seen in Appendix F)***. VIA has asked multiple times for the methodology used to determine how the government ranked standards and have yet to receive it.
    a. In the absence of a clear quantifiable method for comparing standards, VIA has had to develop one.
    b. We have had the methodology peer-reviewed by vehicle emission experts with positive results.
    c. We recommend the government adopt it in this and future harm reduction efforts.
5. As historical statistics show used car importers have consistently imported lighter, more efficient, and less polluting vehicles. As such, we are already importing much cleaner vehicles than we are required to and adopting these standards would only acknowledge our past and current achievement and force those importers who still source dirtier vehicles to improve their products.
6. The most important aspect of Euro 7 is the fact that it becomes fuel agnostic. It also places a cap on ammonia emissions. Few other aspects are relevant to NZ, such as:
    a. Double durability requirements
    b. Recognition of climate change by requiring tests to be accurate even in extreme weather
        i. -10C to 40C
    c. Accurate at increased road speed
        i. 160km/h
    d. NZ should look at removing the cross-subsidy on diesel harm as soon as possible, by harmonising diesel caps with petrol caps. At that point, we should start moving all imports to Euro 7 emission limits.

7. Our research and modelling show that the requirements for Japan 2018 with 50% achievement (petrol), denoted with a 5xx emission code, are significantly less harmful (cleaner) than those for Euro 6d (petrol). We can only conclude that any move to exclude 5xx is symptomatic of ignorance due to poor equivalency modelling or some unqualified and unjustified bias toward the supremacy of EU standards and test regimes.
8. Our research and modelling demonstrate that harm limits from Japan 2005 with 50% achievement (petrol), denoted with a Cxx emission code, are significantly stricter than Euro 5. We can only conclude that any move to exclude Cxx is the result of ignorance due to poor equivalency modelling or some unqualified and unjustified bias toward the basic supremacy of EU standards and test regimes.
   The claim that that there are currently insignificant numbers of Cxx vehicles being imported justifies excluding them is a very poor justification. Not only does it assume conditions will remain static which we know is not the case, but it is extremely unfair commercially; either we are moving to Euro 5, or we are moving to something stricter which excludes Cxx.
9. This question does not make sense unless we accept the unfounded equivalencies specified in the consultation document, which we have already rejected.
    a. We do not agree with the proposed equivalency between standards. It does not match any quantifiable results we have modelled. VIA has asked multiple times for the methodology used to determine how the standards are ranked and have yet to receive it.
        i. In the absence of a clear quantifiable method for comparing standards, VIA has had to develop one.
        ii. We recommend the government adopt it in this and future harm reduction efforts.
    b. There will be inconsistencies if the current proposal is adopted Even if the modern testing regimes are better (which we do not dispute), we are applying the standard based upon the test of the day, not compared to the improved tests of today; the new car industry has not had to apply WLTP & RDE to their requirement to meet Euro 5 for the last decade and neither should those who have to meet Euro 5 tomorrow. That is fundamental to the idea of a phased-in approach.
    c. Either way, Cxx should be included as meeting Euro 5.
10. VIA represents the interests of vehicle importers, usually focused on used cars from Japan, including heavy vehicles. We do not represent the interests of vehicle manufacturers.
11. See the response to question 2.
12. See the response to question 2.
13. See the response to question 4.
14. VIA acknowledges that improving emission standards should impact larger diesels as they are the gross offenders, generating significantly more harm per km than other vehicles. This will create commercial hardship for those who specialise in these vehicles, perhaps even ending segments of the market. This is a necessary consequence of reducing harm from emissions. We do think however, that steps should be taken to maximise options of lower harm vehicles for both importers and buyers of more harmful vehicles to transition to.
15. See the response to question 6.
16. VIA has no specific expertise or representative authority regarding motorcycles and mopeds. A general response to this question from our perspective can be gleaned from our responses to the questions on light vehicles. The exception being, that like the difference in significance between commercial vehicles and light vehicles, where even the dirtiest light vehicle likely produces less harm than the cleanest commercial vehicles, there is a similar relation

between motorcycles and light vehicles. We would argue that the focus should be on reducing absolute harm, not a relative harm per market segment.
As far as harm from emissions go, the public would be best served by every road user transitioning to even the dirtiest motorcycle. Placing restrictions on motorcycles will limit options for that transition, which in turn makes it more expensive if it happens at all.

17. See the response to question 16.
18. See the response to question 16.
19. See the response to question 16.
20. See the response to question 16.
21. We do represent importers of disability vehicles.
22. See the response to question 2.
23. See the response to question 2.
24. See the response to question 4.
25. In general, we agree with the intent to provide leniency for disability vehicle. Disability vehicles have additional costs due to the fitment of specialise equipment.
26. No.
27. We suggest a more quantified approach to determining equivalency between standards. As an example, ***VIA would recommend the equivalency between EU and Japanese standards for light vehicles (but a similar methodology could be used for heavy commercial vehicles) as specified in Appendix G.***

Appendix A: Compare the design of European and Japanese standards



Appendix A: Comparing the design of European and Japanese standards.
Note, "+xx%" means xx% reduction from base standard.

Appendix B: Comparison of harm, Diesel Passenger standards

Emission Standard	Code	Date of Implimentation	Test	Vehicle Mass	Target	Fuel	CO (g/km)	NMHC (g/km)	VOC	THC	THC·NOx	Total Hydrocarbons	NOx (g/km)	PM2.5	SO2	NH3		Calculated Max Harm/ 1000km	Adjusted Harm/ 1000 km (modified using ICCT recommendation)
Euro 7 (proposed, as	EU7	Jul-25	WHTC	<3.5t	Passenger Cars	Neutral	0.5000	0.0680		0.1000		0.1000	0.0600	0.0045	*	0.0200		$ 22.86	$ 16.01
Japan2018+75%	6xx	2020		<3.5t	Passenger Cars	Diesel	0.6300	0.0156				0.0156	0.0633	0.0050	*	*		$ 35.07	$ 35.07
Euro 6d	EU6d	Jan-21	WLTP+RDE	<3.5t	Passenger Cars	Diesel	0.5000	0.1700				0.1700	0.0800	0.0045	*	*		$ 38.12	$ 35.51
ADR 79/05	ADR79/05		WLTC	<3.5t	Passenger Cars	Diesel	0.5000				0.1700	0.1700	0.0800	0.0045	*	*		$ 38.12	$ 38.12
Euro 6b	EU6b	Sep-15	WLTC	<3.5t	Passenger Cars	Diesel	0.5000	0.1700				0.1700	0.0800	0.0045	*	*		$ 38.12	$ 38.12
Euro 6c	EU6c	Sep-18	WLTC	<3.5t	Passenger Cars	Diesel	0.5000	0.1700				0.1700	0.0800	0.0045	*	*		$ 38.12	$ 38.12
Japan2018+50%	5xx	2020		<3.5t	Passenger Cars	Diesel	0.6300	0.0208				0.0208	0.0844	0.0050	*	*		$ 39.00	$ 39.00
Japan2005+75%	Dxx	2005	JC08 cold	<1265kg	Passenger Cars	Diesel	0.6300	0.0060				0.0060	0.0350	0.0130	*	*		$ 32.86	$ 39.21
Japan2005+75%	Dxx	2005	JC08 cold	>1265kg	Passenger Cars	Diesel	0.6300	0.0060				0.0060	0.0375	0.0140	*	*		$ 33.71	$ 40.23
Japan2005+75%	Dxx	2005	10-15 mode	<1265kg	Passenger Cars	Diesel	0.6300	0.0060				0.0060	0.0350	0.0130	*	*		$ 32.86	$ 42.59
Japan2005+75%	Dxx	2005	10-15 mode	>1265kg	Passenger Cars	Diesel	0.6300	0.0060				0.0060	0.0375	0.0140	*	*		$ 33.71	$ 43.69
Japan2018+25%	4xx	2020		<3.5t	Passenger Cars	Diesel	0.6300	0.0278				0.0278	0.1125	0.0050	*	*		$ 44.24	$ 44.24
Japan2009	Fxx	2009	JC08 cold	<3.5t	Passenger Cars	Diesel	0.6300	0.0240				0.0240	0.0800	0.0050	*	*		$ 38.19	$ 45.57
Japan2005+50%	Cxx	2005	JC08 cold	<1265kg	Passenger Cars	Diesel	0.6300	0.0120				0.0120	0.0700	0.0130	*	*		$ 39.38	$ 46.99
Japan2005+50%	Cxx	2005	JC08 cold	>1265kg	Passenger Cars	Diesel	0.6300	0.0120				0.0120	0.0750	0.0140	*	*		$ 40.69	$ 48.56
Japan2005+50%	Cxx	2005	10-15 mode	<1265kg	Passenger Cars	Diesel	0.6300	0.0120				0.0120	0.0700	0.0130	*	*		$ 39.38	$ 51.04
Japan2018	3xx	2020	WLTC	<3.5t	Passenger Cars	Diesel	0.6300	0.0370				0.0370	0.1500	0.0050	*	*		$ 51.22	$ 51.22
Japan2005+50%	Cxx	2005	10-15 mode	>1265kg	Passenger Cars	Diesel	0.6300	0.0120				0.0120	0.0750	0.0140	*	*		$ 40.69	$ 52.74
Japan2005	Axx	2005	JC08 cold	<1265kg	Passenger Cars	Diesel	0.6300	0.0240				0.0240	0.1400	0.0130	*	*		$ 52.41	$ 62.54
Japan2005	Axx	2005	JC08 cold	>1265kg	Passenger Cars	Diesel	0.6300	0.0240				0.0240	0.1500	0.0140	*	*		$ 54.65	$ 65.22
ADR 79/03	ADR79/03		NEDC	<3.5t	Passenger Cars	Diesel	0.5000				0.2300	0.2300	0.1800	0.0045	*	*		$ 56.78	$ 67.63
Euro 5b	EU5b	Jan-13	NEDC	<3.5t	Passenger Cars	Diesel	0.5000	0.2300				0.2300	0.1800	0.0045	*	*		$ 56.78	$ 67.63
Euro 5a	EU5a	Jan-11	NEDC	<3.5t	Passenger Cars	Diesel	0.5000	0.2300				0.2300	0.1800	0.0050	*	*		$ 56.97	$ 67.86
Japan2005	Axx	2005	10-15 mode	<1265kg	Passenger Cars	Diesel	0.6300	0.0240				0.0240	0.1400	0.0130	*	*		$ 52.41	$ 67.93
Japan2005	Axx	2005	10-15 mode	>1265kg	Passenger Cars	Diesel	0.6300	0.0240				0.0240	0.1500	0.0140	*	*		$ 54.65	$ 70.84
ADR 79/02	ADR79/02		NEDC	<3.5t	Passenger Cars	Diesel	0.5000				0.3000	0.3000	0.2500	0.0250	*	*		$ 77.71	$ 92.55
Euro 4	EU4	Jan-06	NEDC	<3.5t	Passenger Cars	Diesel	0.5000	0.3000				0.3000	0.2500	0.0250	*	*		$ 77.71	$ 92.55
*Defaults where no limits are specified													0.5000	0.0100	0.1000	0.0500			

Appendix B: Comparison of Harm, Diesel Passenger Vehicle Standards – VIA's model v1.5 (18Jun2023)

Appendix C: Comparison of harm, Petrol Passenger standards

Emission Standard	Code	Date of Implimentation	Test	Concat for lookup	Vehicle Mass	Target	Fuel	CO (g/km)	NMHC (g/km)	VOC	THC	THC NOx	Total Hydrocarbons	NOx (g/km)	PM	SO2	NH3		Calculated Max Harm/ 1000km	Adjusted Harm/ 1000 km (modified using ICCT recommendation)
Euro 7 (proposed, assum	EU7	Jul-25	WHTC	WHTCNeutral	<3.5t	Passenger Cars	Neutral	0.5000	0.0680		0.1000		0.1000	0.0600	0.0045	*	0.0200		$22.86	$ 16.01
Japan2018+75%	6xx	2020	WLTC	WLTCPetrol	<3.5t	Passenger Cars	Petrol	1.1500	0.0250				0.0250	0.0125	0.0050	*	*		$21.81	$ 21.81
Japan2018+50%	5xx	2020	WLTC	WLTCPetrol	<3.5t	Passenger Cars	Petrol	1.1500	0.0375				0.0375	0.0188	0.0050	*	*		$22.98	$ 22.98
Japan2009+75%	Rxx	2009	JC08 cold & hot	JC08Petrol	<3.5t	Passenger Cars	Petrol	1.1500	0.0125				0.0125	0.0125	0.0050	*	*		$21.79	$ 25.52
Japan2018+25%	4xx	2020	WLTC	WLTCPetrol	<3.5t	Passenger Cars	Petrol	1.1500	0.0750				0.0750	0.0375	0.0050	*	*		$26.50	$ 26.50
Euro 6d	EU6d	Jan-21	WLTP+RDE	WLTPPetrol	<3.5t	Passenger Cars	Petrol	1.0000		0.0680	0.1000		0.1000	0.0600	0.0045	*	*		$30.52	$ 27.57
Japan2005+75%	Dxx	2005	JC08 cold	JC08Petrol	<3.5t	Passenger Cars	Petrol	1.1500	0.0125				0.0125	0.0125	*	*	*		$23.71	$ 27.76
Japan2009+50%	Mxx	2009	JC08 cold & hot	JC08Petrol	<3.5t	Passenger Cars	Petrol	1.1500	0.0250				0.0250	0.0250	0.0050	*	*		$24.13	$ 28.26
Japan2018	3xx	2020	WLTC	WLTCPetrol	<3.5t	Passenger Cars	Petrol	1.1500	0.1000				0.1000	0.0500	0.0050	*	*		$28.85	$ 28.85
Japan2005+75%	Dxx	2005	10-15 Mode	10-15 modePetrol	<3.5t	Passenger Cars	Petrol	1.1500	0.0125				0.0125	0.0125	*	*	*		$23.71	$ 29.87
Japan2005+50%	Cxx	2005	JC08 cold	JC08Petrol	<3.5t	Passenger Cars	Petrol	1.1500	0.0250				0.0250	0.0250	*	*	*		$26.04	$ 30.50
ADR 79/05	ADR79/05		WLTC	WLTCPetrol	<3.5t	Passenger Cars	Petrol	1.0000	0.0680		0.1000		0.1000	0.0600	0.0045	*	*		$30.52	$ 30.52
Euro 6c	EU6c	Sep-18	WLTC	WLTCPetrol	<3.5t	Passenger Cars	Petrol	1.0000		0.0680	0.1000		0.1000	0.0600	0.0045	*	*		$30.52	$ 30.52
Japan2009+10%	Qxx	2009	JC08 cold & hot	JC08Petrol	<3.5t	Passenger Cars	Petrol	1.1500	0.0450				0.0450	0.0450	0.0050	*	*		$27.87	$ 32.64
Japan2005+50%	Cxx	2005	10-15 Mode	10-15 modePetrol	<3.5t	Passenger Cars	Petrol	1.1500	0.0250				0.0250	0.0250	*	*	*		$26.04	$ 32.82
Japan2009	Lxx	2009	JC08 cold & hot	JC08Petrol	<3.5t	Passenger Cars	Petrol	1.1500	0.0500				0.0500	0.0500	0.0050	*	*		$28.80	$ 33.73
Euro 6b	EU6b	Sep-15	NEDC	NEDCPetrol	<3.5t	Passenger Cars	Petrol	1.0000		0.0680	0.1000		0.1000	0.0600	0.0045	*	*		$30.52	$ 33.87
Euro 5b	EU5b	Jan-13	NEDC	NEDCPetrol	<3.5t	Passenger Cars	Petrol	1.0000		0.0680	0.1000		0.1000	0.0600	0.0045	*	*		$30.52	$ 33.87
ADR 79/03	ADR79/03		NEDC	NEDCPetrol	<3.5t	Passenger Cars	Petrol	1.0000	0.0680		0.1000		0.1000	0.0600	0.0045	*	*		$30.52	$ 33.87
Euro 5a	EU5a	Jan-11	NEDC	NEDCPetrol	<3.5t	Passenger Cars	Petrol	1.0000		0.0680	0.1000		0.1000	0.0600	0.0050	*	*		$30.71	$ 34.08
Japan2005	Axx	2005	JC08 cold	JC08Petrol	<3.5t	Passenger Cars	Petrol	1.1500	0.0500				0.0500	0.0500	*	*	*		$30.72	$ 35.97
Japan2005	Axx	2005	10-15 Mode	10-15 modePetrol	<3.5t	Passenger Cars	Petrol	1.1500	0.0500				0.0500	0.0500	*	*	*		$30.72	$ 38.71
ADR 79/02	ADR79/02		NEDC	NEDCPetrol	<3.5t	Passenger Cars	Petrol	1.0000			0.1000		0.1000	0.0800	*	*	*		$36.34	$ 40.34
Euro 4	EU4	Jan-06	NEDC	NEDCPetrol	<3.5t	Passenger Cars	Petrol	1.0000	0.1000				0.1000	0.0800	*	*	*		$36.34	$ 40.34
*Defaults where no limits are specified									0.5000	0.1500				0.5000	0.0100	0.1000	0.0400			

Appendix C: Comparison of Harm, Passenger Vehicle Standards – VIA's model v1.5 (18Jun2023)

Appendix D: Comparison of harm, Diesel Commercial standards

Emission Standard	Code	Date of Implimentation	Test	Vehicle Mass	Target	Fuel	CO (g/km)	NMHC (g/km)	VOC	THC	THC-NOx	Total Hydrocarbons	NOx (g/km)	PM	SO2	NH3	Calculated Max Harm/ 1000km	Adjusted Harm/ 1000 km (modified using ICCT recommendation)
Japan2018+75%	6xx	2020	WLTC	<1700kg	Light & Med Commercial & Buses	Diesel	0.6300	0.0060				0.0060	0.0375	0.0050	*	*	$ 34.09	$ 34.09
Japan2018+75%	6xx	2020	WLTC	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Diesel	0.6300	0.0060				0.0060	0.0600	0.0070	*	*	$ 39.04	$ 39.04
Japan2018+50%	5xx	2020	WLTC	<1700kg	Light & Med Commercial & Buses	Diesel	0.6300	0.0120				0.0120	0.0750	0.0050	*	*	$ 41.07	$ 41.07
ADR 79/05	ADR79/05		WLTC	<3.5t	N1 Class I	Diesel	0.5000				0.1700	0.1700	0.0800	0.0045	*	*	$ 41.95	$ 41.95
Euro VI	EUVI	Sep-14	WLTC	<=1305kg	N1 Class 1	Diesel	0.5000	0.1700				0.1700	0.0800	0.0050	*	*	$ 42.14	$ 42.14
Japan2005+75%	Dxx	2005	JC08 cold	<1700kg	Light & Med Commercial & Buses	Diesel	0.6300	0.0060				0.0060	0.0350	0.0130	*	*	$ 36.68	$ 43.78
ADR 79/05	ADR79/05		WLTC	<3.5t	N1 Class II	Diesel	0.6300				0.1950	0.1950	0.1050	0.0045	*	*	$ 46.62	$ 46.62
Euro VI	EUVI	Sep-15	WLTC	1305-1760kg	N1 Class II	Diesel	0.6300	0.1950				0.1950	0.1050	0.0050	*	*	$ 46.81	$ 46.81
Japan2005+75%	Dxx	2005	10-15 mode	<1700kg	Light & Med Commercial & Buses	Diesel	0.6300	0.0060				0.0060	0.0350	0.0130	*	*	$ 36.68	$ 47.55
Japan2018+25%	4xx	2020	WLTC	<1700kg	Light & Med Commercial & Buses	Diesel	0.6300	0.0180				0.0180	0.1125	0.0050	*	*	$ 48.05	$ 48.05
Japan2009		2009	JC08 cold & hot	<1700kg	Light & Med Commercial & Buses	Diesel	0.6300	0.0240				0.0240	0.0800	0.0050	*	*	$ 42.01	$ 50.14
Japan2018+50%	5xx	2020	WLTC	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Diesel	0.6300	0.0120				0.0120	0.1200	0.0070	*	*	$ 50.21	$ 50.21
ADR 79/05	ADR79/05		WLTC	<3.5t	N1 Class III	Diesel	0.7400				0.2150	0.2150	0.1250	0.0045	*	*	$ 50.36	$ 50.36
Euro VI	EUVI	Sep-15	WLTC	>1760kg	N1 Class III	Diesel	0.7400	0.2150				0.2150	0.1250	0.0050	*	*	$ 50.55	$ 50.55
Euro VI	EUVI	Sep-15	WLTC		N2	Diesel	0.7400	0.2150				0.2150	0.1250	0.0050	*	*	$ 50.55	$ 50.55
Japan2005+75%	Dxx	2005	JC08 cold	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Diesel	0.6300	0.0060				0.0060	0.0625	0.0150	*	*	$ 42.56	$ 50.80
Japan2005+50%	Cxx	2005	JC08 cold	<1700kg	Light & Med Commercial & Buses	Diesel	0.6300	0.0120				0.0120	0.0700	0.0130	*	*	$ 43.20	$ 51.56
Japan2018	3xx	2020	WLTC	<1700kg	Light & Med Commercial & Buses	Diesel	0.6300	0.0240				0.0240	0.1500	0.0050	*	*	$ 55.03	$ 55.03
Japan2005+75%	Dxx	2005	10-15 mode	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Diesel	0.6300	0.0060				0.0060	0.0625	0.0150	*	*	$ 42.56	$ 55.17
Japan2005+50%	Cxx	2005	10-15 mode	<1700kg	Light & Med Commercial & Buses	Diesel	0.6300	0.0120				0.0120	0.0700	0.0130	*	*	$ 43.20	$ 56.00
Japan2018+25%	4xx	2020	WLTC	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Diesel	0.6300	0.0180				0.0180	0.1800	0.0070	*	*	$ 61.37	$ 61.37
Japan2005+50%	Cxx		JC08 cold	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Diesel	0.6300	0.0120				0.0120	0.1250	0.0150	*	*	$ 54.20	$ 64.68
Japan2009			JC08 cold & hot	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Diesel	0.6300	0.0240				0.0240	0.1500	0.0070	*	*	$ 55.80	$ 66.59
Japan2005	Axx		JC08 cold	<1700kg	Light & Med Commercial & Buses	Diesel	0.6300	0.0240				0.0240	0.1400	0.0130	*	*	$ 56.23	$ 67.11
Japan2005+50%	Cxx		10-15 mode	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Diesel	0.6300	0.0120				0.0120	0.1250	0.0150	*	*	$ 54.20	$ 70.25
ADR 79/03	ADR79/03		NEDC	<3.5t	N1 Class I	Diesel	0.5000				0.2300	0.2300	0.1800	0.0045	*	*	$ 60.60	$ 72.18
Euro Va	EUVa	Sep-09	NEDC	<=1305kg	N1 Class 1	Diesel	0.5000	0.2300				0.2300	0.1800	0.0050	*	*	$ 60.80	$ 72.41
Euro Vb	EUVb	Sep-09	NEDC	<=1305kg	N1 Class 1	Diesel	0.5000	0.2300				0.2300	0.1800	0.0050	*	*	$ 60.80	$ 72.41
Japan2018	3xx		WLTC	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Diesel	0.6300	0.0240				0.0240	0.2400	0.0070	*	*	$ 72.54	$ 72.54
Japan2005	Axx		10-15 mode	<1700kg	Light & Med Commercial & Buses	Diesel	0.6300	0.0240				0.0240	0.1400	0.0130	*	*	$ 56.23	$ 72.89
ADR 79/03	ADR79/03		NEDC	<3.5t	N1 Class II	Diesel	0.6300				0.2950	0.2950	0.2350	0.0045	*	*	$ 70.89	$ 84.44
Euro Va	EUVa	Sep-10	NEDC	1305-1760kg	N1 Class II	Diesel	0.6300	0.2950				0.2950	0.2350	0.0050	*	*	$ 71.09	$ 84.67
Euro Vb	EUVb	Sep-10	NEDC	1305-1760kg	N1 Class II	Diesel	0.6300	0.2950				0.2950	0.2350	0.0050	*	*	$ 71.09	$ 84.67
Japan2005	Axx		JC08 cold	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Diesel	0.6300	0.0240				0.0240	0.2500	0.0150	*	*	$ 77.46	$ 92.44
ADR 79/03	ADR79/03		NEDC	<3.5t	N1 Class III	Diesel	0.7400				0.3500	0.3500	0.2800	0.0045	*	*	$ 79.31	$ 94.47
Euro Va	EUVa	Sep-10	NEDC	>1760kg	N1 Class III	Diesel	0.7400	0.3500				0.3500	0.2800	0.0050	*	*	$ 79.51	$ 94.70
Euro Va	EUVa	Sep-10	NEDC		N2	Diesel	0.7400	0.3500				0.3500	0.2800	0.0050	*	*	$ 79.51	$ 94.70
Euro Vb	EUVb	Sep-10	NEDC	>1760kg	N1 Class III	Diesel	0.7400	0.3500				0.3500	0.2800	0.0050	*	*	$ 79.51	$ 94.70
Euro Vb	EUVb	Sep-11	NEDC		N2	Diesel	0.7400	0.3500				0.3500	0.2800	0.0050	*	*	$ 79.51	$ 94.70
ADR 79/02	ADR79/02		NEDC	<3.5t	N1 Class I	Diesel	0.5000				0.3000	0.3000	0.2500	0.0250	*	*	$ 81.53	$ 97.11
Euro IV	EUIV	Jan-05	NEDC	<=1305kg	N1 Class 1	Diesel	0.5000	0.3000				0.3000	0.2500	0.0250	*	*	$ 81.53	$ 97.11
Japan2005	Axx		10-15 mode	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Diesel	0.6300	0.0240				0.0240	0.2500	0.0150	*	*	$ 77.46	$ 100.41
ADR 79/02	ADR79/02		NEDC	<3.5t	N1 Class II	Diesel	0.6300				0.3900	0.3900	0.3300	0.0400	*	*	$ 102.23	$ 121.76
Euro IV	EUIV	Jan-06	NEDC	1305-1760kg	N1 Class II	Diesel	0.6300	0.3900				0.3900	0.3300	0.0400	*	*	$ 102.23	$ 121.76
ADR 79/02	ADR79/02		NEDC	<3.5t	N1 Class III	Diesel	0.7400				0.4600	0.4600	0.3900	0.0600	*	*	$ 121.11	$ 144.24
Euro IV	EUIV	Jan-06	NEDC	>1760kg	N1 Class III	Diesel	0.7400	0.4600				0.4600	0.3900	0.0600	*	*	$ 121.11	$ 144.24
*Defaults where no limits are specified							0.5000	0.1500				0.5000	0.0100	0.1000	0.1000	0.0600		

Appendix D: Comparison of harm, Diesel Commercial standards

Appendix E: Comparison of harm, Petrol Commercial standards

Emission Standard	Code	Date of Implimentation	Test	Vehicle Mass	Target	Fuel	CO (g/km)	NMHC (g/km)	VOC	THC	THC·NOx	Total Hydrocarbons	NOx (g/km)	PM	SO2	NH3		Calculated Max Harm/ 1000km	Adjusted Harm/ 1000 km (modified using ICCT recommendation)
Japan2018+75%	6xx		WLTC	<1700kg	Light & Med Commercial & Buses	Petrol	1.1500	0.0422				0.0422	0.0211	0.0050	*	*		$27.24	$ 27.24
Japan2018+50%	5xx		WLTC	<1700kg	Light & Med Commercial & Buses	Petrol	1.1500	0.0563				0.0563	0.0281	0.0050	*	*		$28.57	$ 28.57
Japan2018+75%	6xx		WLTC	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Petrol	2.5500	0.0633				0.0633	0.0295	0.0070	*	*		$29.60	$ 29.60
Japan2018+25%	4xx		WLTC	<1700kg	Light & Med Commercial & Buses	Petrol	1.1500	0.0750				0.0750	0.0375	0.0050	*	*		$30.33	$ 30.33
Japan2018+50%	5xx		WLTC	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Petrol	2.5500	0.0844				0.0844	0.0394	0.0070	*	*		$31.45	$ 31.45
Japan2005+75%	Dxx		JC08 cold	<1700kg	Light & Med Commercial & Buses	Petrol	1.1500	0.0125				0.0125	0.0125	*	*	*		$27.53	$ 32.24
Japan2018	3xx		WLTC	<1700kg	Light & Med Commercial & Buses	Petrol	1.1500	0.1000				0.1000	0.0500	0.0050	*	*		$32.67	$ 32.67
Japan2005+75%	Dxx		JC08 cold	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Petrol	2.5500	0.0125				0.0125	0.0175	*	*	*		$28.47	$ 33.33
Japan2018+25%	4xx		WLTC	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Petrol	2.5500	0.1125				0.1125	0.0525	0.0070	*	*		$33.92	$ 33.92
Euro VI	EUVI	Sep-14	WLTC	<=1305kg	N1 Class 1	Petrol	1.0000	0.1000				0.1000	0.0600	0.0050	*	*		$34.53	$ 34.53
Japan2005+75%	Dxx		10-15 mode	<1700kg	Light & Med Commercial & Buses	Petrol	1.1500	0.0125				0.0125	0.0125	*	*	*		$27.53	$ 34.69
Japan2005+50%	Cxx		JC08 cold	<1700kg	Light & Med Commercial & Buses	Petrol	1.1500	0.0250				0.0250	0.0250	*	*	*		$29.87	$ 34.98
Japan2005+75%	Dxx		10-15 mode	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Petrol	2.5500	0.0125				0.0125	0.0175	*	*	*		$28.47	$ 35.87
ADR 79/05	ADR79/05		WLTC	<3.5t	N1 Class I	Petrol	1.0000	0.0680		0.1000		0.1000	0.0600	*	*	*		$36.45	$ 36.45
Japan2005+50%	Cxx		JC08 cold	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Petrol	2.5500	0.0250				0.0250	0.0350	*	*	*		$31.73	$ 37.16
Japan2018	3xx		WLTC	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Petrol	2.5500	0.1500				0.1500	0.0700	0.0070	*	*		$37.21	$ 37.21
Euro VI	EUVI	Sep-15	WLTC	1305-1760kg	N1 Class II	Petrol	1.8100	0.1300				0.1300	0.0750	0.0050	*	*		$37.35	$ 37.35
Japan2005+50%	Cxx		10-15 mode	<1700kg	Light & Med Commercial & Buses	Petrol	1.1500	0.0250				0.0250	0.0250	*	*	*		$29.87	$ 37.64
Japan2009	Lxx		JC08 cold & hot	<1700kg	Light & Med Commercial & Buses	Petrol	1.1500	0.0500				0.0500	0.0500	0.0050	*	*		$32.63	$ 38.21
Euro V	EUV	Sep-09	NEDC	<=1305kg	N1 Class 1	Petrol	1.0000	0.1000				0.1000	0.0600	0.0050	*	*		$34.53	$ 38.33
Euro VI	EUVI	Sep-15	WLTC	>1760kg	N1 Class III	Petrol	2.2700	0.1600				0.1600	0.0820	0.0050	*	*		$38.68	$ 38.68
Euro VI	EUVI	Sep-15	WLTC		N2	Petrol	2.2700	0.1600				0.1600	0.0820	0.0050	*	*		$38.68	$ 38.68
ADR 79/05	ADR79/05		WLTC	<3.5t	N1 Class II	Petrol	1.8100	0.0900		0.1300		0.1300	0.0750	*	*	*		$39.26	$ 39.26
Japan2005+50%	Cxx		10-15 mode	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Petrol	2.5500	0.0250				0.0250	0.0350	*	*	*		$31.73	$ 39.99
Japan2005	Axx		JC08 cold	<1700kg	Light & Med Commercial & Buses	Petrol	1.1500	0.0500				0.0500	0.0500	*	*	*		$34.54	$ 40.45
ADR 79/03	ADR79/03		NEDC	<3.5t	N1 Class I	Petrol	1.0000	0.0680		0.1000		0.1000	0.0600	*	*	*		$36.45	$ 40.45
ADR 79/05	ADR79/05		WLTC	<3.5t	N1 Class III	Petrol	2.2700	0.1080		0.1600		0.1600	0.0820	*	*	*		$40.59	$ 40.59
Euro V	EUV	Sep-10	NEDC	1305-1760kg	N1 Class II	Petrol	1.8100	0.1300				0.1300	0.0750	0.0050	*	*		$37.35	$ 41.46
Euro V	EUV	Sep-10	NEDC	>1760kg	N1 Class III	Petrol	2.2700	0.1600				0.1600	0.0820	0.0050	*	*		$38.68	$ 42.93
Euro V	EUV	Sep-10	NEDC		N2	Petrol	2.2700	0.1600				0.1600	0.0820	0.0050	*	*		$38.68	$ 42.93
Japan2009	Fxx		JC08 cold & hot	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Petrol	2.5500	0.0500				0.0500	0.0700	0.0070	*	*		$37.12	$ 43.47
Japan2005	Axx		10-15 mode	<1700kg	Light & Med Commercial & Buses	Petrol	1.1500	0.0500				0.0500	0.0500	*	*	*		$34.54	$ 43.53
ADR 79/03	ADR79/03		NEDC	<3.5t	N1 Class II	Petrol	1.8100	0.0900		0.1300		0.1300	0.0750	*	*	*		$39.26	$ 43.58
ADR 79/02	ADR79/02		NEDC	<3.5t	N1 Class I	Petrol	1.0000	0.1000		0.1000		0.1000	0.0800	*	*	*		$40.17	$ 44.58
Euro IV	EUIV	Jan-05	NEDC	<=1305kg	N1 Class 1	Petrol	1.0000	0.1000				0.1000	0.0800	*	*	*		$40.17	$ 44.58
ADR 79/02	ADR79/02		NEDC	<3.5t	N1 Class II	Petrol	1.8100	0.1300		0.1300		0.1300	0.0800	*	*	*		$40.20	$ 44.61
Japan2005	Axx		JC08 cold	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Petrol	2.5500	0.0500				0.0500	0.0700	*	*	*		$38.27	$ 44.81
ADR 79/03	ADR79/03		NEDC	<3.5t	N1 Class III	Petrol	2.2700	0.1080		0.1600		0.1600	0.0820	*	*	*		$40.59	$ 45.06
Japan2005	Axx		10-15 mode	1700kg<GVW<3.5t	Light & Med Commercial & Buses	Petrol	2.5500	0.0500				0.0500	0.0700	*	*	*		$38.27	$ 48.22
Euro IV	EUIV	Jan-06	NEDC	1305-1760kg	N1 Class II	Petrol	1.8100	0.1300				0.1300	0.1000	*	*	*		$43.92	$ 48.74
ADR 79/02	ADR79/02		NEDC	<3.5t	N1 Class III	Petrol	2.2700	0.1600		0.1600		0.1600	0.1100	*	*	*		$45.80	$ 50.84
Euro IV	EUIV	Jan-06	NEDC	>1760kg	N1 Class III	Petrol	2.2700	0.1600				0.1600	0.1100	*	*	*		$45.80	$ 50.84
*Defaults where no limits are specified													0.1000	0.0100	0.1000	0.0500			

Appendix E: Comparison of harm, Petrol Commercial standards

Appendix F: Comparison of petrol emission standards after assigning arbitrary equivalency as specified by the consultation document

Emission Standard	Code	Adjusted Harm/ 1000 km (modified using ICCT recommendation)	Compared to EU5a Petrol	Compared to EU6d Petrol	Japan 2005 = EU 4 Compared to EU 5 (petrol)	Japan 2018 = EU 5 Compared to EU 5 (petrol)	Japan 2005 = EU 4 Compared to EU 6 (petrol)	Japan 2018 = EU 5 Compared to EU 6 (petrol)
Euro 7 (proposed, assum	EU7	$ 16.01	47%	58%	49%	55%	61%	69%
Japan2018+75%	6xx	$ 21.81	64%	79%	67%	76%	82%	93%
Japan2018+50%	5xx	$ 22.98	68%	83%	70%	80%	87%	98%
Japan2009+75%	Rxx	$ 25.52	75%	93%	78%	88%	96%	109%
Japan2018+25%	4xx	$ 26.50	78%	96%	81%	92%	100%	114%
Euro 6d	EU6d	$ 27.57	81%	100%	84%	96%	104%	118%
Japan2005+75%	Dxx	$ 27.76	82%	101%	85%	96%	105%	119%
Japan2009+50%	Mxx	$ 28.26	83%	103%	86%	98%	107%	121%
Japan2018	3xx	$ 28.85	85%	105%	88%	100%	109%	124%
Japan2005+75%	Dxx	$ 29.87	88%	108%	91%	104%	113%	128%
Japan2005+50%	Cxx	$ 30.50	90%	111%	93%	106%	115%	131%
ADR 79/05	ADR79/05	$ 30.52	90%	111%	93%	106%	115%	131%
Euro 6c	EU6c	$ 30.52	90%	111%	93%	106%	115%	131%
Japan2009+10%	Qxx	$ 32.64	96%	118%	100%	113%	123%	140%
Japan2005+50%	Cxx	$ 32.82	97%	119%	100%	114%	124%	141%
Japan2009	Lxx	$ 33.73	100%	122%	103%	117%	127%	145%
Euro 6b	EU6b	$ 33.87	100%	123%	104%	117%	128%	145%
Euro 5b	EU5b	$ 33.87	100%	123%	104%	117%	128%	145%
ADR 79/03	ADR79/03	$ 33.87	100%	123%	104%	117%	128%	145%
Euro 5a	EU5a	$ 34.08	101%	124%	104%	118%	129%	146%
Japan2005	Axx	$ 35.97	106%	130%	110%	125%	136%	154%
Japan2005	Axx	$ 38.71	114%	140%	118%	134%	146%	166%
ADR 79/02	ADR79/02	$ 40.34	119%	146%	123%	140%	152%	173%
Euro 4	EU4	$ 40.34	119%	146%	123%	140%	152%	173%

Appendix F: Comparison of petrol emission standards after assigning arbitrary equivalency as specified by the consultation document.

Appendix G: Recommended equivalency between European and Japanese emission standards

Petrol Light Passenger and Commercial Standards		
EU Standard	**Example Japanese Equivalent (there may be other levels of achievement within Japanese standards that will also achieve the desired harm reduction)**	**Example Japanese Emission Codes**
Euro 5, *(approx. harm cap per 1000km)* *Passenger: $34* *Commercial: $43*	Japan 2009, Japan2005+50%, Japan2009+10%, Japan2005+75%, Japan2018, Japan2009+50%, Japan2018+25%, Japan2018+50%, Japan2018+75%	Lxx, Cxx, Qxx, Dxx, 3xx, Mxx, 4xx, Rxx, 5xx, 6xx
Euro 6, *(approx. harm cap per 1000km)* *Passenger: $28* *Commercial: $36*	Japan2005+75%, Japan2018+25%, Japan2009+75%, Japan2018+50%, Japan2018+75%	Dxx, 4xx, Rxx, 5xx, 6xx *(tested to JC08 or newer, 2012 age limit as proxy)*
Diesel Light Passenger and Commercial Standards		
EU Standard	**Example Japanese Equivalent (there may be other levels of achievement within Japanese standards that will also achieve the desired harm reduction)**	**Example Japanese Emission Codes**
Euro 5, *(approx. harm cap per 1000km)* *Passenger: $68* *Commercial: $73*	Japan2005, Japan2005+50%, Japan2018, Japan2009, Japan2018+25%, Japan2005+75%, Japan2018+50%, Japan2018+75%	Axx, Lxx, Cxx, 3xx, Fxx, 4xx, Dxx, 5xx, 6xx
Euro 6, *(approx. harm cap per 1000km)* *Passenger: $40* *Commercial: $50*	Japan2005+75%, Japan2018+50%, Japan2018+75%, *(also recommend Japan2018+25% (4xx) for vehicles <1700kg)*	Dxx, 5xx, 6xx *(tested to JC08 or newer, 2012 age limit as proxy)*
Other Japanese standards may also exceed Euro standards, for instance some Japanese commercial vehicle standards that are not included in this submission are noted as having exceptional achievement with regards PM2.5. Industry will continue to work with government to develop a table of equivalencies between international emission standards.		

Appendix G: Recommended equivalency between European and Japanese emission standards. Note, "+xx%" means xx% reduction from base standard.

Adam Lees
Dolphin Shipping NZ Limited
8 Farnham Street, Parnell, Auckland
s 9(2)(a)

21 June 2023

Support for VIA's submission on proposed Amendments to Vehicle Exhaust Emissions Rule

Dear Sir/Madam,

I am writing to express my support for the Imported Motor Vehicle Industry Association (VIA)'s submission on the proposed amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007. I understand and support the government's efforts to reduce noxious emissions and minimise harm caused by vehicles. I believe it is essential to consider the points raised by VIA to achieve these objectives.

VIA's submission emphasises the need to prioritise total harm reduction, maintain a fair market, and address the transport needs of New Zealanders. I fully support VIA's position on these matters. It is crucial to reduce noxious emissions and their detrimental effects on public health. As responsible members of industry, it is our duty to supply vehicles that minimise total harm.

I understand that VIA supports most of the proposed policy but has concerns about certain factual errors. VIA has offered corrections, particularly regarding the equivalency between Euro and Japanese standards. VIA has provided a quantified model that compares the equivalency of standards and argue that policies should be adjusted accordingly. I urge the government to carefully consider these corrections and make the necessary adjustments to ensure a fair market and equity.

VIA has also offered a more radical redesign of the proposed standard that would lead to even more harm reduction. This approach prioritises harm reduction by proportionally restricting vehicles based on the amount of harm they cause. I believe that this approach would be beneficial in achieving a greater reduction in overall harm and facilitating a smooth transition to the strategies used in Euro 7.

In conclusion, I believe that the objectives of reducing noxious emissions and minimising harm caused by vehicles are of utmost importance. I encourage the government to consider VIA's suggestions, make the necessary adjustments to ensure effective legislation that achieves its objectives.

Thank you for considering my views on this matter.

Yours sincerely,

Adam Lees

Out of Scope

From: Holly Rickerby s 9(2)(a)
Sent: Thursday, 22 June 2023 11:42 am
To: Emissions
Subject: Submission: Requiring Euro 6 for vehicles modified for disabled people

Hello,

I am an Occupational Therapist who works in the area of driver assessment and vehicle modification, and has done so for nearly seven years.

While I like the idea of increased standards in terms of vehicle emissions in principle, in practice I think that this idea is flawed when it comes to vehicles for the disability market.

My experience is that over the past few years, the vehicles available in the disability market has decreased. This is vehicles that are entering the country pre-modified, those entering the vehicle new for immediate modification, and those that are available in the secondhand market. At the same time, the costs of these vehicles and the required modifications has increased. Funding changes has not kept pace with increases in costs. Timeframes, both around vehicle imports and parts required, has increased. This negatively impacts on what is moving into the secondhand market, and also places additional demands on the available rental fleet.

Restrictions on what vehicles are able to be imported will place further demands in an already stretched disability vehicle market, both in terms of availability and funding. It will also further increase timeframes for clients. An example of this was when the requirement for electronic stability control was brought in, requiring an exemption application for each individual disability modified vehicle, which is time in addition to the time that it already took to modify the vehicle to meet the client's needs. It has also meant that vehicles do not meet the standard need to be imported against a specific client's name rather than the previous system of a rotating stock of suitable vehicles. This all adds up to significant delays in a client being able to have access to independent transport.

I agree that those who are users of disability vehicles are more likely to be impacted by pollution that changes in emission standards is designed to address. These vehicles are such a small percentage of the overall vehicle fleet in New Zealand, that the changes these particular vehicles make will be small. It seems unequitable that people, who due to their disability generally have significantly lower incomes, who are already having to make significant compromises, who are limited in what vehicles are suitable for them, and who have significant additional expenses due to their disability, then have to take on more expense and responsibility 'for the greater good'. Yes, the greater good is important, and while many small changes do add up to big changes, it seems more efficient to focus on where greater gains can be made.

Regards,

Holly Rickerby
Occupational Therapist (NZROT)

Please note, as I am a community based Occupational Therapist, replies to emails may be delayed till when I am in the office. If an email is urgent, please let me know.

OTRS
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s 9(2)(a)

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THE INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION
1500 K STREET NW | SUITE 650 | WASHINGTON DC 20005

Re: Consultation on the Proposed Amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007 – the "Vehicle Exhaust Emissions Amendment Rule"
To: Te Manatū Waka Ministry of Transport
From: s 9(2)(a) International Council on Clean Transportation (ICCT)
Date: June 22, 2022

We complement New Zealand Ministry of Transport for taking the initiative to introduce Euro 6/VI standards[1] for the new and used imported light- and heavy-duty vehicles.

We support the introduction of Euro 6d/VI stage C for new light- and heavy-duty vehicles, because (a) New Zealand needs to catch up with the other high-income OECD economies almost all of which have adopted Euro 6/VI standards; (b) introducing Euro 6/VI can have a great impact on the emission reduction and environmental impact. We would suggest New Zealand directly leapfrog from Euro 4/IV to apply the same Euro 6/VI standards for used light-duty and heavy-duty vehicles following the same timeline as the new vehicles.

We also support the introduction of Euro 4 and Euro 5 emission standards for mopeds and motorcycles. Unregulated mopeds and motorcycles can be more polluted than cars that are already regulated under Euro 5 for new vehicles and Euro 4 for used vehicles.

The following sections are our comments in detail.

New Zealand should catch up with the other high-income OECD economies in adopting Euro 6/VI standards.

To mitigate the health and climate effects of emissions from vehicles, many markets have imposed stringent emission standards for new vehicles. Figure 1 and Figure 2 show the implementation year for emission standards for new sales light-duty gasoline vehicles and heavy-duty diesel vehicles in selected regions. The emission standards are shown as Euro equivalents. For example, Euro VI-equivalent standards include U.S. 2010, China VI, Euro VI, Bharat Stage (BS) VI in India, PROCONVE P-8 in Brazil, and Post New Long Term in Japan, among others.

Currently, almost all high-income OECD member economies have implemented Euro 6 emission standards for light-duty vehicles (LDVs) and Euro VI emission standards for heavy-duty vehicles (HDVs). The major vehicle markets like the United States, European Union, Korea, Japan, and Canada have implemented Euro 6/VI or equivalent standards for 10 years or more. New Zealand and Australia are the only two high-income OECD member economies that have not adopted Euro 6 for LDVs and New Zealand is the only one that has not adopted Euro VI for HDVs.[2]

There are other developed and developing countries that have also adopted Euro 6/VI emission standards, including China, India, Morocco, Peru, and Singapore for LDVs, and Brazil, China, Colombia, India, Morocco, Peru, and Singapore for HDVs.

[1] The European standards are designated by Arabic numerals for light-duty vehicles, and Roman numerals for heavy-duty vehicles.
[2] Williams, M & Minjares, R. (2016). A technical summary of Euro 6/VI vehicle emission standards. https://theicct.org/sites/default/files/publications/ICCT_Euro6-VI_briefing_jun2016.pdf

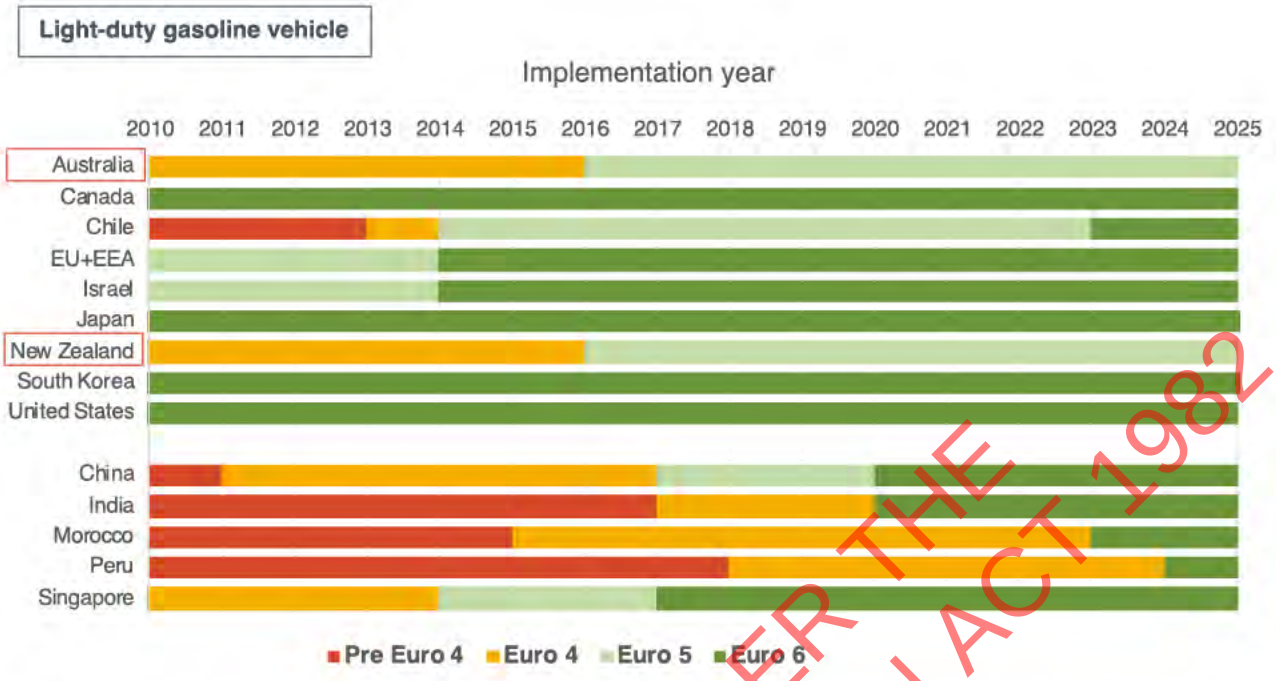

Figure 1 Implementation year (all sales and registration) of light-duty gasoline vehicle emission standards in selected economies.

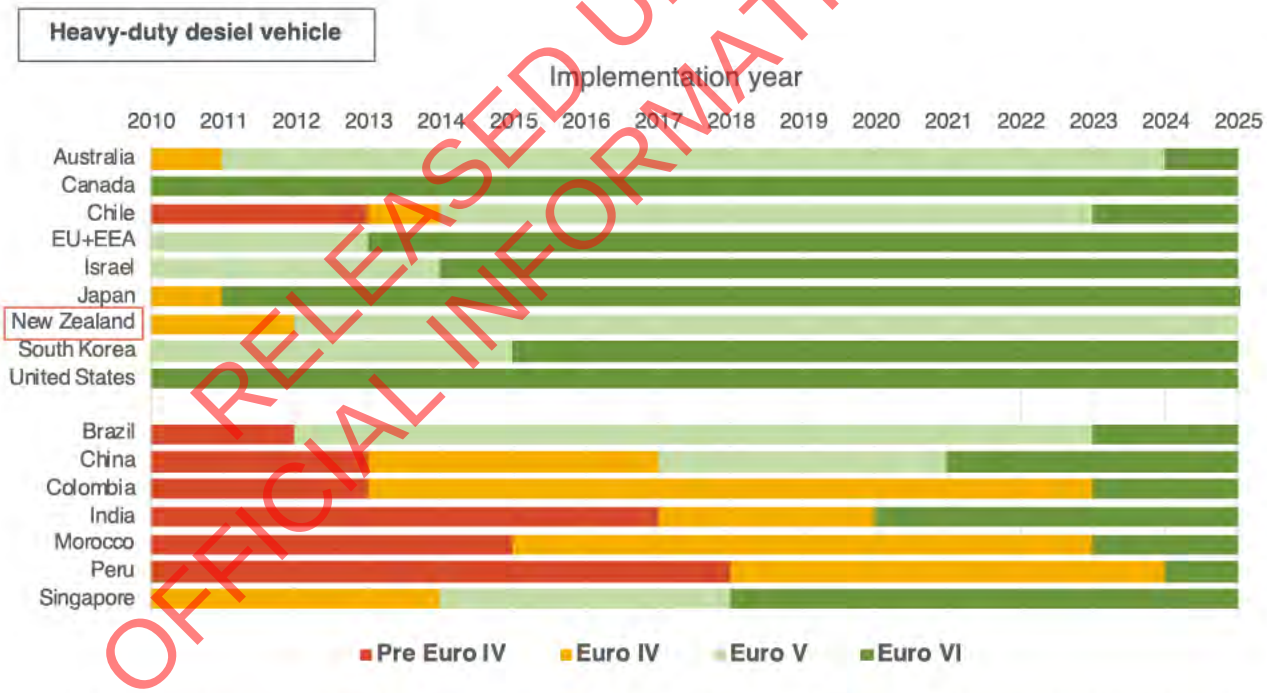

Figure 2 Implementation year (all sales and registration) of heavy-duty diesel vehicle emission standards in selected economies.

The Euro 6/VI emission standards for light- and heavy-duty vehicles require the greatest emission reductions of any previous stage along the European regulatory pathway. The light-duty Euro 6 standards include a new particle number limit for gasoline direct injection engines as well as more stringent NO_x limits for diesel passenger cars. The heavy-duty Euro VI standards address high real-world NO_x and PM emissions from diesel trucks with changes to the heavy-duty vehicle test

procedure in favor of the World Harmonized Transient Cycle, a new particle number limit, and stronger OBD requirements.

These changes with the Euro 6/VI standards will lead to further advances in the full suite of vehicle engine and aftertreatment design. For light-duty gasoline vehicles, the standards will lead to improvements in fuel injection timing and, for some vehicles, the installation of a gasoline particulate filter. Diesel passenger cars can expect to see an increase in injection pressure combined with an aftertreatment emissions control package that includes a diesel oxidation catalyst, a diesel particulate filter, and either a lean NO_X trap or a selective catalystic reduction. Heavy-duty diesel vehicles can expect to use a diesel particulate filter and shift from vanadium- to zeolite-based SCR catalysts.

Given that the Euro 6/VI or equivalent level of emission standards have been implemented in the United States, European Union, Korea, and Japan, the major vehicle markets that New Zealand imports used vehicles from, for more than 10 years, we suggest New Zealand apply the same emission standards to used vehicles as the new vehicles. That means, implementing the same Euro 6d, US Tier 3, and Japan 2028 Low Harm emissions standards to used LDVs from February 1, 2025 and implementing the Euro VI stage C, US Tier 3, Japan 2016, ADR 80/04 emission standards to used HDVs from November 1, 2025. This will enforce earlier adoption of the technologies that are widely used and needed to meet those standards.

Introducing Euro 6/VI emission standards as soon as possible will bring large emissions reduction and net benefits to New Zealand

Vehicle tailpipe exhaust emissions were found responsible for nearly 385,000 premature deaths globally in 2015 from $PM_{2.5}$ and ozone, an increase from 361,000 deaths in 2010.[3] $PM_{2.5}$ and ozone concentrations, contributed from transportation emissions, resulted in 7.8 million years of life lost and approximately US$1 trillion of health damages globally, in 2015. Similar estimates also exist for New Zealand where, transport emissions account for two-thirds of air pollution related social costs and are responsible for $10.5 billion of social cost including cases of childhood asthma, restricted activity days, hospitalizations, and premature deaths.[4]

An accelerated adoption of stringent emissions regulation such as the Euro 6/VI or equivalent standards can reverse the situation and significantly lower the health burden. Based on the health impact modeling results for New Zealand, implementation of Euro 6/VI standards for the new light- and heavy-duty vehicles in 2024 can achieve net social benefits of NZ$8,106 (i.e., total benefits NZ$8,342 – total cost NZ$236) million (in 2019 NZ$ net present value).[5] This estimate is exclusive of the used imported vehicles and thus, a lower-bound benefits estimate achievable from Euro 6/VI standard. The estimated total benefit is about 35 times higher than the estimated potential cost of compliance with the standards, if implemented in 2024. Delaying the implementation of Euro 6/VI standards would reduce the net benefits such as to NZ$1054 million if implemented in 2030 instead of 2024, which means an 87% reduction in achievable net benefits. The consultation document further reported that the proposed changes would save a cumulative social cost of more

[3] Susan Anenberg et al. *A global snapshot of the air pollution-related health impacts of transportation sector emissions in 2010 and 2015*. ICCT report, 2019. https://theicct.org/publication/a-global-snapshot-of-the-air-pollution-related-health-impacts-of-transportation-sector-emissions-in-2010-and-2015/

[4] Gerda Kuschel et al. *Health and air pollution in New Zealand 2016 (HAPINZ 3.0): Volume 1 – Findings and implications*. Prepared for Ministry for the Environment, Ministry of Health, Te Manatū Waka Ministry of Transport and Waka Kotahi NZ Transport Agency, March 2022. https://environment.govt.nz/publications/health-and-air-pollution-in new-zealand-2016-findingsand-implications

[5] Jayne Metcalfe and Gerda Kuschel. *Estimating the impacts of introducing Euro 6/VI vehicle emission standards for New Zealand*. Report prepared by Emission Impossible Ltd for Te Manatū Waka Ministry of Transport, 4 July 2022. https://www.transport.govt.nz/assets/MoT-Euro-6-modelling-final-report-4-July.pdf

than NZ$6 billion through 2050, compared to a cumulative total compliance cost of less than NZ$0.2 billion.[6] Thus, the Euro 6/VI standard is a highly cost-effective regulatory approach.

The findings for New Zealand align with those from prior studies and estimates. Emissions reduction and benefits of Euro 6/VI standards have been extensively studied in various regulatory assessment and literature. In the Euro 6/VI evaluation study, the European Commission reported that compared to Euro 5 compliant vehicles, the real-world emission factors for Euro 6d light-duty vehicles were reduced by 92% for NO_x, 30% for CO, 86% for exhaust particles, 62% for THC, and 61% for NMHC per vehicle.[7] Similarly, for the heavy-duty vehicles, real-world emission factors for Euro VI compliant vehicles were lowered by 72% for NO_x, 90% for each of exhaust particles and CO, 46% for NH_3, and by approximately 23% for each of THC and NMHC per vehicle, compared to Euro V vehicles. In 2020, the fleet-wide NO_x emissions for the entire Euro VI heavy-duty vehicle fleet were estimated about 52% lower compared to Euro V baseline.

The net monetized benefits were estimated 2.0 to 4.7 times higher than the costs of compliance for the Euro 6 standards and 15.0 to 32.8 times for the Euro VI standards. The actual net benefits with Euro 6/VI standards are expected to be even higher because the estimates did not include emissions reduction benefits for few pollutants including PN, CO, THC, and CH_4.

In Australia's consultation process in 2020 for Euro 6 standards for light-duty vehicles, the Early Assessment Regulation Impact Statement (draft RIS) reported benefits-costs assessment of switching to Euro 6d requirements from Australia's existing Euro 5 standard.[8] Implementing Euro 6d standards (from 2027 for all newly approved models and from 2028 for all Australian new light-duty vehicles), was estimated to gain net benefits of AU$5.3 billion through 2050 with a benefit to cost ratio of 5.8 approximately (i.e., total benefits of AU$6.4 billion and total capital costs of AU$1.1 billion for manufacturers through 2050).

The benefits with Euro 6/VI standards are more pronounced for heavy-duty vehicles compared to light-duty vehicles, since heavy-duty diesel vehicles are the major contributor to exhaust emissions and health effects from the on-road fleet. In 2015, heavy-duty diesel vehicles accounted for 86% of NO_x emissions from on-road diesel vehicles.[9] An ICCT report (2021) analyzed the emissions reduction and health benefits of adopting Euro VI standards for the G20 economies.[10] Implementation of Euro VI or equivalent standards during 2023-2025 timeframe in the G20 countries that had Euro V or earlier standards as of 2020, could reduce NO_x emissions by 45% to 85% in 2040 from 2020 level. Switching to Euro 6/VI emissions regulation also offers significant climate benefits, specifically due to the reduction in black carbon emissions, which is the major component of PM and an important short-lived climate pollutant. For the G20 countries that had already adopted Euro VI or equivalent standards, black carbon emissions were projected to lower by 85% to 99% in 2040 compared to the 2020 level. These emissions reductions from heavy-duty diesel vehicles were linked to 24,000 avoided premature deaths across the G20 countries in 2040 and a cumulative total avoided health cost of US$580 billion (2020 US$) from 2020 through 2050.

All these evidence for significant health and climate benefits, and cost-effectiveness of the Euro 6/VI standards or equivalent discussed above, support the rationale that New Zealand should

[6] Te Manatū Waka Ministry of Transport. *Consultation on Euro 6/VI vehicle emissions standards*, 2023. https://consult.transport.govt.nz/policy/consultationeuro6vistandards/

[7] European Commission. *Euro 6/VI evaluation study*, October 2022. https://op.europa.eu/en/publication-detail/-/publication/a9a2eadb-5f1d-11ed-92ed-01aa75ed71a1/language-en

[8] Australian Government Department of Infrastructure, Transport, Regional Development and Communications. *Light Vehicle Emission Standards for Cleaner Air Draft Regulation Impact Statement*, October 2020. https://www.infrastructure.gov.au/sites/default/files/migrated/vehicles/environment/forum/files/light-vehicle-emission-standards-for-cleaner-air.pdf

[9] Lingzhi Jin et al. *Air quality and health impacts of heavy-duty vehicles in G20 economies*, ICCT report, 2021. https://theicct.org/publication/air-quality-and-health-impacts-of-heavy-duty-vehicles-in-g20-economies/

[10] ibid

urgently adopt the standards. The adoption timeframe should be as soon as possible to maximize the achievable benefits from Euro 6/VI standards in real-world emissions reduction.

About ICCT

The International Council on Clean Transportation (ICCT) is an independent nonprofit organization founded to provide first-rate, unbiased research and technical and scientific analysis to environmental regulators. Our mission is to improve the environmental performance and energy efficiency of road, marine, and air transportation, in order to benefit public health and mitigate climate change.

w: trafinz.org.nz
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June 2023

Trafinz Submission to Ministry of Transport on:

Proposed Amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007 (May 2023 Consultation Document)

Background on Trafinz

Trafinz (The New Zealand Traffic Institute Inc) is the respected voice of local authorities and their communities on safe, sustainable, and inclusive mobility. It exists to influence the conversation and decision making. It acts as the forum for sharing, celebrating and promoting best practice professional development and advice. Its membership includes regional councils, the major metropolitan cities and smaller provincial authorities as well as private sector and non-local government members.

Trafinz's Executive is comprised of local authority elected councillors and officers, transport groups and associate members, drawing from a cross section of the membership, together with senior personnel representing its key government partners and supported by a number of senior technical staff from transport consultancies that volunteer their services pro bono.

The Institute's primary focus is on sustainable transportation planning, traffic management and road safety. It shares specialist advice to member authorities on transportation and safety issues by drawing from the depth of expertise available through its national members and international networks. It also acts as a conduit for local authorities to respond to the NZ Government on new transport policies and legislation.

Trafinz has been associated with transportation in NZ since 1948. Trafinz strong advice to government over more than 70 years is that aspirational transportation outcomes for NZ communities and businesses requires bold and visionary decisions. Change will be achieved through engineering innovation and scientific, transparent and evidence-based decision making that gives confidence in achieving forecasted outcomes.

Summary

Trafinz is supportive of the Ministry of Transport's Proposed Amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007 (May 2023 Consultation Document).

We recognise that the proposals focus on emissions that are harmful to human health (such as nitrogen oxides and carbon monoxide), and do not focus on carbon dioxide (CO2) emissions that are harmful to the climate.

However, we would like to see recognition of the fact that there is overlap between the emissions that are harmful to human health and emissions that are harmful to the climate. For example, the Euro 6 emission standard sets a legal requirement for a car manufacturer to average CO2 emissions below 98g/km (compared to 136g/km for the Euro 5 emission standard).

We are strongly committed to the Emissions Reduction Plan and our role in achieving the targets set out in this document, particularly those related to transport.

Therefore, we would like to see greater consideration of how the impacts of the Proposed Amendments will affect emissions that are harmful to the climate, and how far the Proposed Amendments will go towards achieving emissions reductions and targets set out in the Emissions Reduction Plan.

The Proposed Amendments outlined in the May 2023 Consultation Document do not make it clear if the timeframes for the changes are sufficient to effectively deliver on the Emissions Reduction Plan and emissions targets.

A better understanding of the implications of the Proposed Amendments on the Emissions Reduction Plan and its targets is required before we can comment on the pace of the proposed changes (as proposed, sped up, or are reduced).

Our response to the pace of the changes would be dependent on their impact on contributing to the Emissions Reduction Plan and targets. However, we also recognise that the timelines must be realistic and achievable for businesses and individuals to implement the changes, and to ensure that we achieve a just transition to a low-carbon future.

With this in mind, we support the introduction of higher emissions standards for light vehicle fleet; the introduction of formal emissions standards into the motorcycle and moped industry; and support both the retained and proposed exemptions.

However, we encourage the Ministry of Transport to consider the impacts of the Proposed Amendments on transport greenhouse gas emissions as outlined above, to recognise that these changes can and should lead to climate change benefits in addition to reducing impacts on human health.

We support the timeline extension for 'Disability Vehicles' to ensure we have a just, fair, and inclusive transition to the new standards of vehicles, and to minimise the potential supply constraints with obtaining a modified vehicle and seeking exemptions from the Director of Land Transport.

Introduction

Trafinz welcomes the opportunity to make a submission to the Ministry of Transport's Proposed Amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007 (May 2023 Consultation Document) - referred to as the Proposed Amendments

There is an evidential link between the emissions released from internal combustion engine (ICE) vehicles and the surrounding air quality.

Implementation of the Proposed Amendments is another key step in ensuring the ongoing improvement to Aotearoa's air quality.

Overall, we are supportive of the Proposed Amendments to reduce emissions from motor vehicles that cause significant harm to our health.

We understand that the proposals are focused on emissions that are harmful to health (e.g., nitrogen oxides) and that these are different to greenhouse gas emissions (e.g., carbon dioxide, CO2). We also recognise that greenhouse gas emissions for light fleet are regulated separately i.e., through the Land Transport (Clean Vehicles) Amendment Act 2022.

However, we encourage the Ministry of Transport to recognise that there is an overlap between the two. For example, nitrogen oxides impact health in the ways outlined on page 10 of the Consultation Document, but also lead to the formation of ozone, which is a greenhouse gas.

We also note that the Euro 6 emission standard sets a legal requirement for a car manufacturer to average CO2 emissions below 98g/km (compared to 136g/km for the Euro 5 emission standard).

As such, we would like to see greater consideration and explanation of how the Proposed Amendments can have positive impacts on greenhouse gas emissions from transport, and how they align with the Emissions Reduction Plan and transport targets set in the Consultation Document.

We are strongly committed to the Emissions Reduction Plan and our role in achieving the targets. However, the Consultation Document does not address if the Proposed Amendments and their timeframes contribute to delivering the Emissions Reduction Plan and associated targets. Our response to the pace of the changes would be dependent on the contribution to the Emissions Reduction Plan and targets, and whether they support a just transition to a low-carbon future by enabling businesses and individuals to comply with the new measures in a realistic timeframe that also delivers to our climate change goals.

In summary, we are supportive of the proposals outlined, but would like to understand their role in greenhouse gas emission reductions. Whether the pace of the changes remain the same, sped up, or are reduced, is dependent on their contribution to the Emissions Reduction Plan and impact to achieving the associated targets.

Consultation Questions on Euro 6/VI Vehicle Emissions Standard

Trafinz has provided feedback only to the questions in the Consultation Document that are of most relevance to our role as the respected voice of local authorities.

Proposal One - Requiring a Stronger Standard for Harmful Emissions from Light Vehicles

Q2: Do you consider the proposed timeframes to require stronger standards for harmful emissions from light vehicles should:

a) **Be pushed back**

b) **Be bought forward**

c) **Proceed as proposed**

d) **Not be implemented at all**

We support Proposal One to require a stronger standard for harmful emission from light vehicles as it will enable better health outcomes from Aotearoa. However, a better understanding of the implications of the proposal for the Emissions Reduction Plan and its targets is required before we can comment on the pace of the proposed changes. Our response would be dependent on the impact of the stronger emissions standards for light vehicles on the Emissions Reduction Plan and targets, and whether the proposal timeframes are realistic for business and individuals to comply in a way that ensures a just transition to a low-carbon future.

Q3: Please explain your answer for question for question two:

This proposal aims to reduce the emissions associated with light vehicles that are harmful to human health, and we acknowledge the significant emissions reductions and health benefits that the proposal brings.

However, we encourage the Ministry of Transport to recognise that emissions that are harmful to human health can also be greenhouse gas emissions that are harmful to the climate. As such Proposal One will likely have some impact on greenhouse gas emissions from transport, so we would like to see greater consideration of this and how the Proposed Amendments align with the Emissions Reduction Plan and the transport targets set in the Plan.

A better understanding of the implications of the proposal on the Emissions Reduction Plan and its targets is required before we can comment on the pace of the proposed changes. However, we would support the introduction of these standards into the industry, which should proceed within appropriate and realistic timeline for implementing the changes.

This is especially important for major cities where there is a high rate of car dependency. Whilst we acknowledge there is an urgent need to reduce our vehicle kilometers traveled (VKT) as we work towards our greenhouse gas emissions targets and the Emissions Reduction Plan, and that

providing genuine transport choice will encourage modal shift, the car will still play a role as a 'mode' in our transport network.

While greenhouse gas emissions reductions can be achieved by purchasing hybrid or electric vehicles, many people will still depend on ICE light vehicles due to ICE alternatives being financially out of reach. This proposal provides an opportunity to reduce harmful emissions and greenhouse gas emissions associated with ICE light vehicles, without further exacerbating socioeconomic class inequities around the cost of a private vehicle and the potential financial burden. We must ensure a just transition to a low-carbon future by enabling businesses and individuals to comply with the new measures in a realistic timeframe and would support the scale and pace of the change required to deliver this.

Q4: Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Yes.

Proposal Two: Requiring a Stronger Standard for Harmful Emissions from Heavy Vehicles

Q11: Do you consider the proposed timeframes to require stronger standards for harmful emissions from heavy vehicles should:

a) **Be pushed back**
b) **Be bought forward**
c) **Proceed as proposed**
d) **Not be implemented at all**

We support Proposal Two to require a stronger standard for harmful emissions from heavy vehicles as it will enable better health outcomes for Aotearoa. However, a better understanding of the implications of the proposal for the Emissions Reduction Plan and its targets is required before we can comment on the pace of the proposed changes. Our response would be dependent on the impact of the stronger emissions standards for heavy vehicles on the Emissions Reduction Plan and targets, and whether the proposed timeframes are realistic for business and individuals to comply in a way that ensures a just transition to a low-carbon future.

Q12: Please explain your answer for question for question two:

Proposal Two aims to reduce the emissions associated with heavy vehicles that are harmful to human health, and we acknowledge the significant emissions reductions and health benefits that the proposal brings. This is especially important as heavy vehicle movements are projected to increase e.g., due to online shopping trends.

However, we encourage the Ministry of Transport to recognise that emissions that are harmful to human health can also be greenhouse gas emissions that are harmful to the climate. As such Proposal Two will likely have some impact on greenhouse gas emissions from transport, so we would like to see greater consideration of this and how the proposal and timeframes align with the Emissions Reduction Plan and transport targets set in the Plan.

In particular, we would like to understand how the proposal helps in achieving the Emissions Reduction Target of *"reduce emission from freight in transport by 35% by 2035".*

A better understanding of the implications of the proposal on the Emissions Reduction Plan and its targets is required before we can comment on the pace of the proposed changes. However, we would support that the introduction of these standards into the industry should proceed within appropriate and realistic timeline for implementing the changes.

We must ensure a just transition to a low-carbon future by enabling businesses and individuals in this area to comply with new measures in a realistic timeframe. We support the scale and pace of the change required to deliver this.

Proposal Three: Requiring Motorcycles and Mopeds to Meet Minimum Exhaust Emissions Standard

Q17: Do you consider the proposed timeframes to require stronger standards for harmful emissions from motorcycles and/or mopeds should:

a) **Be pushed back**

b) **Be bought forward**

c) **Process as proposed**

d) **Not be implemented at all**

We support Proposal Three to require stronger standards for harmful emissions from motorcycles and mopeds as this will enable better health outcomes for Aotearoa. However, a better understanding of the implications of the proposal for the Emissions Reduction Plan and its targets is required before we can comment on the pace of the proposed changes. Our response would be dependent on the impact of the stronger emissions standards for motorcycles and mopeds on the Emissions Reduction Plan and targets, and whether the proposal timeframes are realistic for business and individuals to comply in a way that ensures a just transition to a low-carbon future.

Q18: Please explain your answer for question for question two:

This proposal aims to reduce the emissions associated with motorcycles and mopeds that are harmful to human health, and we acknowledge the significant emissions reductions and health benefits that the proposal brings. The introduction of these standards into the industry should proceed within appropriate and realistic timeline for implementing the changes.

However, we encourage the Ministry of Transport to recognise that emissions that are harmful to human health can also be greenhouse gas emissions that are harmful to the climate. As such, Proposal Three will likely have some impact on greenhouse gas emissions from transport, so we would like to see greater consideration of this and how the proposal aligns with the Emissions Reduction Plan and transport targets set in the Plan.

A better understanding of the implications of the proposal on the Emissions Reduction Plan and its targets is required before we can comment on the pace of the proposed changes. However, we would support that the introduction of these standards into the industry should proceed within appropriate and realistic timeline for implementing the changes.

We must ensure a just transition to a low-carbon future by enabling businesses and individuals in this area to comply with new measures in a realistic timeframe. We support the scale and pace of the change is required to would deliver this.

Proposal Four: Provisions for Disability Vehicles

Q22: Do you consider the proposed timeframes to require stronger standards for harmful emissions from disability vehicles should:

a) **Be pushed back**

b) **Be bought forward**

c) **Proceed as proposed**

d) **Not be implemented at all**

We support Proposal Four to allow extra time for used light disability vehicles to meet a stronger emissions standard. However, a better understanding of the implications of the proposal for the Emissions Reduction Plan and its targets is required before we can comment on the pace of the proposed changes. Our response would be dependent on the impact of the stronger emissions standards for disability vehicles on the Emissions Reduction Plan and targets, and whether the proposed timeframes are realistic for business and individuals to comply in a way that ensures a just transition to a low-carbon future.

Q23: Please explain your answer for question for question two:

We recognise that those who depend on a modified vehicle will be limited in their ability to reduce their emissions by modal change, and therefore support this proposal as it helps to ensure that these modified vehicles are at a standard that reduces emissions.

The proposal must ensure that the user is receiving their vehicle in an appropriate timeframe and does not provide further barriers to these user groups. We support the timeline extension to reduce the need to apply for case-by-case exemptions from the Director of Land Transport, to reduce potential supply constraints with obtaining a modified vehicle.

However, we encourage the Ministry of Transport to recognise that emissions that are harmful to human health can also be greenhouse gas emissions that are harmful to the climate. As such Proposal Four will likely have some impact on greenhouse gas emissions from transport, so we would like to see greater consideration of this and how the proposal aligns with the Emissions Reduction Plan and transport targets set in the Plan.

Trafinz appreciates the opportunity to submit on the Proposed Amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007 (May 2023 Consultation Document). Please direct any questions to Glenn Bunting, email s 9(2)(a)

Trafinz representatives do not wish to be heard in support of this submission.

Glenn Bunting

Executive Officer, Trafinz

Out of Scope

From: McGonigle, Sean <s 9(2)(a) >
Sent: Thursday, 22 June 2023 1:21 pm
To: Emissions
Cc: Out of Scope
Subject: FW: New Zealand Euro 6/VI Consultation document
Attachments: New Zealand 2023 new regs_6-14-2023.docx

Kia Ora

Harley-Davidson, Inc is a US-based motorcycle manufacturer. We import a range of heavyweight motorcycles into New Zealand. Harley-Davidson has been made aware of the proposals to change the Land Transport Rule on Vehicle Exhaust Emissions and would like to present the attached submission on the proposal.

Broadly, speaking, while Harley-Davidson understands the rationale for the proposed changes it recommends aligning regulations with other key markets in order to minimize or eliminate any additional cost to New Zealand consumers arising from the need to meet a different standard in a relatively small market.

We would be happy to discuss further, perhaps by putting our technical compliance experts in contact with those from LTNZ. Please feel free to reach out to me with any questions.

Ngā mihi
Sean

Sean McGonigle
Head Government Affairs Asia-Pacific
HARLEY-DAVIDSON MOTOR COMPANY
20 Cecil Street #19-07 Singapore 049705
s 9(2)(a)

Out of Scope

Wednesday, 21 July, 2023

Ministry of Transport
emissions@transport.govt.nz

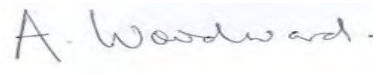
Submission on the Proposed Amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007

Thank you for the opportunity for Healthy Auckland Together (HAT) to provide a submission on the Ministry of Transport's proposed amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007.

The primary contact point for this submission is:

Sean Selby
Health promoter
Auckland Regional Public Health Service
s 9(2)(a)

Ngā mihi,



Alistair Woodward
Chair of the Healthy Transport Working Group
Healthy Auckland together

About Healthy Auckland Together

Healthy Auckland Together is committed to improving Tāmaki Makaurau so that it's an environment where all people can live full and healthy lives. By working collaboratively, we want to make it easier for everyone to be active, eat better and maintain a healthy weight. Healthy Auckland Together is a coalition of more than 30 partners representing local government, mana whenua, health agencies, non-government organisations, academia and consumer interest groups.

Overview

As a collective aimed to improve the health outcomes of all Tāmaki Makaurau, Healthy Auckland Together urges the Ministry of Transport to recognise the substantial health impacts of vehicle emissions and to make the necessary amendments to the Land Transport Rule. We recommend the Ministry move rapidly to require Euro 6/IV standards for new and used vehicles imported to this country.

Good air quality is a fundamental requirement for fulfilling and flourishing lives. Vehicle emissions degrade the quality of the air that the population of Tāmaki Makaurau live, work and play in, with serious effects on the respiratory and cardiovascular health of adults and children.

Poor air quality caused by vehicle emissions prevents many people from leading full and healthy lives, and the effects are distributed unequally. In 2016, more than half of all Aucklanders (59.4%) were exposed to levels of nitrogen dioxide (NO_2) higher than the current World Health Organizations Air Quality Guidelines, and this fraction was even greater for Pacific Peoples (74.5%).[1] NO_2 comes almost entirely from vehicle emissions. It is estimated exposure to this pollutant causes each year about 685 premature deaths and 2,504 respiratory and cardiovascular hospitalisations, alongside 6,144 new cases of asthma among children in Tāmaki Makaurau. The annual social costs are approximately $3.2 billion from both the direct hospital costs and restricted activity days during which people could not work. Air quality is a major and long-standing health problem in Tāmaki Makaurau. We note monitoring stations have recorded NO_2 concentrations above WHO AQG for the past 5 years.[2] Both Māori and Pacific Peoples are more likely to be impacted from the negative health effects of poor air quality, as there are inequities in the treatment of respiratory illness and high rates of co-morbidity in both populations.[3]

Rapid introduction of stricter emission standards will lead quickly to population-wide health gains. We argue that Euro 6/VI standards should be introduced in 2024. Euro 6/VI standards were first introduced in Europe in 2012, leaving Aotearoa New Zealand far behind other countries and at risk of higher emitting, used vehicles being imported into Aotearoa New Zealand. The economic benefits of better health would be enormous, amounting to approximately $8 billion a year from fewer premature deaths, hospitalisations, and reduced activity days.[4] The savings are reduced the more slowly Euro 6/VI standards are introduced. It is estimated only 80%, 45% and 13% of the potential benefits up to 2050 are realised if the standards are introduced in 2025, 2027 or 2030, respectively. The health gains would be further eroded if exceptions from the standard were granted to any class

[1] Kuschel et al (2022). Health and air pollution in New Zealand 2016 (HAPINZ 3.0): Volume 1 – Finding and implications. (Report prepared by G Kuschel, J Metcalfe, S Sridhar, P Davy, K Hastings, K Mason, T Denne, J Berentson-Shaw, S Bell, S Hales, J Atkinson and A Woodward for Ministry for the Environment, Ministry of Health, Te Manatū Waka Ministry of Transport and Waka Kotahi NZ Transport Agency, March 2022). Ministry for the Environment

[2] Auckland Council. Auckland air quality monitoring network (2023). Available at: https://aucklandairquality.shinyapps.io/AucklandAirDashboard/. Accessed Jan 6, 2023.

[3] Harris R, Tobias M, Jeffreys M, et al. (2006) Effects of self-reported racial discrimination and deprivation on Māori health and inequalities in New Zealand: cross-sectional study. Lancet 367 2005–9.

[4] Metcalfe J and Kuschel G (2022). Estimating the impacts of introducing Euro 6/VI vehicle emission standards for New Zealand. (Report prepared by Emission Impossible Ltd for Te Manatū Waka Ministry of Transport, 4 July 2022.). Ministry of Transport

of vehicle, particularly diesel and heavy vehicles, as a large proportion of harmful transport emissions are produced by vehicles of this kind.[5]

Key points that Healthy Auckland Together would like you to consider are:

1. Exhaust emissions from vehicles are a significant cause of ill-health within Tāmaki Makaurau.
2. A Euro 6/VI emission standard or equivalent should be introduced for all classes and fuel types of used and imported vehicles, to maximise the health benefits of improved air quality.
3. Euro 6/VI emission standards should be introduced as soon as possible, preferably in 2024 to maximise health benefits
4. Exemptions should not be granted to any class or fuel type, in particular diesel vehicles as they cause a disproportionate harm to the health of residents of Tāmaki Makaurau.

Responses to Consultation Questions

The following are detailed responses to select questions posed in the consultation document.

Proposal one: Requiring a stronger emissions standard for light vehicles

Question 2: Proposed timeframes, and
Question 3: Explain

Healthy Auckland Together recommends that the proposed timeframes to require stronger standards should be brought forward to 2024 for all imported light vehicles in the interest of health equity in Tāmaki Makaurau. Light vehicle emissions make up a majority of Aotearoa New Zealand's fleet and contribute significantly to the harms of poor air quality in Tāmaki Makaurau, with Pacific Peoples having higher exposure and being more at risk to the negative health effects.[6] Introduction of the higher vehicle emission standards as proposed or delayed will increase the avoidable harm experienced by the population of Tāmaki Makaurau by a significant amount compared to introduction in 2024.[7]

Question 4: Grouping of international standards.

We agree with the group of the standards and believe they are appropriately aligned.

Question 6: Euro 6e and Euro 7

We recommend that Aotearoa New Zealand introduce Euro 6e and Euro VII standards in a manner consistent with global standards. Keeping with the latest standards allows Aotearoa New Zealand to reduce the harm of vehicle emissions in an efficient manner. Not implementing global standards may result in an increase in higher emitting, used vehicles within Aotearoa New Zealand as the market will accept them where other countries will not.

Proposal two: Requiring a stronger emissions standard for heavy vehicles

Question 11: Proposed timeframes, and

[5] Metcalfe J, & Peeters S (2022). Vehicle Emissions Prediction Model: VEPM 6.3 update technical report. (Report prepared for Waka Kotahi NZ Transport Agency by Emission Impossible Ltd, April). Ministry of Transport.
[6] See 1
[7] See4

Question 12: Explain

We recommend that the proposed timeframes to require stronger standards should be brought forward to 2024 for all imported heavy vehicles in the interest of health equity in Tāmaki Makaurau. Heavy vehicles produce a disproportionate amount of harmful emissions, causing 17.4 times more harm through emissions per kilometre travelled when compared to a petrol light vehicle.[8] Tāmaki Makaurau is a centre for shipping and freight, which results in a disproportionate amount of heavy vehicles within our communities compared with the rest of Aotearoa New Zealand. By 2028, it is expected that there will be a 5% increase in vehicle emissions from a 2019 baseline, with 85% due to increased heavy vehicle demand.[9] The introduction of the higher vehicle emission standards as proposed or delayed will increase the avoidable harm experienced by the population of Tāmaki Makaurau by a significant amount compared to introduction in 2024.

Question 13: Grouping of international standards.

We agree with the group of the standards and believe they are appropriately aligned.

Question 15: Euro VII introduction.

We recommend that Aotearoa New Zealand introduce Euro VII standards for heavy vehicles in a consistent manner with global standards. Keeping with the latest standards allows Aotearoa New Zealand to reduce the harms of vehicle emissions in an efficient manner. Not implementing global standards may result in an increase in higher emitting, used vehicles within Aotearoa New Zealand as the market will accept them where other countries will not.

Proposal three: Requiring motorcycles and mopeds to meet minimum exhaust emissions standard

Question 17: Proposed Time frames
Question 18: Explain

We recommend to use a consistent approach and introduce minimum vehicle emissions standards for motorcycles and mopeds to keep up with the global standard.

Question 19: Grouping of international standards.

We agree with the group of the standards and believe they are appropriately aligned.

Proposal four: Provisions for disability vehicles

Healthy Auckland together supports, in principal, the definitions used for disability vehicles. We recommend a consistent approach to vehicle emissions standards to protect those most vulnerable to poor air quality.

Conclusion

Thank you for the opportunity to submit on the Proposed Amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007.

[8] See 1
[9] Auckland Transport (2019). Auckland's road transport emissions…a new dialogue (2019) Available at: https://at.govt.nz/media/1980587/aucklands-road-transport-emissions-a-new-dialogue-final-may-2019.pdf

Te Whatu Ora
Health New Zealand

Te Whatu Ora submission on proposed amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007

Date	22 June 2023
Contact person	Suz Halligan, Principal Advisor, National Public Health Service
Contact email	s 9(2)(a)
Authorised by	Dr Nick Chamberlain, National Director, National Public Health Service

Details of Submitter

1. Thank you for the opportunity to provide Te Whatu Ora's view on the amendments to the Land Transport Rule: Vehicle Exhaust Emissions.

2. Te Whatu Ora leads the day-to-day running of the health system across Aotearoa New Zealand, and either provides or commissions services at local, district, regional and national levels. Under the Pae Ora (Healthy Futures) Act 2022, one of the key objectives of Te Whatu Ora is "to promote health and prevent, reduce, and delay ill-health, including by collaborating with other agencies, organisations, and individuals to address the determinants of health." The National Public Health Service (NPHS) is a Division of Te Whatu Ora and leads the delivery of Health Protection, Health Promotion and Prevention services, as well as working with the Public Health Agency and Te Aka Whai Ora on intelligence, population health and policy.

General Comments

3. Te Whatu Ora supports the proposed amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007. The future health and well-being of the population of Aotearoa New Zealand is reliant on an environment that can sustain and promote healthy human life. Clean air is fundamental to life and health and is a basic human right.[1] Clean air is a taonga for Māori. Ensuring that public health impacts from poor air quality are minimised will help all New Zealanders achieve pae ora (healthy futures). It supports the prospect of longer and healthier lives for all New Zealanders – improving the quality of life and improving health equity for Māori and all people.

[1] United Nations Human Rights Council, 2021. Resolution 48/13, 8 October. [Available at: https://undocs.org/A/HRC/RES/48/13]. Accessed 11 Jun 2023. WHO, 2021. *WHO global air quality guidelines. Particulate matter ($PM_{2.5}$ and PM_{10}), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide.* World Health Organization. Geneva. Switzerland.

4. It is estimated that every year, harmful transport emissions are responsible for $10.5 billion in social costs[2], including:

    a. 13,000 cases of asthma in our tamariki

    b. 900 hospitalisations of tamariki presenting with asthma/wheeze

    c. 9000 cardiovascular and respiratory hospitalisations

    d. 2,200 premature deaths, which accounts for about one in fourteen deaths annually.

5. The implementation of these emission standards will go some way to reducing these deaths and the burden of disease inflicted on our communities due to harmful transport emissions.

Priority Comments

Co-benefits for health

6. By introducing the proposed emission requirements, there will be significant co-benefits for health. We see particular benefits in reducing exposure to air pollution for our children and young people who are attending early childhood centres, kohanga reo and schools/kura in locations near busy main roads and highways, and are spending much of their time outdoors, as well as whānau whose homes are in these areas. There are also many marae, often with kohanga reo attached, located on main roads that will benefit from reduced exposure to transport associated air pollution.

7. The introduction of the standards will reduce the level of emissions on busy roads which will encourage greater use of active transport on and beside those roading systems and will protect those who do.

Implementation Timeframe

8. Te Whatu Ora supports the proposed timeframes for implementation. The proposed emission requirements will (in time) lower the amounts of NO_2 and CO_2 contributed to the atmosphere from our main contributor (NZ vehicle fleet). Aotearoa New Zealand is lagging behind other comparable countries in setting emission expectations for imported vehicles. Even by adopting the Euro 6 Standards at the beginning of 2025, we will be below the new Euro 7 Standards.

9. We agree with the Ministry of Transport saying that leaving the transition too long means continuing to accept social harms that are inequitably felt throughout our country. If this timeframe is met there will be a social cost saving of upward of $6.7b (accumulated to 2050).

[2] Kuschel et al (2022). Health and air pollution in New Zealand 2016 (HAPINZ 3.0): Volume 1 – Finding and implications. Report prepared by G Kuschel, J Metcalfe, S Sridhar, P Davy, K Hastings, K Mason, T Denne, J Berentson-Shaw, S Bell, S Hales, J Atkinson and A Woodward for Ministry for the Environment, Ministry of Health, Te Manatū Waka Ministry of Transport and Waka Kotahi NZ Transport Agency, March 2022.

Equity

10. The proposal identifies that 31 percent of the population (in 2016) were living in areas where nitrogen dioxide (NO_2) concentration exceeded the WHO 2021 Air Quality Guidelines (used in the absence of an Aotearoa New Zealand standard or guideline).

11. We support the analysis that air quality impacts on various groups are disproportionate. Young and old and those living near busy roads are more greatly affected by air pollution and that these groups would most likely receive the benefits of importing clean vehicles due to improved air quality around their homes and being diesel vehicle users (that are affected as drivers and passengers).

12. A recent study that Te Whatu Ora commissioned (yet to be published) identified that this exposure was not shared evenly when stratified by the New Zealand Deprivation Index (NZDep2013):

    a. The percentage of people living in the most socioeconomically deprived areas (NZDep2013 decile 10) exposed to annual concentrations of NO_2 above the WHO 2021 Air Quality Guidelines is three times greater than the percentage of people living in the least deprived areas (NZDep2013 decile 1).

    b. On average, people living in NZDep2013 decile 10 areas were exposed to long-term concentrations of NO_2 that were 34% higher than people living in NZDep2013 decile 1 areas.

13. The study found that estimated air pollution health impacts associated with both anthropogenic $PM_{2.5}$ and NO_2 exposure were substantially higher in more deprived areas. For example, in the most deprived areas (NZDep2013 decile 10) compared with the least deprived areas (NZDep2013 decile 1), the:

    a. rate of premature mortality (30 years +) associated with exposure to NO_2 and $PM_{2.5}$ is two times higher

    b. rate of respiratory hospitalisation associated with exposure to NO_2 is four times higher

    c. rate of respiratory hospitalisation associated with exposure to $PM_{2.5}$ is three times higher

    d. rate of cardiovascular hospitalisation associated with exposure to NO_2 and $PM_{2.5}$ is 1.7 times higher

    e. rate of asthma prevalence in 0–18-year-olds associated with exposure to NO_2 is 1.6 times higher.

14. This analysis strengthens that provided in the Ministry of Transports proposal. Any improvements in Aotearoa New Zealand vehicle emissions will likely have a significant positive benefit on our communities that are located in our most deprived areas, including those with existing health conditions that are exacerbated by exposure to poor air quality.

Conclusion

15. Te Whatu Ora supports the Ministry of Transport proposal to:

    a. Rapidly shift the minimum requirement on used imports from Euro 4/IV to Euro 5/V.

    b. Phase in the shift from Euro 5/V to Euro 6/VI on used imports and new vehicles in several steps, between late 2024 and the start of 2028.

    c. Introduce an emissions requirement for mopeds and motorcycles.

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s 9(2)(a)

22 June 2023

Ministry of Transport
3 Queens Wharf
Wellington, 6011

Email: emissions@transport.govt.nz

Vehicle Exhaust Emissions Amendment 2023

Thank you for the opportunity for a submission for consideration.

Ford New Zealand are supportive of implementing the new standard and already have a large portion of our market offer at Stage *6NI.*

We understand the broader industry concerns around ADR and linking timing to Australian market adoption of Stage 6NI.

Our submission focuses on the timing of the new rule implementation but the unintended consequences of being a leader and early in your transition to Stage 6NI under the Clean Car CCD and CCS policies.

Key Points:

- We need absolute clarity on the definitions of "new" and "existing" models please.
- Most of Ford New Zealand's products on offer today are already EU6NI including some Rangers. Alongside our ZEV products we are also leading on Stage 6NI adoption at the mass market level (see table below of our current showroom emissions levels by product.)
- Today an unfortunate consequence of having cleaner Stage 6NI rated vehicles is that the CCD Fees our customers pay and the potential CCS Fees we may pay are significantly higher than they would be at a lower emissions standard because the base measure has changed to a more real-world measure. We have experienced this on our Transit Vans and recently on Ranger where the conversion does not accommodate the more accurate measure (see background data provided separately).
- Manufacturing costs of the cleaner standard vehicles are also significantly higher, so effectively by offering a cleaner vehicle there are multiple financial penalties under CCS and CCD that simply do not make sense and as they do not incentivise early adoption across the market and in fact disincentivises it. We have ploughed ahead deploying these technologies to New Zealand customers despite this because we believe it to be the right thing to do.
- We ask that due consideration of this perverse outcome be considered immediately in the Clean Car Policy framework. This is a key concern as the introduction of the revised standard will effectively re-set targets for the CCS vs the basis on which they were originally set. We suggest this is also a key input into the ministerial review of the CCS in 2024.
- From now until the point of implementation of the new rule (even if that is to accommodate a timeline that aligns with Australia), serious consideration needs to be given to ensure those manufacturers who are ahead are not disadvantaged by being cleaner sooner. This could be supported in the form of an off standard credit under the CCS alongside a discount in the CCD to make Stage 6NI meaningful in the public domain.

Ford New Zealand - Current Stage 6NI Showroom Line-Up

Model/Powertrain	Current Emissions Level
Passenger Vehicles	
Focus 1.0. Mild Hybrid	Euro 6
Puma 1.0 Mild Hybrid	Euro 6
Escape Full Hybrid	Euro 6
Mustang Mach E BEV	Zero Emissions
Mustang V8	USA EPA Tier 3 or EU6
Commercial Vehicles	
Ranger Bi-Turbo 2.0 (OR2) Wildtrak X & Raptor	Euro 6d
Transit Custom	Euro 6d
Transit Tourneo	Euro 6d
Transit Carqo	Euro 6d
Transit Carqo BEV	Zero Emissions

Background Data (attached separately).

- The separately attached paper from the European Commission attempted to place ranges on where CO2 emissions measured would move to with the adoption of WLTP. Tables on Pages 3 (Light Passenger Vehicles) and 4 (Light Commercial Vehicles) show the uplift in CO2 output when moving from NEDC to WLTP to be anywhere between 1.07 for a large Gasoline engine passenger car **to 1.45 for a Diesel-Hybrid commercial vehicle.**
- The International Council on Clean Transportation (ICCT, who monitor transport CO2 emissions), reported that the average uplift is +21% for Passenger Vehicles when moving form NEDC to WLTP cycles: https://theicct.org/publication/on-the-way-to-real-world-co2-values-the-european-passenger-car-market-in-its-first-year-after-introducing-the-wltp/

Sincerely,

Jtd /(

Simon Rutherford
Managing Director
Ford Motor Company of New Zealand
s 9(2)(a)

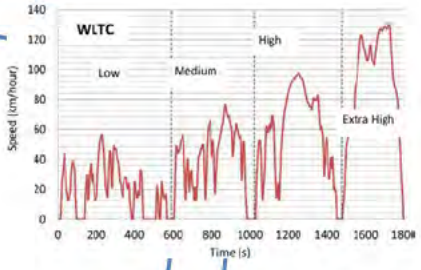
European Commission

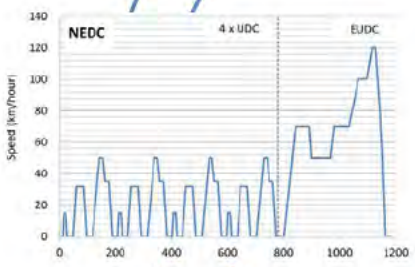
JRC SCIENCE FOR POLICY REPORT

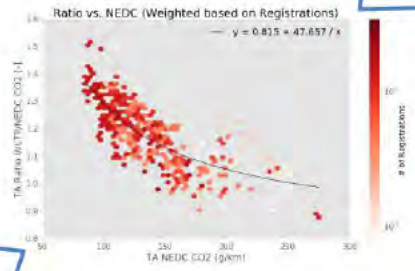
From NEDC to WLTP: effect on the type-approval CO_2 emissions of light-duty vehicles

S. Tsiakmakis, G. Fontaras,
C. Cubito, J. Pavlovic,
K. Anagnostopoulos, B. Ciuffo

2017







Joint Research Centre

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From NEDC to WLTP: effect on the type-approval CO_2 emissions of light-duty vehicles

The present report summarises the work carried out by the European Commission's Joint Research Centre to estimate the impact of the introduction of the new type approval procedure, the Worldwide Light duty vehicle Test Procedure (WLTP), on the European car fleet CO_2 emissions.
To this aim, a new method for the calculation of the European light duty vehicle fleet CO_2 emissions, combining simulation at individual vehicle level with fleet composition data is adopted. The method builds on the work carried out in the development of CO2MPAS, the tool developed by the Joint Research Centre to allow the implementation of European Regulations 1152 and 1153/2017 (which set the conditions to amend the European CO_2 targets for passenger cars and light commercial vehicles due to the introduction of the WLTP in the European vehicle type-approval process).
Results show an average WLTP to NEDC CO_2 emissions ratio in the range 1.1-1.4 depending on the powertrain and on the NEDC CO_2 emissions. In particular the ratio tends to be higher for vehicles with lower NEDC CO_2 emissions in all powertrains, the only exception being with the plug-in hybrid electric vehicles (PHEVs). In this case, indeed, the WLTP to NEDC CO_2 emissions ratio quickly decreases to values that can be also lower than 1 as the electric range of the vehicle increases.

Contents

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Disclaimer

The views expressed here are purely those of the authors and may not, under any circumstances, be regarded as an official position of the European Commission.

Executive summary

The present report presents the results of a study aimed at analysing the impact on the European light duty vehicle fleet CO2 emissions of the introduction of the Worldwide Light duty vehicle Test Procedure (WLTP) in the European vehicle type-approval process.

The calculations made in this report for conventional vehicles rely mainly on the use of the PyCSIS (Passenger Car fleet emissions SImulator) model, which was developed on the basis of CO2MPAS (CO2 Model for PAssenger and commercial vehicles Simulation), the model used in the phasing-in of the WLTP for the adaptation of the CO2 targets for light duty vehicles to the new test procedure[1]. However, while CO2MPAS depends on the test results of individual vehicles, PyCSIS makes use of limited information, referring mainly to already available data sources and using empirical models and information collected from measurements at the Joint Research Centre of the European Commission. The methodology was applied to assess the impact of the introduction of the new CO2 certification procedure in Europe on the vehicle fleet CO2 emissions. The main results of this calculation are reported in Table E.1 for passenger cars and in Table E.2 for light commercial vehicles. For conventional, internal combustion engine (ICEV) passenger cars, the PyCSIS model has been applied to all new registrations of year 2015. For battery electric, plug-in hybrid electric, and hybrid electric vehicles, a different approach has been used due to the limited number of such vehicles sold in the European market in 2015. For this reason, in the table below only the WLTP to NEDC ratio is shown for these vehicle segments and not the NEDC values.

Considering the certification values for CO2 emissions, results for ICEV passenger cars show an average WLTP to NEDC CO2 ratio of 1.21 (sales weighted average across the fleet). The ratio is higher for cars with lower NEDC emission values, while at very high emission levels (about 250 CO2 g/km) WLTP and NEDC lead to comparable results between the two procedures. Similar trends are found for light commercial vehicles, with a slightly higher average ratio for passenger cars (~1.3).

Results for battery electric (BEVs) and fuel cell vehicles (FCVs) show an expected average WLTP to NEDC electric energy ratio of approximately 1.28 and a pure electric range ratio of approximately 0.9 (approximately 0.8 for BEVs and 0.95 for FCVs). Differently from the case of the ICEVs, the ratio for EVs remains almost constant for vehicles of different size. In addition, the energy ratio is slightly higher for bigger vehicles than for smaller vehicles.

Results for hybrid electric vehicles (HEVs) show an average WLTP to NEDC CO2 ratio significantly higher than for ICEVs (approximately 1.33 for passenger cars and 1.4 for light commercial vehicles). Like in the case of ICEVs, the ratio is higher for vehicles with lower CO2 emissions.

[1] European Commission Regulations 1152/2017 and 1153/2017

Table E.1: Relationship between WLTP and NEDC CO_2 emissions for different passenger cars

Passenger Cars		NEDC Type Approval Emissions (g/km) (official 2015 data)	Ratio WLTP/NEDC
All ICEV		123	1.21
Gasoline	All	125	1.22
	< 1.4 l	115	1.24
	1.4-2.0 l	148	1.15
	> 2.0 l	225	1.07
Diesel	All	121	1.20
	< 1.4 l	93	1.26
	1.4-2.0 l	114	1.21
	> 2.0 l	159	1.14
LPG		116	1.16
Gas		104	1.36
HEV Gasoline	< 1.4 l		1.37
	1.4-2.0 l		1.32
	> 2.0 l		1.23
HEV Diesel	< 1.4 l		1.38
	1.4-2.0 l		1.34
	> 2.0 l		1.30
PHEV			1.00
BEV/FCV*	Small		1.258
	Medium		1.283
	Large		1.299

Table E.2: Relationship between WLTP and NEDC CO_2 emissions for different types of light commercial vehicles

Light Commercial Vehicles	Ratio WLTP / NEDC
All ICEV	1.30
Gasoline	1.22
Diesel	1.31
LPG	1.16
Gas	1.36
HEV Gasoline	1.38
HEV Diesel	1.45
PHEV	1.00
BEV / FCV[2]	1.21

Finally, results for plug-in hybrid electric vehicles (PHEVs) show a peculiar trend. Due to the differences between the two test procedures (especially in the way they combine results from the charge-depleting and charge-sustaining tests), the WLTP to NEDC CO2 emissions ratio strongly depends on the capacity of the electric battery. The ratio quickly decreases as the battery capacity increases. For this reason, also considering the evolution in the battery capacity, an average ratio of 1 has been estimated for PHEVs.

[2] The WLTP to NEDC RATIO for BEVs and FCVs refer to the electric energy consumption

1 Introduction

Light-duty vehicles only – passenger cars and vans – produce around 15% of the EU's CO_2 emissions [1]. Regulation (EU) No 443/2009 sets the target of fleet-wide sales weighted average CO_2 emissions from passenger cars to 130 gCO_2/km and 95 gCO_2/km, for years 2015 and 2020, respectively[3]. The aim is to curb transport generated greenhouse gas emissions and incentivize investments in new technologies that will improve fuel efficiency and fuel consumption [2]. In order to respect the competitiveness and diversity among different manufacturers, manufacturer-specific targets are defined according to a limit-value line, proportional to the sales-weighted average mass of their fleet while the fleet-wide emissions need to comply with the targets set in the Regulation [3]. Manufacturers failing to achieve their targets are subject to costly penalties.

The current test protocol and associated New European Driving Cycle (NEDC), on which the CO_2 targets are based, has received criticism regarding its effectiveness to reduce CO_2 emissions in real world operating conditions [4–10]. There are multiple reasons contributing to this, the NEDC itself [4,11], the flexibilities of the NEDC-based test procedure, i.e. the interpretation made on various loosely defined boundaries [12], and differences in the operation of the car under laboratory conditions compared to that over real life conditions [13].

In order to address these issues and to strengthen the effectiveness of existing policies, the European Commission is introducing a new, more realistic test procedure in the type-approval process. The new World-wide harmonized Light duty Test Cycle (WLTC) and the new World-wide harmonized Light duty Test Procedure (WLTP) were developed as a global standard for determining pollutant and CO_2 emissions. The objective of WLTP was to provide a more robust test-basis and a procedure which is more representative of actual on-road vehicle operation [14–17]. WLTP significantly differs from NEDC; its main differences affecting fuel consumption include the test cycle and gear-shifting sequence, vehicle mass definition, road load determination, chassis dynamometer preconditioning, temperature, and REESS (Rechargeable Electric Energy Storage System) Charge Balance correction.

The WLTP is introduced in the European type-approval process from September 2017 [18], in parallel with the introduction of the final Euro 6c emission limits [19,20] and following the recently established procedure for measuring Real Driving Emissions [21,22]. These three pillars create a robust framework for pollutant and CO_2 emission control in Europe. However, the WLTP introduction will have an effect on the monitored CO_2 emission values and consequently on the targets for the year 2021, as those are based on the NEDC. Through the correlation and target translation legislation, the WLTP procedure will be introduced without amending the targets set for the 2015-2021 period. Until 2021, the existing (NEDC) CO_2 targets will not change, and CO_2 emissions measured at type-approval using the WLTP procedure will be translated into the corresponding NEDC-based value using a technology-based vehicle simulation model, CO_2MPAS (CO_2 Model for PAssenger and commercial vehicles Simulation) [23], developed by the European Commission for the implementation of EU Regulations 1152/2017 [24] and 1153/2017 [25]. In 2020, the ratio between the average sales-weighted NEDC-simulated emissions and the manufacturer-specific target will be applied to the WLTP-measured, sales-weighted CO_2 emissions to identify, for each vehicle manufacturer, a specific WLTP-based target for 2021 and thereafter [26,27].

The exact effect of WLTP introduction on fleet-wide CO_2 emissions is difficult to estimate and limited literature on the topic is available. Most studies published to date estimate the effect of the WLTP introduction on individual cars, rather than the effect on the European fleet as a whole. The present report attempts an estimate of the impact of WLTP introduction on the officially reported CO_2 emissions from light duty vehicles. To achieve this the PyCSIS tool (Passenger Car fleet emissions SImulator) was used [28];

[3] Regulation (EU) 510/2011 sets the targets for vans.

PyCSIS makes use of as limited information as possible, referring mainly to already available data sources and using empirical models and information collected from measurements at the Joint Research Centre of the European Commission in order to calculate CO_2 emissions over the two test protocols.

PyCSIS focuses mainly on conventional vehicles but the methodology based on PyCSIS was extended to cover electric vehicles (battery and fuel-cell vehicles), plugin-in hybrid electric vehicles and hybrid electrics in order to provide a comprehensive picture. The remainder of the report is structured as follows: initially, the methodology applied for the internal combustion engine vehicles is outlined. The outline of the PyCSIS tool is provided along with its main inputs, models and sub-models. The two main datasets used are presented together with the various data analysis steps. The results obtained with the model on the 2015 European fleet of passenger cars are presented. Next, the methodology is extended to cover electric powertrains. Simulation results obtained for conventional vehicles are coupled with powertrain specific assumptions and extended to cover the WLTP/NEDC ratio of battery electric and fuel-cell powered vehicles. Plug-in hybrid electrics' and hybrid electrics' operation is modelled using a simplified back-engineering approach starting from individual vehicles' laboratory measurement data. The approach is used to define the on-off operation of the internal combustion engine of an hybrid architecture. The approach is combined with the PyCSIS outputs for conventional internal combustion engine vehicles and, applying the respective legislations, calculates the respective CO_2 emission figures assuming that each vehicle operates as an hybrid.

2 Internal Combustion Engine Vehicles

2.1 Methodology

The following paragraphs provide a high level description of the PyCSIS model's structure (Figure 1). More information about PyCSIS and its sub-models can be found in [28]. The approach uses a methodology similar to the methodology of the CO_2MPAS Model [27,29], the open-source software developed by the Joint Research Centre of the European Commission to support the introduction of WLTP in the European Legislation and to allow the back-translation of a WLTP test to the equivalent NEDC CO_2 emission value [23].

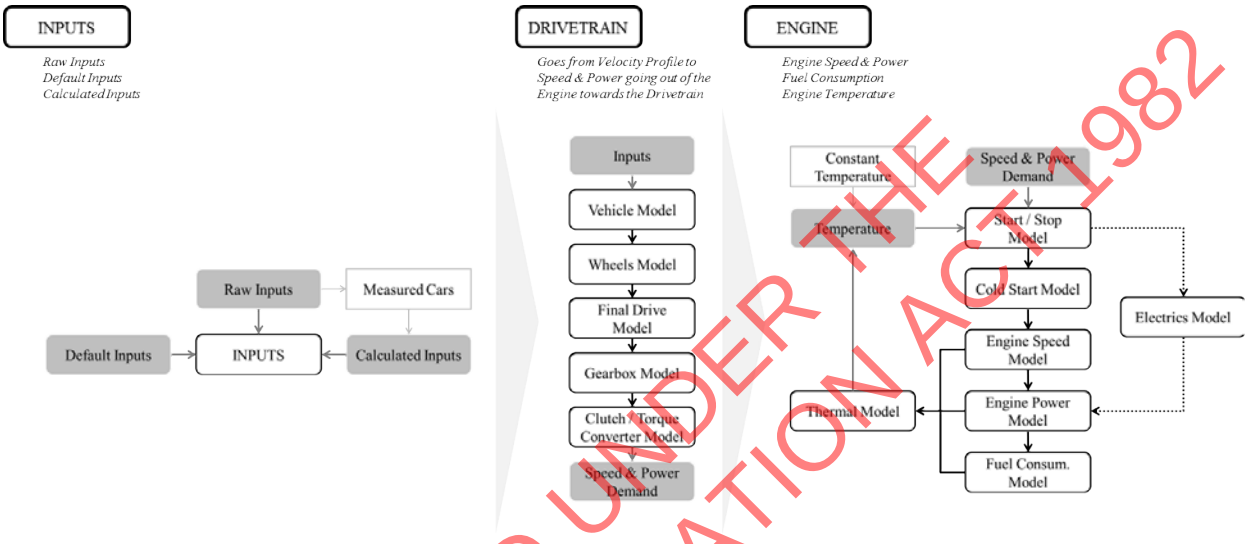

Figure 1: Outline of the Vehicle Simulation Tool and its key modules: the inputs module, the drivetrain module, and the fuel consumption module

Table 1 lists the main raw inputs of PyCSIS, the main parameters that define a single car. In addition, the tool uses a list of default values, plus a list of values calculated by empirical formulas derived from a pool of available measured cars (Annex 1).

Vehicle energy demand is calculated via simple vehicle longitudinal dynamics. The drivetrain module includes the various sub-models of the vehicle's drivetrain, excluding the engine. The calculation starts with a predefined velocity profile, and, respecting the energy equilibriums in the various steps, goes backwards from the forces applied to the vehicle and the wheels, to the final drive, the gearbox, the clutch or torque converter, up to the required engine's speed and power output. Engine power, engine speed, temperature and fuel consumption are then calculated by the engine module, using an extended Willans' lines approach [30,31] for the "fuel map" representation. A detailed description of the model and its sub-modules can be found in [28].

Table 1: Inputs of the Vehicle Simulation Tool

Name	Unit	Values / Comments
Aspiration Method	-	Turbo or Natural Aspiration / Turbo concerns all charging technologies
Dynamic Rolling Radius	Mm	Dynamic rolling radius of the wheel
Engine Capacity	Cc	Engine's capacity
Final Drive Ratio	-	Final drive ratio
Fuel	-	Fuel can be gasoline, diesel, etc.
Gearbox Ratios	-	Gearbox ratios
Gearbox Type	-	Manual or automatic
Mass in Running Order	Kg	As defined in Regulation No. 1230/2012 [32]
Nominal Power	kW	Nominal power of the ICE
Nominal Speed	RPM	Nominal speed of the ICE
Nominal Torque	Nm	Nominal torque of the ICE
Reference Mass	Kg	Vehicle's test mass
Start Stop Technology	-	Presence of a S/S system
Stroke	Mm	Cylinder's stroke
Unladen Mass	Kg	Vehicle's curb mass
Velocity Profile	km/hr, sec, -	Velocity, time, gear
Wheel Drive	-	2WD or 4WD

Table 2: Outputs of the Vehicle Simulation Tool used in the present study

Name	Unit	Values / Comments
Energy Demand	kJ	Overall and instantaneous energy demand for the simulated mission profile
Fuel Consumption	l	Overall and instantaneous fuel consumption for the simulated mission profile
CO_2 Emissions	g/km	Average CO_2 emissions for the simulated mission profile

2.2 Data Sources & Analysis

The official European Monitoring databases of CO_2 developed and maintained by the European Environmental Agency (EEA) [33,34] were used as a reference of this study. The databases, henceforward referred to as the "Fleet Datasets", collect the necessary information to assess vehicle manufacturers' compliance to the European CO_2 targets. Approximately 13 million new registrations of passenger cars and 1.5 million new registrations of light-commercial vehicles in the 27 Member States are grouped per

vehicle type, variant, and version. For each entry the following information, among others, is provided: CO_2 emissions (g/km), mass in running order (kg), displacement (cm^3), engine power (kW), type of fuel, number of registrations in Europe for the specific year and vehicle footprint. Provisional data for the year 2015 were used for the present analysis.

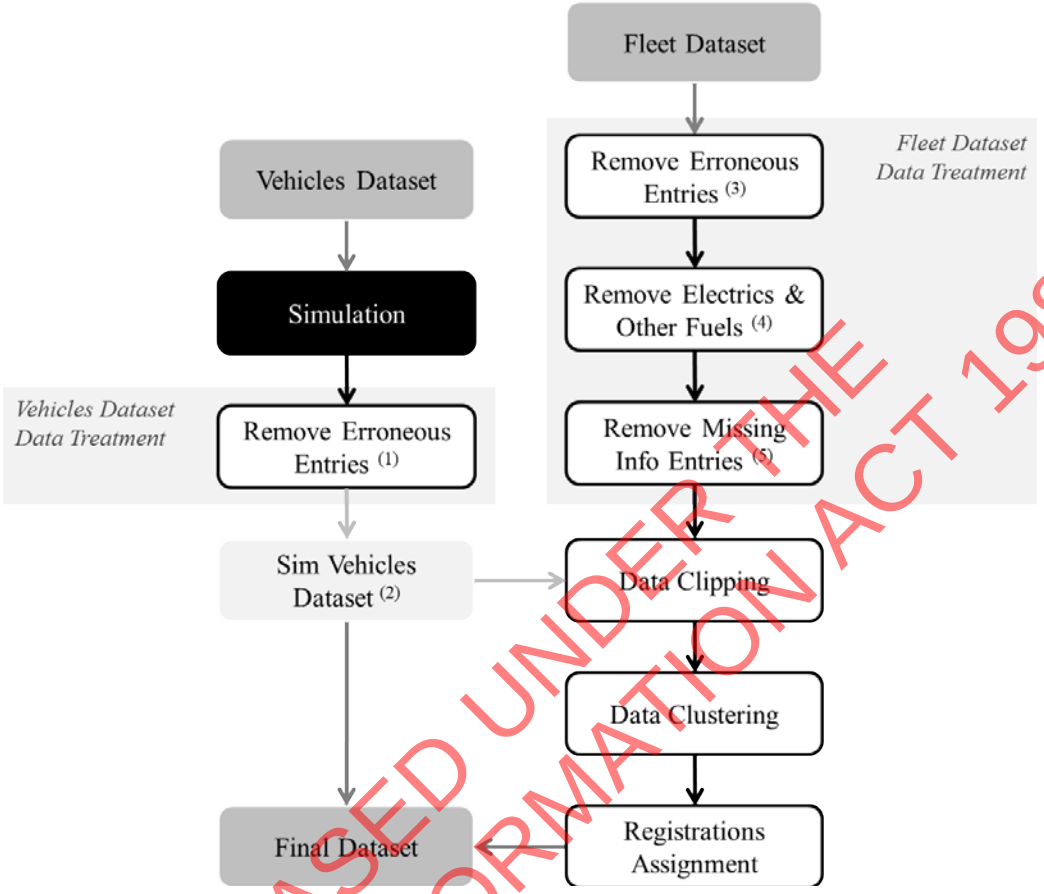

Figure 2: Flow-chart of the various data analysis steps performed to the two main datasets: the Vehicles Dataset and the Fleet Dataset (see footnote for notes[4])

The information included in each Fleet Dataset is not sufficient to run the model, as it provides no information on most vehicle characteristics, engine characteristics, road loads and on the type and the characteristics of the transmission. This information deeply affects the model's performance. Information from the official EEA database was combined with additional information retrieved from on-line publicly available sources (i.e. online databases like carfolio.com, cars-data.com, carspector.com, etc., and vehicle manufacturers' websites) which was used to formulate a second, more detailed database ("Vehicles Dataset"). This second database contains vehicle-specific information of approximately 1,200 vehicles, all available in the market in 2015, for both gasoline and diesel fuelled cars, with automatic and manual transmissions. Vehicles using other fuels and electric or electrified vehicles were excluded due to their very low share in vehicle sales. The Vehicles Dataset contains information regarding gearbox (gearbox ratios and

[4] Notes: (1) Defined as entries with an error of Simulated vs. Reported NEDC CO2 Emissions value of < -10% or +30%; (2) The Sim Vehicles Dataset contains all entries of the Vehicles Dataset, plus two new entries: Simulated NEDC & Simulated WLTP CO2 emissions; (3) Defined as falling in one of the two following categories: (a) vehicles with carbon based fuels with no CO2 emissions, or (b) vehicles with CO2 emissions less than 70 g/km; (4) Other fuels include entries with either "hydrogen" or "others" in the fuel field of the raw dataset; (5) Defined as entries with no available data on at least one of the following fields: capacity, model, mass, CO2, power.

final drive), engine (capacity, bore, stroke), drive system, fuel, nominal power and engine speed, etc.), vehicle body dimensions (width, height, length), additional technologies (start-stop and engine aspiration), tyres, mass, type approved fuel consumption and CO2 emissions. A complete list of the fields included in the various datasets is available in the Annex 2.

The two datasets are combined into a single dataset (referred to as the Final Dataset) as shown in Figure 2 and described hereafter. The Fleet Dataset is initially created by removing erroneous data (i.e. vehicles with carbon based fuels and no CO_2 emissions, non-electrified vehicles with CO_2 emissions of less than 70g/km), entries representing electrics/electrified vehicles or vehicles fuelled with non-gasoline or diesel "equivalent" fuels (e.g. hydrogen or others), and finally entries missing key information, i.e. capacity, mass, CO_2, power and model. The Vehicles Dataset is used as an input to PyCSIS. The simulation results (namely the CO_2 emissions for NEDC and WLTP) are added to the Vehicles Dataset. All cases with a simulation deviation (namely the percentage difference between simulated and reported NEDC CO_2 emissions), falling outside the range of the average plus minus two standard deviations, are removed to minimize the uncertainty introduced by the simulation to the overall quality of the present exercise. This new dataset (referred to as "Sim Vehicles Dataset") constitutes the basis for further analyses including filtering, clustering and grouping. More information regarding the data treatment process can be found in [28].

2.3 Results

2.3.1 Passenger Cars

Figure 3 presents the simulated WLTP CO_2 emissions against the simulated official NEDC ones. WLTP CO_2 emissions result in higher values compared to the NEDC, reaching a range of 20-25 gCO_2/km for vehicles approaching 100 gCO_2/km. These values decrease as the CO_2 emissions increase (and become approximately null for WLTP CO_2 emissions of 250 gCO_2/km).

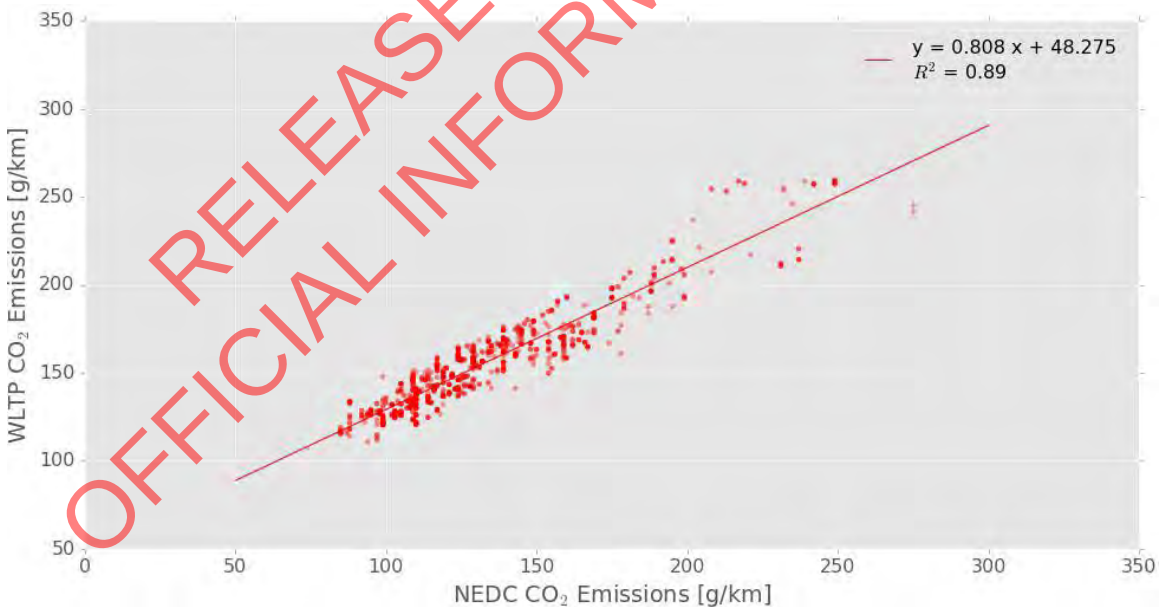

Figure 3: Simulated WLTP vs. Reported NEDC CO_2 emission values

In order to understand the implications of this observation a direct comparison is made against existing test-based datasets (Figure 4). In particular, Figure 4 shows the simulated WLTP/NEDC ratio (blue dots) as a function of the official NEDC reported values. In addition, Figure 4 also reports the equivalent ratio as derived from experimental data (red dots) originating from the latest update of the ADAC-EcoTest database [6]. The

ADAC EcoTest attempts to characterize the fuel consumption performance of passenger cars based on a series of tests performed over NEDC, WLTP and other ADAC developed realistic driving cycles. From this figure three main conclusions can be extracted: i) independently of the absolute accuracy of the simulations presented in this analysis, the proposed methodology manages to capture well the trends of the passenger car fleet, with the trend-lines of the two datasets coinciding in a large part of the range of data; ii) there is a clear decreasing trend of the WLTP/NEDC ratio as the NEDC value increases, confirming the observations drawn from Figure 3; iii) the WLTP/NEDC ratio tends towards very high values as the NEDC value decreases. Considering that different sources show an increasing gap between real-world and NEDC fuel consumption and CO_2 emissions [13], the fact that a similar trend is expected also between WLTP and NEDC confirms that the new test procedure should be more representative of real-world emissions. In this light, the recent introduction of WLTP in the EU emission type-approval of light duty vehicles seems crucial in order to reduce the gap between real-world and certification values.

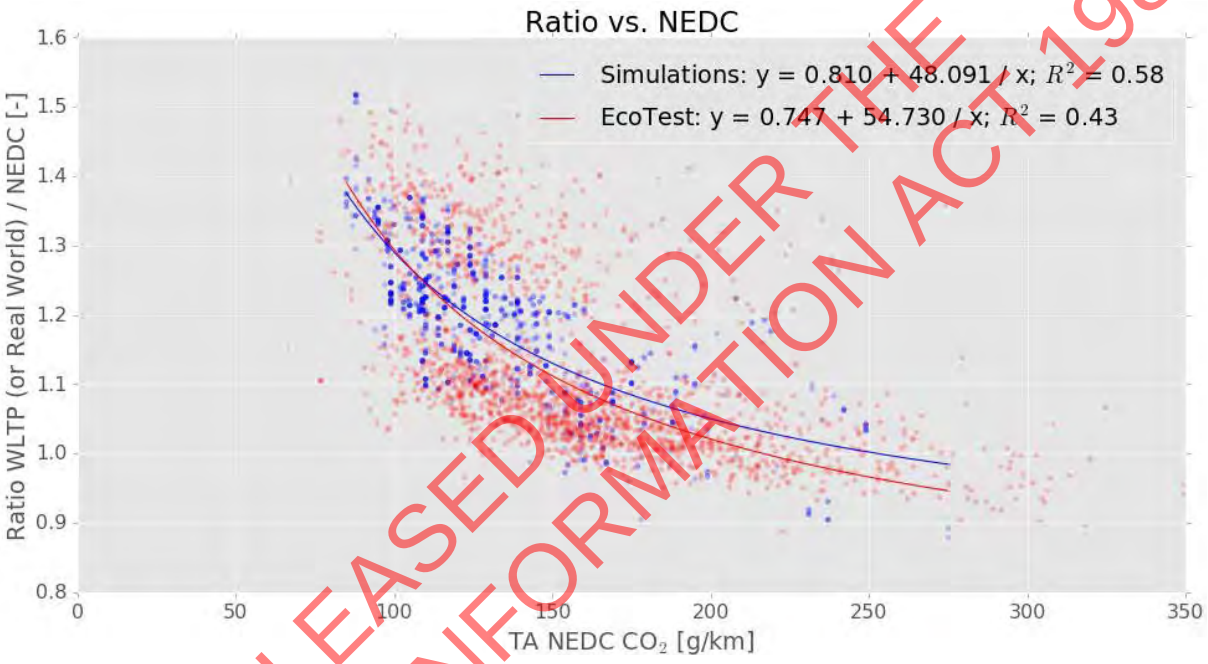

Figure 4: Correlation Factor, i.e. ratio, between WLTP/NEDC vs. Reported NEDC values

Finally, Table 3 summarizes the simulation results following the segmentation of COPERT [35] regarding fuel type and engine capacity. COPERT is one of the main methodologies used in Europe and in several non-European countries, for emissions monitoring and inventorying. For ICEV passenger cars, the overall (sales-weighted average) ratio between the two tests is equal to 1.21, which corresponds to an overall difference between the 2015 WLTP and NEDC CO_2 emissions of 23.5 gCO_2/km. Gasoline and diesel vehicles on average show almost the same ratio (1.22 vs 1.20) and the respective emissions' increases for 2015 are 25.0 vs. 22.2 gCO_2/km. This occurs independently of the capacity category. When capacity is taken into account, both for average and sales-weighted average values, segments of higher capacity show lower ratios as opposed to lower capacity ones. This finding is in line with the observation made previously that WLTP and NEDC emissions' difference reduces as CO_2 increases.

Table 3: Summary of the Average and Sales-Weighted (SW) Average values for various fuel / capacity segments among ICE passenger cars

		Type Approval Emissions [g/km]			
		NEDC (Type Approval 2015)	WLTP[5] (Type Approval equivalent)	Delta WLTP-NEDC	Ratio WLTP/NEDC
All ICEVs	Average	131.9	153.9	22.0	1.19
	SW Average	122.6	146.1	23.5	1.21
Gasoline	Average	140.9	162.6	21.7	1.18
	SW Average	124.6	149.6	25.0	1.22
Gasoline <1.4 l	Average	118.1	143.5	25.3	1.23
	SW Average	115.2	141.8	26.6	1.24
Gasoline 1.4-2.0 l	Average	146.6	166.8	20.1	1.15
	SW Average	148.0	168.3	20.3	1.15
Gasoline >2.0 l	Average	210.2	223.3	13.0	1.07
	SW Average	224.6	237.8	13.2	1.07
Diesel	Average	123.6	145.7	22.1	1.19
	SW Average	121.2	143.5	22.2	1.20
Diesel <1.4 l	Average	92.9	116.1	23.3	1.26
	SW Average	92.9	116.1	23.3	1.26
Diesel 1.4-2.0 l	Average	115.4	137.6	22.2	1.20
	SW Average	114.3	136.7	22.4	1.21
Diesels >2.0 l	Average	157.4	178.7	21.3	1.15
	SW Average	159.3	180.4	21.1	1.14
LPG	Average	114.8	132.5	17.7	1.16
	SW Average	115.8	133.9	18.1	1.16
Gas	Average	91.1	127.9	36.8	1.43
	SW Average	103.9	137.8	33.9	1.36

[5] WLTP Type Approval value equals to the simulated WLTP increased by 2% to account for a series of corrections (e.g. temperature, battery discharge, etc.) that are foreseen by the WLTP and take place after the official test is performed.

2.3.2 Light-Commercial Vehicles

Different from the passenger cars where all entries of the respective Fleet dataset have been considered, only the "top sellers" of each individual class[6] of the light-commercial vehicles' respective Fleet dataset have been used in the present. The "top sellers" were defined as vehicles representing more than 10% of the sales in their equivalent class. The resulting WLTP to NEDC conversion factors for the two main fuel categories are provided in Table 4 below.

Table 4: Summary of average conversion factors for light-commercial vehicles

Avg. WLTP / NEDC for conventional LCVs	
Diesel	1.31
Gasoline	1.22

It shall be highlighted that the main difference in the CO_2 emissions calculation, as compared to the passenger cars, comes from the calculation of the road load coefficients. More specifically, and as described in Annex 3, different parameters and empirical relationships are considered regarding the masses, the aerodynamic drag, and the wheel rolling resistance definitions.

[6] Classes are defined as: Class I: mass <= 1305 kg; Class II: mass 1305-1760 kg; Class III: mass >1760 kg

3 Electric powertrains

The calculations performed using PyCSIS for internal combustion engine based vehicles have been adapted in order to capture the effect of the WLTP introduction also on vehicles with electrified powertrains (i.e. HEV, BEV, FCV and PHEV). In particular, results from PyCSIS constituted the basis for various hypotheses and assumptions regarding the difference of an electric vehicle as compared with a conventional one in terms of the various efficiencies and losses, the fuel / energy storage systems, etc. The boundaries and provisions of the WLTP and NEDC type approval regulations were then applied to the sample, and the end results of CO_2 emissions, energy, and zero emissions vehicles range, for the two cycles were calculated. In the next sections, the approach used for the different types of electric vehicles is described in details.

3.1 Battery Electric & Hydrogen Fuel Cell Powered Vehicles

3.1.1 Methodology & Data Sources

WLTP to NEDC ratios for these two categories of vehicles are calculated on the basis of the conventional cars data, i.e. the vehicles included in the Vehicles Dataset as defined in section 2, and assuming that these would be run as BEVs and/or FCVs. This was necessary because using only the limited number of BEVs/FCVs included in the monitoring database could have produced a distorted picture.

In order to model a conventional vehicle as a BEV and/or FCV, specific assumptions are formed regarding the electrical efficiencies, battery sizes, etc., as it will be described below. As these vehicles have zero CO_2 emissions, two other environmental performance indicators are considered: the overall energy efficiency of the vehicle, and its pure electric driving range, starting with a full energy storage medium, i.e. battery or hydrogen tank.

Initially, the overall energy at the wheel is calculated by the Drivetrain Module of PyCSIS, both for NEDC and WLTP, for each individual vehicle of the sample, as if they were conventional internal combustion engine vehicles. Then, and since the overall distance driven is not the same between NEDC and WLTP, the energy at the wheel is normalized to, i.e. divided with, the total distance driven on each respective cycle. The ratio of the WLTP energy requirements per distance driven to the NEDC equivalent one provides a good estimate of the increased energy consumption of a vehicle over WLTP.

In order to calculate the driving range ratio between the two cycles when driven in pure electric, the overall available energy of the energy storage tank shall be defined. This figure is then compared with the energy demands of each cycle as defined above (energy on the wheel). In both cases, the overall energy storage capacity is calculated as a function of the energy storage system's mass and its energy carrier density. Initially, the energy storage system's mass is assumed to be a function of the vehicle mass:

$$m_{energy\ storage\ system} = a * m_{vehicle} \quad (1)$$

Where $m_{energy\ storage\ system}$ and $m_{vehicle}$ is the mass of the energy storage system and the vehicle, respectively. In order to guarantee a representative sample of both contemporary and future systems, parameter a is sampled from a uniform distribution from 15% to 35%. The energy storage capacity is then calculated multiplying the energy storage system's energy density with its mass. The energy storage system's energy density is sampled from a uniform distribution in the range of 100 to 150 Wh per kg. Lastly, the usable energy available from the energy storage system is assumed to be equal to 70% of the system's total storage capacity. The remaining 30% is accounted for the battery's depth of discharge, other losses, etc. The end driving range is then calculated dividing the usable energy available in the energy storage system by the normalized energy demand of the cycle. The latter, is further divided by the respective powertrain efficiency to estimate the exact energy requirements from the energy source

and accounting for the differences between the two systems, BEVs and FCVs, as defined below:

- *Battery Electric Vehicles*: powertrain efficiency of 70% and 73% is assumed for the NEDC and the WLTP, respectively;
- *Hydrogen Fuel Cell Powered Vehicles*: powertrain efficiency of 27% for the NEDC and 32% for the WLTP is assumed.

Figure 5 provides a schematic representation of the various assumptions and steps to calculate the usable energy at the wheels.

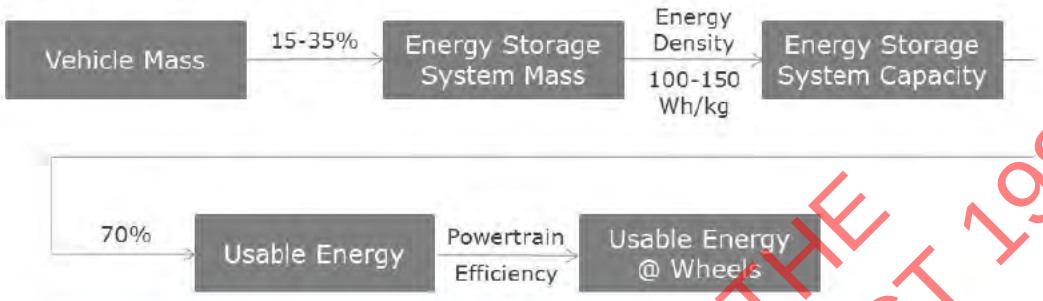

Figure 5: Schematic representation of usable energy at the wheels calculation

3.1.2 Results

Table 5 provides a summary of the resulting WLTP/NEDC energy and pure electric driving range ratio. Results are grouped based on the designated engine capacity segments of the respective conventional vehicles, which are used as an indicator of the vehicle's size and category.

Table 5: Energy & Range Ratio of WLTP vs. NEDC for Battery Electric & Hydrogen Fuel Cell Powered Vehicles

Category	Energy Ratio	Pure Electric Range Ratio	
		BEVs	FCVs
Small passenger cars	1.26	0.83	0.94
Medium passenger cars	1.28	0.81	0.92
Large passenger cars	1.30	0.80	0.91
Light-Commercial Vehicles[7]	1.21	0.86	0.98

3.2 Plugin Hybrid Electric Vehicles

3.2.1 Methodology & Data Sources

Plugin Hybrid Electric Vehicles (PHEVs) can operate in two different modes: a) In charge-depleting (CD) mode where the electric machine is responsible for propulsion and the internal combustion engine (ICE) is switched off, and b) In charge-sustaining (CS) mode where the ICE is used for propulsion and to maintain battery state-of-charge (SOC) within a small window.

For the calculation of the WLTP/NEDC CO_2 emission ratio for the PHEVs a different methodology, as compared to the BEVs and FCVs, is used. The calculation of the energy

[7] A dedicated part of the Vehicles Dataset including the "top sellers" of light-commercial vehicles only (as described in section 2.3.2) is used for the present analysis

storage capacity is similar to the battery electric vehicles, except that the nominal capacity is assumed to be 1/3 as compared to the BEVs considering the smaller batteries used. The powertrain efficiencies over the two cycles are considered equal to the ones used for the battery electrics, i.e. 70% for the NEDC and 73% for the WLTP. In the case of PHEVs though, the usable energy available is assumed to be equal to 60% of the overall available, given the usually smaller depth of discharge of the batteries and the higher regeneration frequency.

Additionally, EC Regulation No 1151/2017 [18] prescribes a specific procedure for calculating the equivalent CO_2 emissions of a PHEV under WLTP and NEDC, respectively. A detailed description of the two different procedures, together with an experimental evaluation of the effect of the WLTP regulation regarding PHEVs, is provided in Annex 4 of the present document.

Procedural changes regarding the prescribed laboratory procedures and post-processing of the test data significantly affect the final PHEV CO_2 and fuel consumption figures. However, in order to perform the simulations of a PHEV and calculate the WLTP/NEDC correlation coefficients based on the prescribed procedure, modelling the behaviour of PHEVs was necessary. PHEV's modelling is based on a reverse engineering test campaign carried out on two different plug-in vehicles, characterized by the same hybrid architecture (Flywheel Alternator Starter or FAS, which is widely diffused between several PHEVs), the same electric machine (Max output power 70 kW) and different internal combustion engine size (respectively 3.0 and 1.4 litres spark ignition). The PHEV model aims at identifying and reproducing the typical operating conditions of a hybrid powertrain, namely:

- *Electric vehicle*: the internal combustion engine is off and all the power requested by the driver is supplied by the high voltage battery, allowing zero tail pipe emissions at the exhaust;
- *Regenerative braking*: the kinetic energy during the deceleration phases is recovered by the electric machine and stored in the high voltage battery;
- *Load point moving*: when the internal combustion engine is enabled (for example when the battery is depleted or the driver's power demand overcomes the physical limits of the electric powertrain) and used both to propel the vehicle and to charge the high voltage battery, increasing the overall powertrain efficiency;
- *Electric boost*: during aggressive transient phases, the internal combustion engine is on and it is supported by the electric machine.

The control logic for the simulation of the several test cases is the same and it reflects the behaviour identified from the two test campaigns. The model simulates both the CD and CS sustaining conditions, by supposing different initial battery State of Charge (SOC) at the beginning of the cycle and using the same simulation approach. The PHEV model simulates the engine on/off strategy using curves designed as function of the SOC, vehicle acceleration and motive power, as reported in Figure 6, based on the analysis of the experimental data. In Figure 6 the red line represents the engine-on curve, while the blue the engine-off one. The necessity to define two curves relies on the necessity to prevent frequent engine on/off, which are not representative of a realistic engine behaviour.

The efficiency of the powertrain during the regenerative braking and the electric drive is assumed to be constant and equal to 0.8, since the average efficiencies of a permanent magnet and of a mechanical transmission are around 0.9.

The enabling of the load point moving (or smart charge) or the electric boost is modelled using statistical analysis performed on the two reference vehicles tested at JRC. The load point moving/electric boost model correlates the battery SOC, the product between vehicle speed per acceleration and the motive power, obtaining the volume reported in Figure 7, where the green points stand for the load point moving while the magenta for the electric boost.

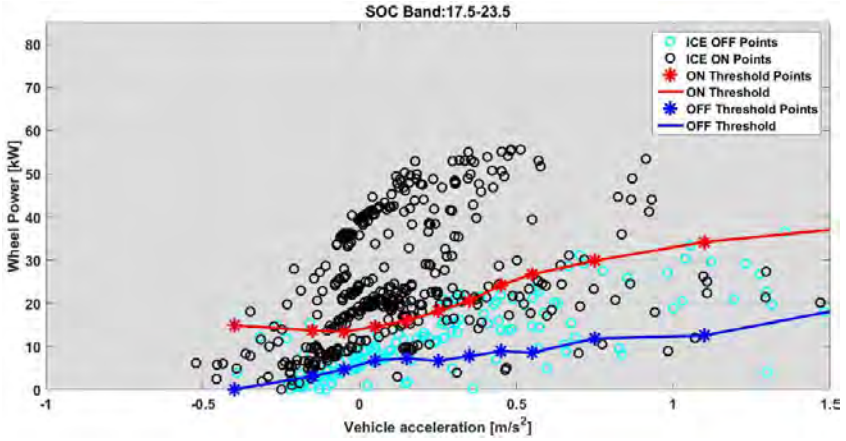

Figure 6: Engine on/off strategy for a PHEV as function of battery SOC, vehicle acceleration and wheel power

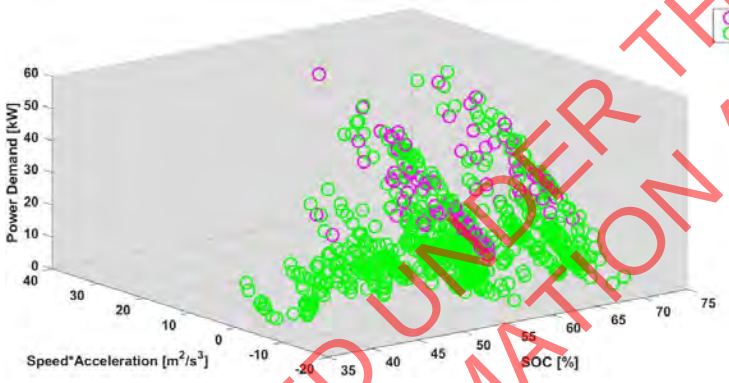

Figure 7: Powertrain operating volume of PHEVs when the internal combustion engine is enabled

During the simulation of the PHEV powertrain along the NEDC and WLTC cycles, the model evaluates the weight of the load point moving or electric boost depending on the SOC and vehicle kinematic parameters (speed, acceleration and motive power) at each instant of time, allowing the correct mode enabling.

The power adsorbed or released by the battery during these two modes is modelled through maps, detected during the reverse engineering activity, as shown in Figure 8. These two maps are effective for different size of the battery since the power adsorbed/released are strictly dependent on the maximum charge/discharge current of the cell, which chemistry is supposed to be similar for all the virtual prototypes and equal to the LiFePO4 [36], actually used by several PHEVs manufacturers.

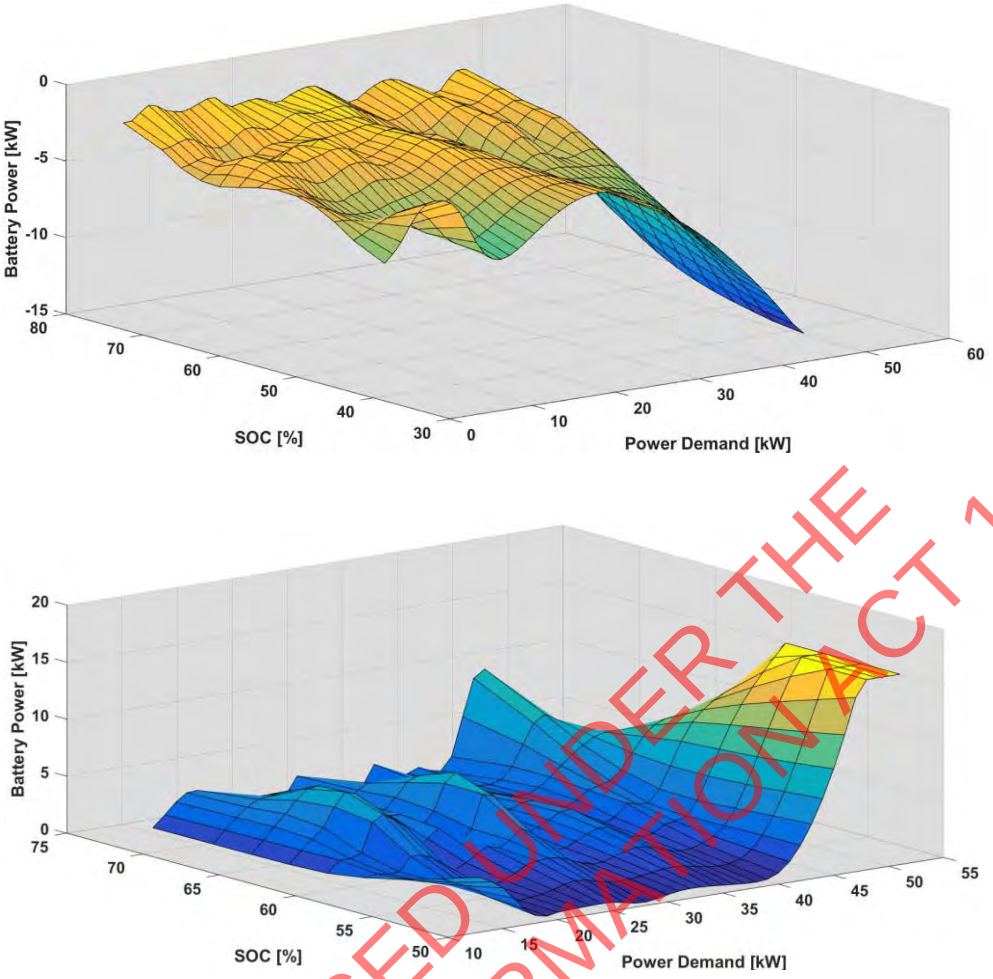

Figure 8: Load point moving (top) /Electric boost (bottom) for a PHEV

The battery modelling, necessary for the computation of battery current and consequently for the evaluation of SOC swing, is based on a 0-D circuital approach, reported in Figure 9. The computation of battery current is done using the Ohm's law using as Open Circuit Voltage (OCV) and Internal Resistance (R0) data representative of a LiFePO4 cell, which are variable as function of the battery SOC, as illustrated in Figure 10. Moreover, the battery cells are supposed to be connected in series similarly to the available hybrid technologies.

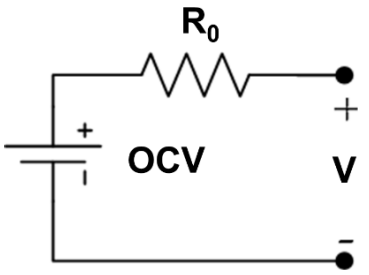

Figure 9: 0-D Battery model

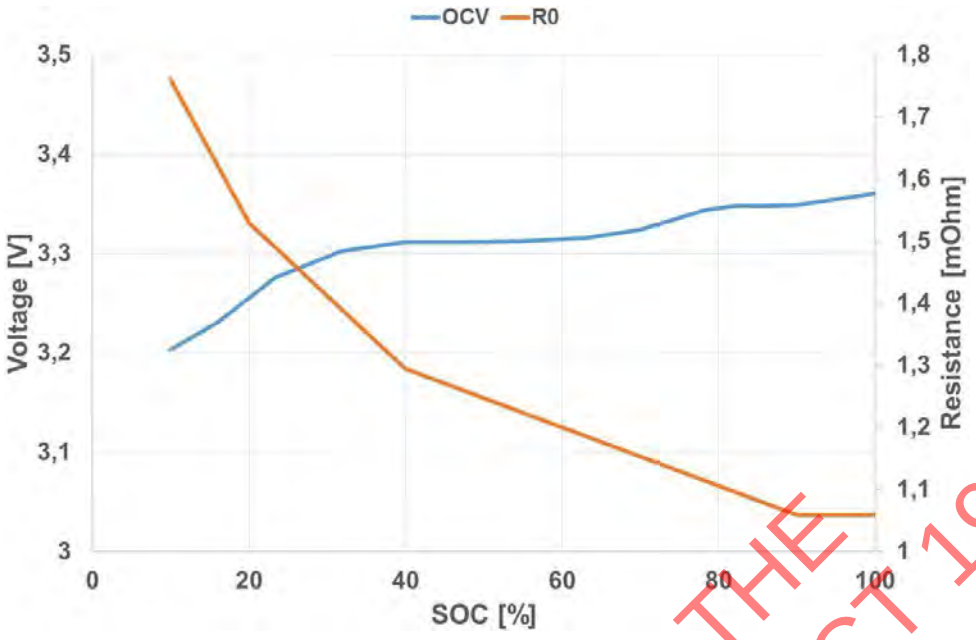

Figure 10: OCV and Internal resistance curves for a LiFePO4

Several sizes of the battery were considered during the simulation. The battery sizing for the different vehicles class was done as function of the three different electric distances (20, 40 and 80 km) and as function of the vehicle mass. Since the chemistry is the same for all vehicles and the cells are connected in series, the number of cells varies as function of the target electric range and of the vehicle mass. The definition of number of cells for different vehicle classes was done to satisfy the electric range requirements, through the evaluation of cycle energy demand along the NEDC cycle, since the actual hybrid portfolio is designed on the energetic requirements of the actual type approval procedure. An example of battery sizing for a target range of 40 km is reported in Figure 11.

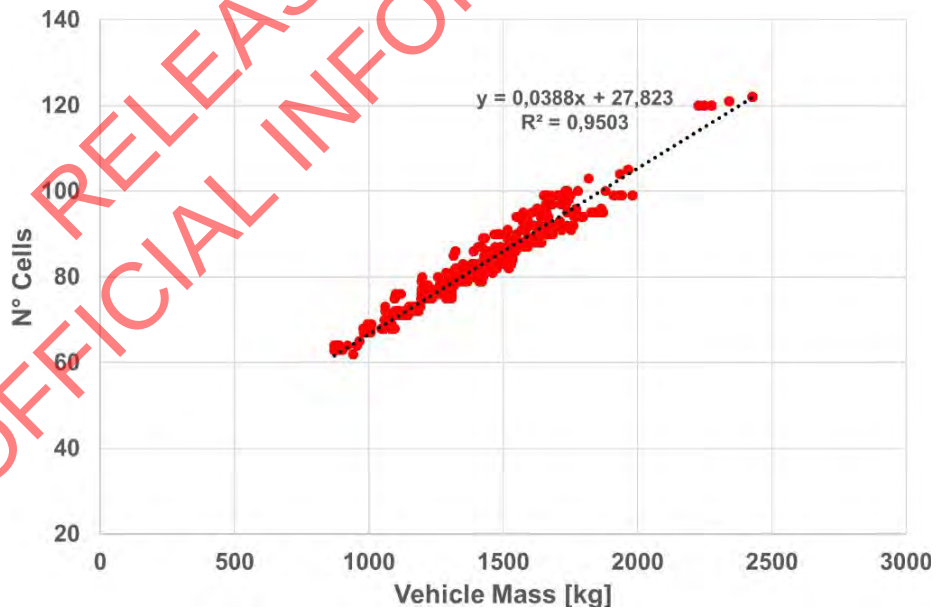

Figure 11: Battery size versus vehicle mass for a target electric range of 40 km on NEDC

3.2.2 Results

Considering the simulation results and the application of the specific procedural elements of the two Regulations, Figure 12 presents the resulting WLTP/NEDC CO_2 emissions ratios as a function of the size of the battery. As it can be seen on the graph, increasing the energy storage capacity, i.e. the battery size, leads to a decrease on the ratio as the WLTP procedure results more dependent on the electric range than the NEDC one (which uses a more simplistic and therefore less realistic approach in the combination of charge depleting and charge-sustaining conditions). In this light, from the results it seems clear that in the future, WLTP emissions are expected to be below the NEDC equivalent ones, confirming what was experimentally calculated (reported in Annex 4). It can be concluded that the energy storage system is thus of decisive importance both for environmental and economic reasons (batteries constitute one of the biggest elements in the cost structure of electric vehicles).

Given the approximation of the calculations carried out and considering 25kWh as a reasonable battery size after 2020, **a WLTP-NEDC correlation factor of 1 for plug-in hybrid vehicles (both passenger cars and light commercial vehicles) is considered appropriate in the present exercise**.

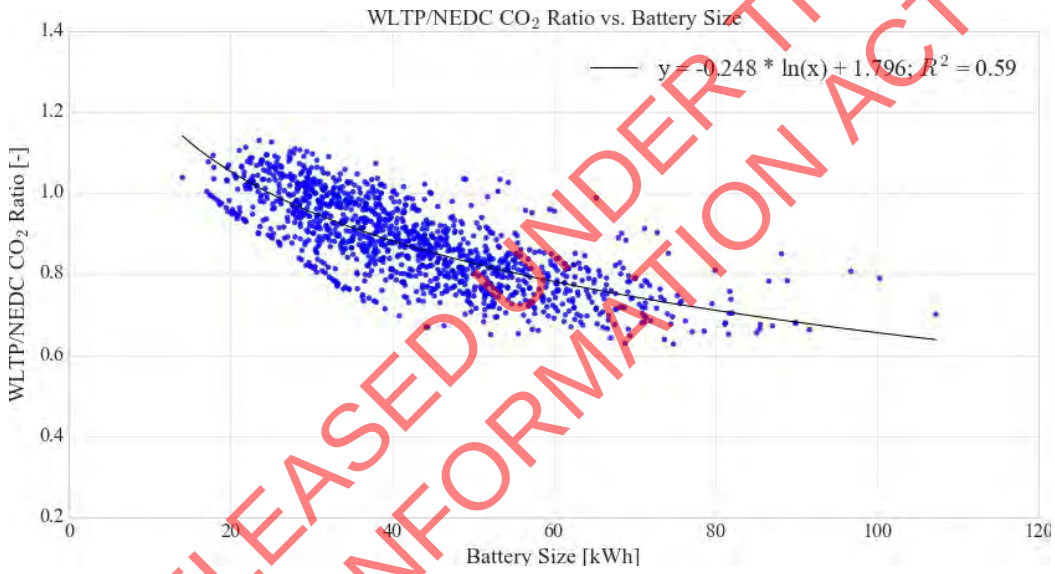

Figure 12: WLTP/NEDC ratio for Plugin Hybrid Electric Vehicles changing the battery size

3.3 Hybrid Electric Vehicles

3.3.1 Methodology & Data Sources

As opposed to the PHEVs, in Hybrid Electric Vehicles (HEVs) the high voltage battery represents an energy buffer, because the electric energy used during the discharge phase (for example during the electric drive) should be supplied afterwards through the engine load point moving or through the regenerative braking. For this reason, the tail pipe CO_2 emissions should be corrected, since the declared value should correspond to a neutral energy balance of the battery. This correction is necessary to take into account the effect of battery recharge made by the internal combustion engine, since HEVs do not allow the external recharge of the high voltage battery. The correction coefficient applied is called K-Factor. Thus, for HEVs tail pipe emissions should be corrected according to equation (2):

$$M_{CO2,corr} = M_{CO2} - K_{CO2} \times Q \quad (2)$$

Where $M_{CO2,\ corr}$ are the corrected tail pipe CO_2 emissions, M_{CO2} are the raw CO_2 emissions measured during the chassis dyno test, K_{CO2} is the K-Factor calculated according to the WLTP legislation and Q is the integral of the battery during corresponding to M_{CO2} measurement. The K-Factor evaluation for both procedures requests at least two measurements performed at different starting battery SOC values.

One crucial difference among the WLTP and NEDC correction formulations is that the WLTP formulation uses the battery energy for the correction of tail pipe CO_2 emissions, allowing the car manufacturers to measure the voltage, while on the contrary, the NEDC assumes that the battery voltage is constant; therefore the correction uses the integral of the battery current.

For the evaluation of WLTP/NEDC ratios for HEVs, the battery voltage for the evaluation of the corrected CO_2 emissions along the WLTC cycle is assumed to be constant, according to Annex 8 - Appendix 3 paragraph 3, making the computational approach equivalent to Equation 2.

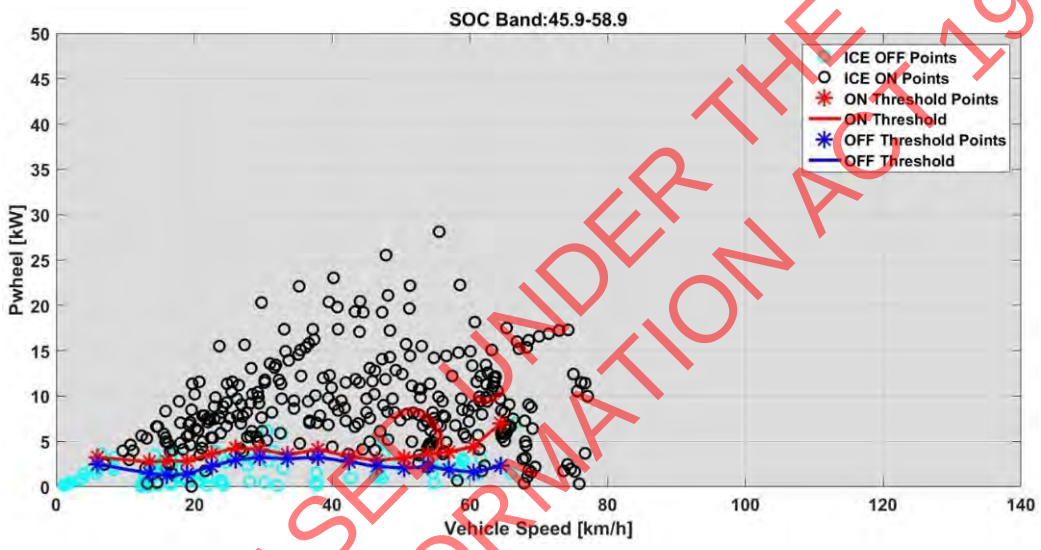

Figure 13: Engine on/off strategy for a HEV as function of battery SOC, vehicle speed and wheel power

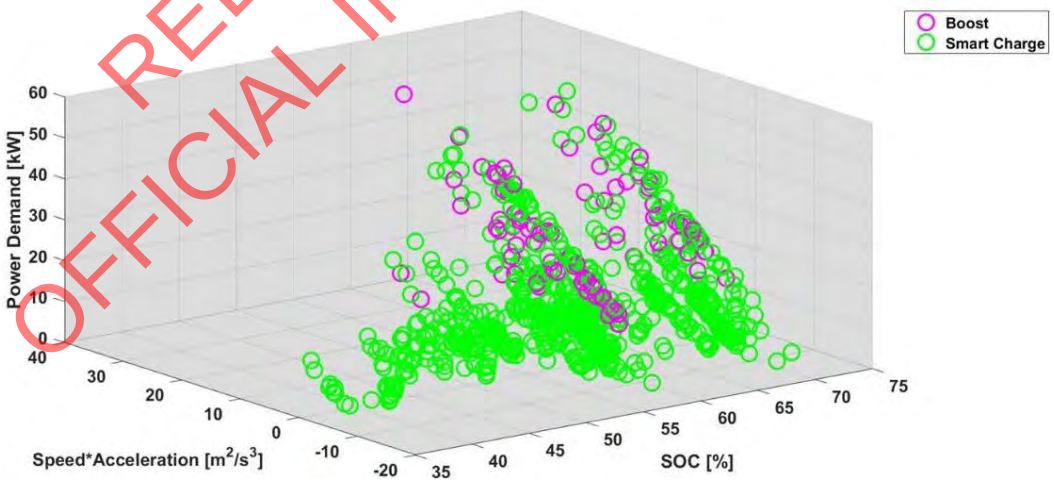

Figure 14: Powertrain operating volume of HEVs when the internal combustion engine is enabled

Similar to the PHEVs, the modelling of the HEVs operation is based on reverse engineering test data of a Euro 6 hybrid vehicle based on an Electric Continuous Variable

Transmission (eCVT) architecture, which uses two electric machine with a rated power of 60 kW and a 1.8 l spark ignition engine. Similar to the PHEV model, the HEV model identifies and predicts the various operating conditions of a hybrid powertrain. For the computation of K-Factor, the model simulates the vehicle considering two different initial SOC values (40% and 65% representative of the discharged and charged condition). The HEV model, as the PHEV one, simulates the engine on/off strategy using curves defined as function of the SOC, vehicle speed and motive power, as reported in Figure 13.

The efficiency of the powertrain during the regenerative braking and the electric drive, as the PHEV case, is assumed to be constant and equal to 0.8. The enabling of the load point moving (or smart charge) or the electric boost is modelled using a statistical approach, based on the experimental data of the reference vehicle used for the model development. The load point moving/electric boost model correlates the battery SOC, the product between vehicle speed per acceleration and the motive power, obtaining the volume reported in Figure 14, where the green points stand for the load point moving while the magenta for the electric boost.

During the simulation of the HEV powertrain along the NEDC and WLTC cycles, as the PHEV case, the model evaluates the weight of the load point moving or electric boost depending on the SOC and vehicle kinematic parameters (speed, acceleration and motive power) at each instant of time, allowing the correct mode enabling.

The power adsorbed or released by the battery during these two modes is modelled through maps, using the same approach as PHEVs. These maps are effective for different size of the battery since the power adsorbed/released are strictly dependent on the maximum charge/discharge current of the cell, which chemistry is supposed to be same for all the virtual prototypes and equal to the NiMH [37], actually used by the main HEV manufacturer (Toyota).

The battery modelling is based on a 0-D circuital approach, similar to the one used for PHEVs (Figure 9). The Open Circuit Voltage (OCV) and Internal Resistance (R0) data representative of a NiMH cell, which are variable as function of the battery SOC, as illustrated in Figure 15. Moreover, the battery cells are supposed to be connected in series.

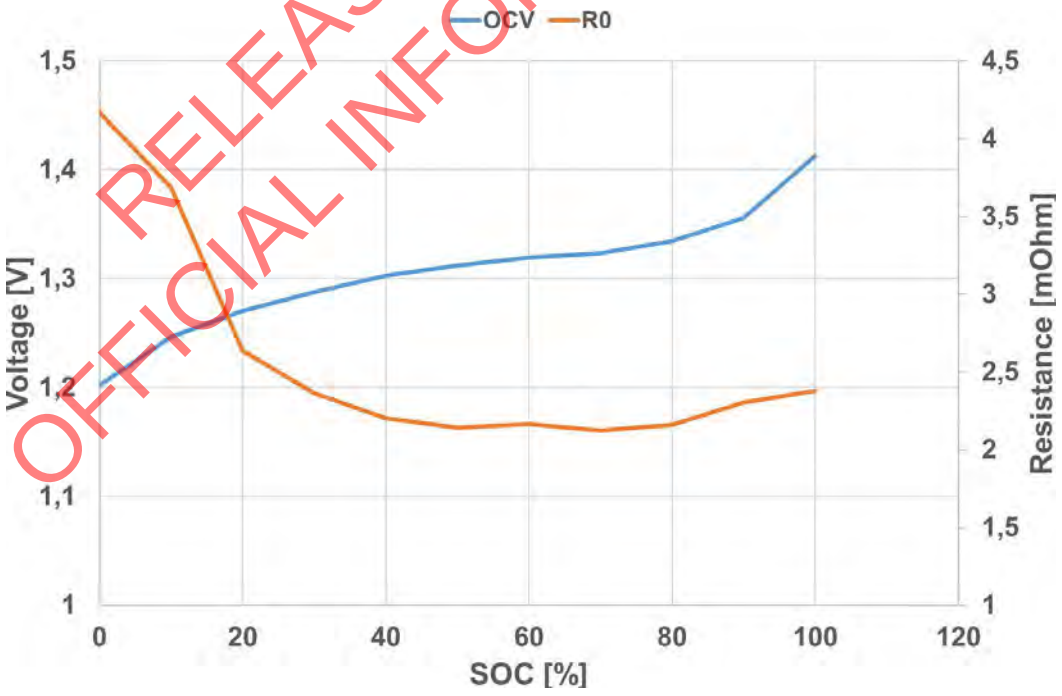

Figure 15: OCV and Internal resistance curves for a NiMH

Finally, the model computes the CO_2 emissions for the two initial SOC levels (40% and 65% of battery SOC) and the integral of battery current, necessary for the computation of K-Factor. The approach for the computation of CO_2 emissions is equivalent to the PHEVs methodology.

The simulation of the considered vehicle portfolio uses a fixed size of the electric machine, equal to 60 kW representatives of the actual HEV portfolio, and variable number of cells connected in series, which is function of the vehicle mass, as reported in Figure 16.

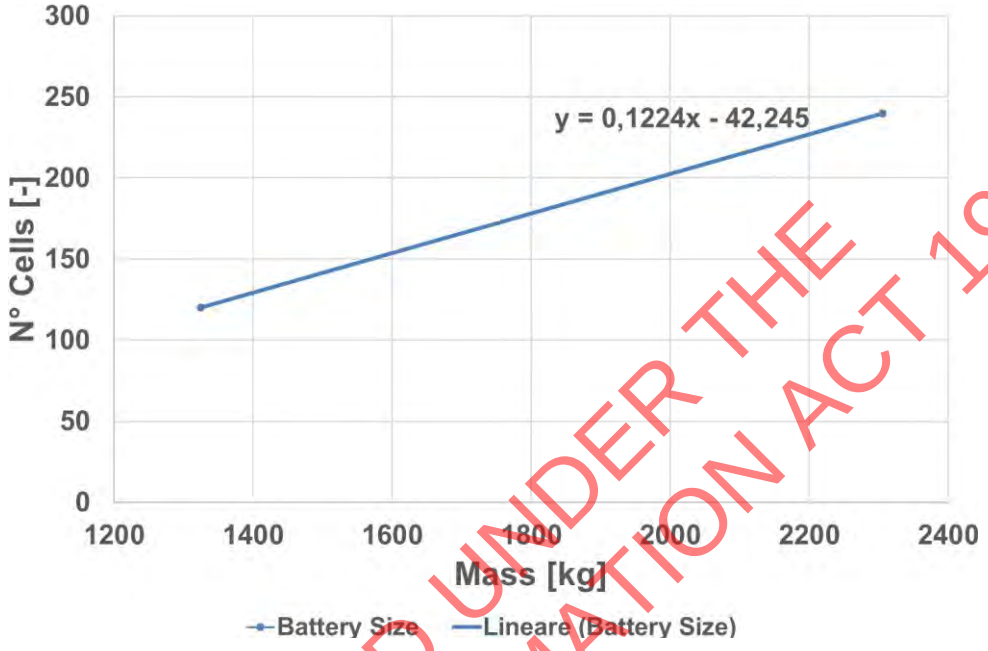

Figure 16: Battery size versus vehicle mass for HEVs

3.3.2 Results

From the application of the modelling approach presented in the previous sections to the fleet of vehicles (in line with what presented for BEVs and FCVs) the WLTP-NEDC CO_2 correlation factors presented in Table 6 have been derived for the different vehicle categories.

Using the factors presented in Table 6 the conversion factors of hybrid light-commercial vehicles have been also calculated. Due to the lack of adequate data, the ratio between conventional and hybrids WLTP to NEDC ratios for diesel and gasoline vehicles calculated for the passenger cars has been applied to calculate the respective values of light-commercial vehicles as defined in the following equation (pivoting approach):

$$R_{hybrid\ lcv} = R_{conventional\ lcv} * R_{hybrid_{passenger}} / R_{conventional\ passenger} \quad (3)$$

Table 6: WLTP/NEDC CO_2 Ratio for Hybrid Passenger Cars

	WLTP/NEDC CO_2 Ratio
Hybrid gasoline <1.4 l	*1.37*
Hybrid gasoline 1.4 - 2.0 l	*1.32*
Hybrid gasoline >2.0 l	*1.23*
Hybrid diesel <1.4 l	*1.38*
Hybrid diesel 1.4 - 2.0 l	*1.34*
Hybrid diesel >2.0 l	*1.30*

Results of the calculations are reported in Table 7.

Table 7: WLTP/NEDC CO_2 Ratio of for Hybrid Light Commercial Vehicles

Avg. WLTP/NEDC for Hybrid LCVs	
Diesel	1.45
Gasoline	1.38

4 Summary

Conversion factors were calculated between NEDC and WLTP type approval CO_2 values that can be used for the analytical work performed for the impact assessment of future WLTP-based CO_2 emission targets. The analysis was based on the reported 2015 CO_2 emissions from the European CO_2 Emissions Monitoring Database, and a collection of approximately 1,200 vehicles, whose technical characteristics were available. The main findings are the following:

- The fleet-wide, sales weighted average ratio between WLTP and NEDC officially reported CO_2 emissions for conventional passenger cars for year 2015 fleet composition was estimated to be 1.21.
- The WLTP/NEDC ratio decreases as the NEDC CO_2 value increases. This ratio becomes around 1 at values of approximately 250 gCO_2/km in NEDC.
- A slightly higher ratio between WLTP and NEDC is observed for gasoline vehicles as compared to diesel ones, while there is a decreasing trend in the ratio with increasing mass, capacity, or power of the vehicle.
- Results for Light-Commercial Vehicles are expected to follow the same trend as passenger cars. However the WLTP to NEDC ratios resulting from the calculations seem overall higher than those derived for passenger cars (especially for diesel vehicles, which however represent the vast majority of the fleet of light-commercial vehicles)
- Battery electric vehicles, fuel cell vehicles and hybrid vehicles show slightly higher WLTP/NEDC ratios than ICEVs and for BEVs and FCVs the dependency of the ratio from the size of the vehicle is less pronounced and opposite in sign, with bigger vehicles experiencing slightly higher ratios).
- Different considerations hold for plug-in hybrid vehicles instead. Due to the difference in the two procedures (NEDC & WLTP) for calculating the final CO_2 emissions, after several analyses it resulted that the WLTP to NEDC ratio will quickly decrease as the size of the vehicle batteries will increase. Given the uncertainty in the market evolution, in the present report it was considered appropriate to assume that in the coming years the WLTP CO_2 emissions for plug-in hybrid vehicles will be very close to the NEDC ones.

Considering that different sources show an increasing gap between real-world and NEDC fuel consumption as CO_2 emissions decrease, the fact that a similar trend is found also between WLTP and NEDC confirms that the new test procedure should be more representative of real-world emissions. In this light, the recent introduction of WLTP in the EU emission type-approval of light duty vehicles is crucial in order to reduce the gap between real-world and type-approval fuel consumption and CO_2 emissions.

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List of abbreviations and definitions

EU	*European Union*
EC	*European Commission*
NEDC	*New European Driving Cycle*
WLTC	*Worldwide Light duty vehicle Test Cycle*
WLTP	*Worldwide Light duty vehicle Test Procedure*
REESS	*Rechargeable Electric Energy Storage System*
CO_2MPAS	*CO_2 Model for PAssenger and commercial vehicles Simulation*
PyCSIS	*Passenger Car fleet emissions Simulator*
ICE	*Internal Combustion Engine*
S/S	*Start/Stop System*
2WD	*2 Wheel Drive*
4WD	*4 Wheel Drive*
P_{dtr}	*Drivetrain Power (kW)*
F_0, F_1, F_2	*Road Load Coefficients (N, N/(km/h), N/(km/h)^2)*
m	*Vehicle Mass (kg)*
v	*Vehicle Velocity (km/h)*
a	*Vehicle Acceleration (m/s^2)*
φ	*Road Gradient (radians)*
g	*Acceleration of Gravity (m/s^2)*
η_{trn}	*Transmission Efficiency (%)*
P_{eng}	*Engine Power (kW)*
P_{elc}	*Vehicle Electrical System Power (kW)*
P_{mec}	*Vehicle Auxiliaries Mechanical Power (kW)*
t	*Time (s)*
FMEP	*Fuel Mean Effective Pressure (bar)*
BMEP	*Brake Mean Effective Pressure (bar)*
Cm	*Engine Mean Piston Speed (m/s)*
a, b, c, a2	*Willans Lines Model Thermodynamic Efficiency Parameters (-)*
l, l2	*Willans Lines Model Engine Losses Parameters (-)*
k	*Exponential Parameter (-)*
T	*Engine Temperature (^{o}C)*
T_{trg}	*Engine Target Operating Temperature (^{o}C)*
T_{thres}	*Engine Thermostat Temperature (^{o}C)*
T_{max}	*Engine Max Allowed Temperature (^{o}C)*
N	*Engine Speed (RPM)*
s	*Engine Stroke (mm)*
CC	*Engine Displacement (cc)*

FC	*Engine Fuel Consumption (g/s)*
FLHV	*Fuel Lower Heating Value (kJ/kg)*
ΔT	*Delta Temperature (°C)*
ΔQ	*Delta Heat (J)*
eng_{m*cp}	*Engine Heat Capacity (J/K)*
cc	*Cooling Constant (-)*
$cool_{m*cp}$	*Coolant Heat Capacity (J/K)*
$cool_{flow}$	*Coolant Flow (g/s)*
EEA	*European Environmental Agency*
AP	Affinity Propagation
$CO2_{fleet}$	Fleet Sales Weighted CO_2 Emissions (g/km)
$CO2_{model}$	Individual Model CO_2 Emissions (g/km)
r_{model}	Individual Model Registrations (-)
m_{fleet}	Fleet Sales Weighted Mass (kg)
m_{model}	Individual Model Mass (kg)
TA	Type-Approval

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Annex 1. Database of measured cars

Table A.1: Measured cars

	Fuel [-]	Capacity [cc]	Stroke [mm]	Turbo [-]	Nominal Power [kW]	Nominal Speed [RPM]	Nominal Torque [Nm]	Transmission [-]	Gears Number [-]	BERS [-]	Start Stop [-]
Vehicle											
veh 1	gasoline	1995	90.1	yes	180.1	5300	350.0	automatic	8	yes	yes
veh 2	diesel	1798	84.1	yes	125.0	3800	320.0	manual	6	yes	yes
veh 3	diesel	2967	91.4	yes	190.0	4000	583.6	automatic	8	no	yes
veh 4	diesel	1248	82.0	yes	69.5	4000	193.6	manual	5	yes	yes
veh 5	diesel	1995	90.0	yes	120.0	4000	380.0	manual	6	yes	yes
veh 6	gasoline	1991	92.0	yes	135.0	5500	300.0	automatic	7	yes	yes
veh 7	gasoline	3498	86.0	yes	225.1	6500	370.0	automatic	7	yes	yes
veh 8	gasoline	875	86.0	yes	62.7	5500	145.0	manual	5	yes	yes
veh 9	gasoline	997	82.0	yes	59.0	6300	110.0	manual	5	no	no
veh 10	gasoline	1368	84.0	yes	121.5	5500	250.0	manual	6	yes	yes
veh 11	diesel	1596	88.0	yes	88.0	4000	300.0	manual	6	yes	yes
veh 12	gasoline	1595	73.7	yes	115.0	5300	250.0	manual	6	yes	yes
veh 13	diesel	1995	90.0	yes	100.0	3750	370.0	automatic	7	no	no
veh 14	gasoline	999	77.4	yes	77.0	5500	170.0	manual	5	yes	yes
veh 15	gasoline	2995	89.0	yes	250.0	6500	460.0	automatic	8	no	no
veh 16	diesel	1598	80.5	yes	81.0	4400	250.0	automatic	7	yes	yes
veh 17	diesel	2191	86.0	yes	110.0	4500	380.0	manual	6	no	yes
veh 18	diesel	1598	83.6	yes	82.0	4000	270.0	manual	6	yes	yes
veh 19	diesel	1598	80.1	yes	81.0	3500	300.0	manual	6	yes	yes
veh 20	gasoline	1195	75.6	no	66.0	5000	160.1	manual	5	no	no
veh 21	gasoline	1368	84.0	no	56.8	6000	115.4	manual	5	no	yes
veh 22	diesel	2198	94.6	yes	74.0	3500	310.0	manual	5	no	no
veh 23	gasoline	2497	92.3	yes	185.2	5300	360.0	automatic	6	no	no
veh 24	diesel	1969	93.2	yes	165.6	4250	470.0	automatic	8	yes	yes
veh 25	diesel	1995	90.0	yes	120.0	4000	380.0	manual	6	yes	yes
veh 26	diesel	1598	81.5	yes	100.3	3500	321.0	manual	6	no	yes

Annex 2. Fields of public datasets

Table A.2: Fields in the passenger cars fleet dataset

Name	Field Definition	Data type
ID	ID	integer
MS	Member state	varchar(2)
MP	Manufacturer pooling	varchar(120)
Mh	Manufacturer harmonised	varchar(120)
MAN	Manufacturer name OEM declaration	varchar(120)
MMS	Manufacturer name as in MS registry	varchar(120)
T	Type	varchar(120)
TAN	Type approval number	varchar(255)
Va	Variant	varchar(120)
Ve	Version	varchar(120)
Mk	Make	varchar(120)
Cn	Commercial name	varchar(120)
Ct	Category of the vehicle type approved	varchar(2)
r	Total new registrations	integer
m (kg)	Mass	integer
e (g/km)	Specific CO_2 Emissions	Integer
w (mm)	Wheel Base	Integer
at1 (mm)	Axle width steering axle	Integer
at2 (mm)	Axle width other axle	Integer
Ft	Fuel type	varchar(120)
Fm	Fuel mode	varchar(1)
ec (cm3)	Engine capacity	Integer
z (Wh/km)	Electric energy consumption	Integer
IT	Innovative technology or group of innovative technologies	varchar(255)
Er (g/km)	Emissions reduction through innovative technologies	Integer
ep (KW)	Engine power	Integer

Table A.3: Fields in the vehicle dataset

Field name	Field Definition	Data type
Model	Vehicle Model [-]	string
fuel_type	Fuel [-]	string
engine_capacity	Engine Capacity [cc]	integer
engine_max_power	Engine Nominal Power [kW]	integer
engine_max_speed_at_max_power	Engine Nominal Speed [RPM]	integer
final_drive_ratio	Final Drive Ratio [-]	float
gear_box_type	Gear Box Type [-]	string
gear_box_ratios	Gear Box Ratios [-]	dict
has_start_stop	Start Stop [-]	boolean
running_order_mass	Mass in Running Order [kg]	float
vehicle_mass_N	NEDC Inertia Mass [kg]	integer
target_co2	"Declared"/"Official" CO_2 Emissions Value [CO_2 gr/100 km]	float
nedc_parametric_co2	Simulated NEDC CO_2 Emissions Value [CO_2 gr/100 km]	float
wltp_parametric_co2	Simulated WLTP CO_2 Emissions Value [CO_2 gr/100 km]	float

Table A.4: Fields in the light-commercial fleet dataset

Name	Field Definition	Data type
ID	ID	Integer
MS	Member state	varchar(2)
MP	Manufacturer pooling	varchar(120)
Mh	Manufacturer harmonised	varchar(120)
MAN	Manufacturer name OEM declaration	varchar(120)
MMS	Manufacturer name as in MS registry	varchar(120)
T	Type	varchar(120)
Va	Variant	varchar(120)
Ve	Version	varchar(120)
Mk	Make	varchar(120)
Cn	Commercial name	varchar(120)
Ct	Category of the vehicle type approved	varchar(2)
Cr	Category of the vehicle registered	varchar(120)
r	Total new registrations	Integer
m (kg)	Mass	Integer
mb (kg)		Integer
TPMLM (kg)	Technically permissible maximum laden mass	Integer
Dam (kg)		Integer
mf (kg)		Decimal
e (g/km)	Specific CO_2 Emissions	Integer
w (mm)	Wheel Base	Integer
at1 (mm)	Axle width steering axle	Integer
at2 (mm)	Axle width other axle	Integer
Ft	Fuel type	varchar(120)
Fm	Fuel mode	varchar(1)
ec (cm3)	Engine capacity	Integer
z (Wh/km)	Electric energy consumption	Integer
IT	Innovative technology or group of innovative technologies	varchar(255)
Er (g/km)	Emissions reduction through innovative technologies	Integer
TAN	Type approval number	varchar(255)
ep (KW)	Engine power	Integer

Annex 3. Road Loads Calculation Model

Definition of Masses

A list of the required vehicle masses for the calculation of the Road Loads is provided bellow:

- Mass in Running Order (*MRO*) is defined as in Article 2(4)(a) of Commission Regulation (EU) No 1230/2012.
- Reference Mass (*RM*) is defined as $RM = MRO + 25\ [kg]$
- Max Permissible Mass (*MM*), when not available is defined as $MM = RM + 500\ [kg]$
- Unladen Mass Min (*UMMin*) is defined as $UMMin = RM - 100\ [kg]$
- Unladen Mass Max (*UMMax*) is defined as $UMMax = RM + DUM\ [kg]$, where *DUM* is defined from the following empirical relationship for passenger cars:

  $$DUM = 0.00009 * UMMin^2 - 0.0364 * UMMin\ [kg]$$

  While for light-commercial vehicles the following functions are used:

  $$cla = 0.00009 * UMMin^2 - 0.0364 * UMMin\ [kg]$$

  $$clb = 0.0777 * UMmin + 67.744\ [kg]$$

  $$DUM_{class\ I\ lcv} = cla; DUM_{class\ II\ lcv} = {(cla + clb)}/{2}; DUM_{class\ III\ lcv} = clb$$

- Laden Mass Max (*LM*) is defined as equal to *MM*, $LM = MM\ [kg]$
- Test Mass High (*TMH*) is calculated as:

  $$TMH = UMMax + 100 + 0.15 * (LM - UMMax - 100)\ [kg]$$

- Test Mass Low (*TML*) is calculated as:

  $TML = UMMin + 100 + 0.15 * (LM - UMMax - 100)\ [kg]$.

Definition of Aerodynamic Drag

The Aerodynamic Drag (*Drag*) is defined as $Drag = FA * Cw\ [-]$, where *FA* and *Cw* are defined as presented in the following paragraphs.

The Delta Drag (*DCDA*) which captures the effect in the drag of the difference between the "best case" and the "worst case" cars within the same category, is defined as $DCDA = 2 * 0.04\ [-]$ for passenger cars and class I light-commercial vehicles, $DCDA = 0.1\ [-]$ for class II light-commercial vehicles, and $DCDA = 0.12\ [-]$ for class III light-commercial vehicles.

Frontal Area

The Frontal Area (*FA*) of the vehicle is defined as $FA = W * H * 0.84\ [m^2]$, where *W* represents the vehicle's width, in meters, and *H* the vehicle's height, in meters.

The factor 0.84 is an empirical factor used for the correction of the "dead" areas of the product of width and height, e.g. area between ground and vehicle's bottom side in-between the wheels, side areas between vehicle's sides and tips of mirrors, etc. For class II and class III light-commercial vehicles, this factor is considered equal to 0.91 and 0.98 respectively.

Aerodynamic Coefficient

The Aerodynamic Coefficient (*Cw*) of the vehicle is provided by the following table, based on the vehicles carbody type.

These values are taken from the BOSCH Automotive Handbook [28] and amended in order to capture the effect of advanced aerodynamic design of modern cars - when it was judged that the minimum value does not well define modern cars another value has been

picked from the defined range. For class II and class III light-commercial vehicles, the aerodynamic coefficient is increased by 12.5% and 25% respectively.

Carbody	Cw
Cabriolet	0.28
Sedan	0.27
Hatchback	0.3
Stationwagon	0.28
SUV/Crossover	0.35
MPV	0.3
Coupe	0.27
Pick-up	0.4

Definition of Wheel Rolling Resistance

Regulation (EC) No 1222/2009 of the European Parliament and of the Council defines the energy classes of the various tyres based on their rolling resistances. For the purposes of the present exercise C1 tyres of Energy Efficiency Class A are considered representative and thus the Wheel Rolling Resistance (*WRR*) is defined as equal to $WRR = 0.0065\ [-]$, for both passenger cars and class I light-commercial vehicles. For class III light-commercial vehicles C2 tyres of Energy Efficiency Class B are considered, $WRR = 0.006\ [-]$, while for class II an average $WRR = 0.00625\ [-]$ is used.

The Delta Wheel Rolling Resistance (*DRR*) which captures the effect of the different tyres / in the rolling resistance of the difference between the "best case" and the "worst case" cars within the same "category", is defined as $DRR = 0.0105 - 0.008\ [-]$.

Definition of Procedural Differences affecting Road Loads

Pre-conditioning effect

In preparing the chassis-dynamometer for the execution of a type-approval test, the vehicle is pre-conditioned in order to reach similar conditions to those used in the coast-down test. The pre-conditioning procedure used in the WLTP test differs from that used for the purpose of NEDC so that, with equal road loads, the vehicle is considered subject to higher forces under the WLTP. That difference, defined as Pre-conditioning Effect (*PCE*) shall be set at 6 Newtons, such as $PCE = 6\ [N]$.

Tyre pressure

According to the WLTP, the lowest tyre pressure for the vehicle test mass shall be used, while this is not specified in the NEDC. For the purpose of determining the tyre pressure to be taken into account for the purpose of calculating the NEDC road load, the tyre pressure shall, taking into account the different tyre pressure per vehicle axle, be the average between the two axles of the average between the minimum and the maximum tyre pressure permitted for the selected tyres on each axle for the NEDC reference mass of the vehicle. The calculation shall be carried out for both the "best case" vehicle / vehicle L and the "worst case" vehicle / vehicle H.

For the purpose of the present exercise the followings are defined:

$P_{max} = 3\ [bar]$, is the average of the maximum tyre pressures of the selected tyres for the two axles; considered constant for both vehicles L and H

$P_{min} = 2\,[bar]$, is the average of the minimum tyre pressures of the selected tyres for the two axles; considered constant for both vehicles L and H,

$P_{avg} = {}^{(P_{max} + P_{min})}/_{2}\,[bar]$, the average between the previous two.

The corresponding effect in terms of resistance applied to the vehicle, defined as *TP*, shall be calculated using the following formulae: $TP = ({}^{P_{avg}}/_{F_{min}})^{-0.4}$ [−].

Tyre Tread Depth

A minimum tyre tread depth of 80% is to be considered for the WLTP test, while the minimum allowed tyre tread depth for the purpose of the NEDC test is to be considered as equal to 50% of the nominal value. This results in an average difference of 2mm in tread depth between the two procedures. The corresponding effect in terms of the resistance applied to the vehicle, defined as *TTD*, shall be determined for the purpose of the NEDC road load calculation in accordance with the following formulae: $TTD = {}^{2 * 0.1 * RM * 9.81}/_{1000}$ [−].

Inertia of Rotating Parts

During the WLTP test four rotating wheels are to be considered, while for the purpose of the NEDC tests only two rotating wheels are to be considered. The effect this has on the forces applied to the vehicle, defined as *RI*, shall be taken into account in accordance with the formulae: $RI = {}^{1.015}/_{1.03}$ [−].

Results / Road Loads Definitions

Definition of "physical" F0, F1, & F2

The three functions bellow define the "physical" road loads which are later used for the calculation of the regulated road load coefficients.

$$F0 = RM * WRR * 9.81\,[N]$$

$$F2 = {}^{0.5 * 1.2 * Drag}/_{3.\ ^{2}}\,[N/(km/h)^2]$$

$$F1 = {}^{(-71.735 * F2 + 2.7609)}/_{2}\,[N/(km/h)]$$

The last function, *F1*, is an empirical function derived from known road load coefficients of measured cars. For class II and class III light-commercial vehicles *F1* is calculated by the following empirical functions:

$$F1_{class\ II\ lcvs} = {}^{(-44.5 * F2 + 2.6)}/_{2}\,[N/(km/h)]$$

$$F1_{class\ III\ lcvs} = {}^{(-18.31 * F2 + 2.4439)}/_{2}\,[N/(km/h)]$$

Definition of NEDC Road Loads

Starting from the physical coefficients *F0*, *F1*, *F2*, and taking into account the respective procedural differences the road load coefficients for NEDC are calculated, along with the respective reference mass, as follows:

$$F0N = (F0 - TTD) * TP * RI\,[N]$$

$$F2N = F2\,[N/(km/h)^2]$$

$$F1N = {}^{F1}/_{2}\,[N/(km/h)]$$

$$RMN = RM\,[kg]$$

Definition of WLTP H Road Loads

Starting from the NEDC coefficients *F0N*, *F1N*, *F2N*, and performing all correction in order to take into account the respective procedural differences the road load coefficients for WLTP High are calculated, along with the respective reference mass, as follows:

$$F0H = (F0N + PCE + TTD) * {}^{1}/_{RI} * {}^{1}/_{TP} * {}^{TMH}/_{RM} + (DRR * TMH * 9.81)\ [N]$$

$$F2H = {}^{F2N}/_{RI} + ({}^{1.189}/_{2} * {}^{DCDA}/_{3.6^2})\ [N/(km/h)^2]$$

$$F1H = {}^{F1N}/_{RI}\ [N/(km/h)]$$

$$RMH = TMH\ [kg]$$

Definition of WLTP L Road Loads

Starting from the NEDC coefficients *F0N*, *F1N*, *F2N*, and performing all correction in order to take into account the respective procedural differences the road load coefficients for WLTP Low are calculated, along with the respective reference mass, as follows:

$$F0L = (F0N + PCE + TTD) * {}^{1}/_{RI} * {}^{1}/_{TP} * {}^{TML}/_{RM}\ [N]$$

$$F2L = {}^{F2N}/_{RI}\ [N/(km/h)^2]$$

$$F1L = {}^{F1N}/_{RI}\ [N/(km/h)]$$

$$RML = TML\ [kg]$$

Annex 4. Procedural differences between the WLTP and the NEDC for the CO_2 emissions of PHEVs

Driving cycles

A comparison of the two driving cycles (NEDC and WLTC) is provided in Table A.5, which can be helpful for a better understanding of the difference between the two testing conditions.

Table A.5: Key parameters of the driving cycles NEDC and WLTC

Parameters	NEDC	WLTC
Duration (s)	1180	1800
Distance (km)	11.03	23.27
Average speed (km/h)	33.6	46.5
Maximum speed (km/h)	120.0	131.3
Stop duration (%)	23.7	12.6
Constant driving (%)	40.3	3.7
Acceleration (%)	20.9	43.8
Deceleration (%)	15.1	39.9
Average positive acceleration (m/s^2)	0.59	0.41
Maximum positive acceleration (m/s^2)	1.04	1.67
Average positive "speed*acceleration" (m^2/s^3)	1.04	1.99
Maximum positive "speed*acceleration" (m^2/s^3)	9.22	21.01
Average deceleration (m/s^2)	-0.82	-0.45
Minimum deceleration (m/s^2)	-1.39	-1.50

Test-procedures

A summary of the main procedural differences identified between NEDC and WLTP procedures that will have either direct or resulting impact on CO_2 emissions and Fuel Consumption can be mainly summarized in the following three points:

1. Higher WLTP road load (RL) due to stricter road load and mass determination procedure;
2. Changes in the test protocol and the laboratory test conditions;
3. Procedures introduced for post-processing of the data.

However, for PHEVs there are additional differences to consider related to laboratory procedures and post-processing of the data that need to be considered and that significantly affect the final CO_2 and FC numbers. These procedural differences are discussed in the following sections.

Charge-Depleting Test

In the NEDC if the electric range of a vehicle is longer than 1 NEDC cycle (~11km), the manufacturer (OEM) had the possibility to request CD mode test to be carried out in a pure electric mode. Given that most PHEVs present in the market already have range higher than 11km, CD mode CO_2 emissions resulting from NEDC testing are equal 0 g/km.

These favourable testing assumptions for CD NEDC testing will be eliminated with the introduction of WLTP, where WLTP CD test can bring a non-negligible increase in the CD CO_2 emissions and FC. In the WLTP, CD CO_2 emissions and FC of each phase of WLTP test (low, medium, high, and extra-high) have a different weighting in the final CD CO_2 emissions in line with the formula:

$$M_{CO2,CD}^{WLTP} \quad \frac{\sum_{j=1}^{k} (UF_j \times M_{CO2,CD,j})}{\sum_{j=1}^{k} UF_j}$$

Where $M_{CO2,CD}^{WLTP}$ is the WLTP's utility factor-weighted CD CO_2 emission in g/km, UF_j is the utility factor of WLTP's CD phase j, and $M_{CO2,CD,j}$ is the CO_2 mass emission of CD phase j in g/km.

Method for calculation of specific utility factors for each phase of the WLTP is explained in details in Annex 8 (Appendix 5) of the GTR#15[8]. Utility factors represent the ratio of the distance covered in CD mode to the total distance covered between 2 subsequent charges. The UF curve (Figure 1) is developed based on driving statistics described in SAE J2841[9].

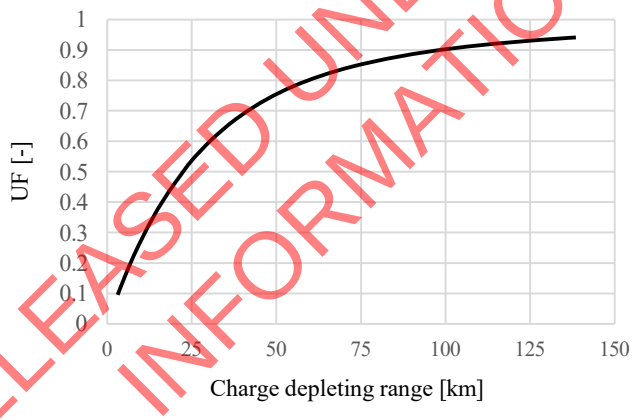

Figure 17: WLTP Utility Factor curve

The UF curve for Europe (according to statistics for Europe) is valid from 0 km to 800 km where at 800 km the UF converges to 1. With increasing electric range CD phase-CO_2 emissions contribute less to $M_{CO2,CD}$ and their phase-UFs decrease with increasing the number of WLTP tests in CD mode.

Charge-Sustaining Test

CS test is performed following procedures for standard Type 1 test under cold start conditions, i.e. the standard European Certification test. Although the WLTP test will inevitably result in higher CS CO_2 emissions and FC compared to the NEDC due to higher WLTP RLs and more energy demanding driving cycle, it is worth to recall that the WLTP introduces an energy balance correction which was not present in the NEDC TA

[8] http://www.unece.org/fileadmin/DAM/trans/doc/2016/wp29grpe/ECE-TRANS-WP29-GRPE-2016-03e_clean.pdf.

[9] SAE 2841. "Utility factor definitions for plug-in hybrid electric vehicles using travel survey data", September 2010, Hybrid-EV Committee

procedure, and which might result in lower WLTP CS CO_2 emissions and FC compared to the NEDC CS results. Therefore, the increase in the CD CO_2 and FC, as described in the previous section, might be partially compensated by the energy-balance correction foreseen in the WLTP.

Under the WLTP procedure, the OEM has the possibility to correct the CS CO_2 emissions for the difference of the State of Charge (SOC) of the battery between the start and end of the CS test. This was not foreseen under the NEDC and the formula for WLTP CS correction is the following:

$$M_{CO2,CS}^{WLTP} = M_{CO2,CS,nb} - K_{CO2} \times EC_{DC,CS}$$

Where K_{CO2} is the CO_2 correction coefficient (g/km)/(Wh/km)), $EC_{DC,CS}$ is the electric energy consumption of CS test (Wh/km), and $M_{CO2,CS,nb}$ is the non-balanced CO_2 result (g/km) obtained in the CS cycle, which doesn't take into account whether the Rechargeable Electric Energy Storage System (REESS) has been charged or discharged during the test. For the correction of FC K_{fuel} shall be developed in a similar way.

The correction coefficients K_{CO2} and K_{fuel} are determined by the manufacturer from results of at least three CS Type 1 tests and are approved and reviewed by the approval authority. If the electric energy change during the CS test is more than 0.5% and the SOC decreased (that corresponds to battery discharge) correction is mandatory. Correction is optional in situations with SOC increase, but since in these cases applying the correction will result in lower CO_2 and FC it is easy to predict that OEMs will take advantage of it. Therefore, for the vehicles with charging battery strategy during the CS test this correction will reduce the CS CO_2 and FC and since this correction did not apply under the NEDC, this is an important reduction that OEMs can benefit under the WLTP.

Weighted Final CO_2 Emissions

In the NEDC, the final CO_2 emissions, FC, and electric energy consumption (EC) are calculated as weighted values using the following formula:

$$M_{CO_2}^{NEDC} = \frac{D_{OVC} * M_1 + D_{av} * M_2}{D_{OVC} + D_{av}}$$

Where D_{OVC} is the vehicle's off-vehicle charging range in km (OVC); M_1 is the CD CO_2, FC, or EC; D_{av} is equal to 25 km and represents the average distance covered in CS mode prior to the next battery charge; and M_2 is the CS CO_2, FC, or EC.

As we already highlighted, the CD CO_2 and FC may be 0 if the electric range of vehicle is higher than 1 NEDC cycle, which is the case for most PHEVs. Therefore, only CS CO_2 and FC contribute to the final weighed NEDC results.

The formula introduced in the WLTP to calculate the final weighted CO_2 and FC is the following:

$$M_{i,weighted}^{WLTP} = \sum_{j=1}^{k}(UF_j \times M_{i,CD,j}) + (1 - \sum_{j=1}^{k} UF_j) \times M_{i,CS}$$

In this formula UFs are used to weight CD and CS CO_2 and FC. The longer the electric range is, the lower contribution of CS CO_2 and FC to the total weighted result is expected.

Before performing any test, in order to quantitatively compare and estimate the effects of the two different weighting approaches (NEDC and WLTP) on CS results and total weighted results, simple calculations with different assumed electric ranges of the vehicles were performed by the authors and the results are shown in Table A.6.

Table A.6: Difference in CS weighting factors depending on electric distance in the NEDC and WLTP

Electric range NEDC (km)	Electric range WLTP (km)	NEDC / WLTC electric range	NEDC CS UF	WLTP CS UF	WLTP / NEDC CS UF	WLTP / NEDC CS TOTAL
25	25	1	0.43	0.27	0.62	0.69
50	50	1	0.31	0.17	0.53	0.58
75	75	1	0.25	0.11	0.45	0.50
100	100	1	0.19	0.08	0.43	0.47
150	150	1	0.14	0.05	0.33	0.36
200	200	1	0.11	0.03	0.27	0.30
25	20	1.25	0.43	0.49	1.14	1.25
50	40	1.25	0.31	0.27	0.86	0.95
75	60	1.25	0.25	0.17	0.67	0.74
100	80	1.25	0.19	0.11	0.60	0.66
150	120	1.25	0.14	0.06	0.42	0.47
200	160	1.25	0.11	0.05	0.43	0.47

In the first scenario (first six rows of the table) we assumed the same electric distances driven under the NEDC and WLTP (NEDC/WLTC electric range ratio equal to 1) to see the influence of only different CS weighting formulas present in two regulations. As it can be seen, with the same electric range the contribution of CS emissions is lower in WLTP compared to the NEDC. Increasing the range results in lower WLTP/NEDC CS ratio. For example, the ratio WLTP/NEDC of CS UFs decreased from 0.62 for vehicle with 25 km electric range to the ratio of 0.27 for vehicle with 200 km range.

In the second scenario (last six rows of the table) we assumed electric distance of WLTP to be 25% lower than that of NEDC (NEDC/WLTC electric range ratio equal to 1.25), due to the more energy demanding cycle and the higher road loads resulting from the more strict new procedure. That consequently resulted in higher WLTP/NEDC CS UFs ratios compared to the first case. In the last column, the WLTP/NEDC CS UFs ratio has been further increased by 10%, providing the WLTP/NEDC CS TOTAL ratio, which considers also the overall higher CS CO_2 emissions and FC expected from the WLTP compared to the NEDC testing[10]. The results of the experimental campaign reported in the following sections will show how close to reality these pure theoretical calculations are.

[10] Pavlovic, J., Marotta, A., Ciuffo, B. “CO2 emissions and energy demands of vehicles tested under the NEDC and the new WLTP type approval test procedure”, Applied Energy, 2016, 177, 661-670.

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8 June 2023

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To whom it may concern

Submission on: Proposed Amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007

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Thank you for the opportunity to make a submission on this subject.

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Technical Services Manager

Introduction
Mitsubishi Motors New Zealand (MMNZ) is a wholly owned subsidiary of Mitsubishi Motors Corporation Japan (MMC) and has been selling Mitsubishi vehicles in New Zealand since 1970.

MMNZ currently has 59 dealers nationwide which employ approximately 600 staff and over the last two year we have sold in excess of 40,000 vehicles in New Zealand, including to government departments.

MMNZ is the leading distributor of Plug-in Hybrid Electric Vehicles (PHEV) in New Zealand and were the first automotive manufacturer to introduce mass-produced electric cars and plug-in hybrids to New Zealand. We are a pioneer of cleaner, greener motoring.

Summary
MMNZ welcomes the chance to make a formal submission on the Draft Vehicle Exhaust Emission Amendment 2023 (the draft Rule) and in principle supports the objective of this Rule to introduce Euro 6/VI and similar standards for the exhaust emissions of light and heavy motor vehicles, however we would like to see some amendments made to the draft Rule in order to make the implementation and management of it more functional.

The changes are:

- Change "Date of entry certification"" to "Date of Manufacture"
- Align with Australian introduction of Euro 6d as an ADR as developed for new vehicles and for existing vehicles.
- US Tier 3 definition to be further clarified.
- Remove Japan 2005 Emission and replace with Japan 2018 Emission standard
- Allow Euro 6b/c compliant vehicles until 2028
- Removal of RDE test requirements from this amendment
- Future Exhaust Emission Standards
- Further details are outlined in the following submission.

We ask for your considered view of the points raised to introduce the Draft Rule amendments where the import industry can manage and introduce emission standards in a way that recognises our technology taker and destination market perspective, rather than just an ideological perspective without consideration for people's jobs and disruption that is the potential of this Draft in its current requirements.

Submission
MMNZ would like to see the draft Rule follow international convention and start from a "date of Manufacture" not when "certified for entry into service" as is currently proposed.

NZ is currently experiencing a vast range of issues such as Primary Industry protection programs (Brown Marmorated Stink bug), shipping constraints and uncertainties, international production delays and labour shortages that are outside of the industries control and which can delay or determine when a vehicle might be available to be entry certified.

An arbitrary date of "Certified for entry into service" for a production-controlled engineering and design requirement does not make sense nor does it reflect international convention.

Failure to follow a date of manufacture introduction date as it exists in the current Rule and for international standards, would make the draft Rule extremely difficult to manage. Potentially huge numbers of vehicles and the associated costs would end up not being able to be sold due to these external delay forces that are beyond every importer's control.

Section 1
1.2 Commencement
Proposed timing of the introductions.

Globally the New Zealand vehicle market is very small scale and because of this it is impossible to be able to achieve unique model specification, hence our volumes are integrated with those of the Australian importers to form a larger market size.

The draft rule introduction dates have been aligned with the mandatory introduction of Euro 6d specific fuel in the Australian market, mistakenly believing this to be when Australian market specified new vehicles will be Euro 6d compliant. This is not the case and vehicles are still being researched and designed in readiness for when the Euro 6d Australian Design Rule (ADR) emission equivalent will be required, at a date still to be determined by Australian legislators.

This incorrect expectation will leave a large number of New Zealand new vehicle distributors with production blackout periods where they will not be able to import vehicles as they won't yet be certified to the proposed emission standards. This will leave businesses vulnerable to closure with loss of jobs and community impacts, this could be avoided with understanding of how the global industry is geared for NZ models.

The Minister has had repeated discussions with automotive industry members and organizations explaining the way that the New Zealand new vehicle industry is managed on a global scale. 80% of New Zealand new vehicles are compliant with the ADR program as this is the bigger destination market.

The fixation with Euro 6d and the expectation that all vehicles are available to this standard confirms the poor policy advice provided to the Minister and the development of the draft Rule.

MMNZ would recommend an implementation date in line with Australian Design Rule implementation.

MMNZ recommend table 2A be split into 2 separate tables, one for NZ new

vehicles and one for used imports to differentiate the introduction date parameters (entry certified for used import and date of manufacture for new vehicles)

Part 2 Definitions

US Tier 3

MMNZ has concerns with the US Tier 3 standard and lack of clarity regarding what level is to be accepted under the Rule for petrol/diesel vehicles. Our understanding is that the Subsection S86.1811-17 is the base line requirement without fleet average calculations and without different levels being introduced over a timeframe within the draft Rule commitments.

MMNZ would recommend further clarifying/confirming the US Tier 3 requirements.

Japan Regulations

There has been an acceptance of the Japanese standards for standard internal combustion engine (ICE) powered vehicles of emission code 5BA. This is a welcome addition to the set of listed codes.

There is however serious concern in allowing Japan 2005 exhaust emission levels when these vehicles can be up to 18 years old and have considerably less stringent test regimes to determine the emission levels. We are all aiming to bring in the best emission levels we can and in light of the HAPINZ 2016 report on air quality, it is surprising to see these very old standards still specified in the draft Rule.

With the Japan 2018 Emission standards being in place for at least 8 years at the time of this draft Rule implementation, we would expect this to be the minimum standard detailed even for used imports. NZ new ICE and EV's cannot be expected to improve air quality if the market is continuing to be fed with higher polluting used imports to the older 2005 emission standards.

MMNZ would recommend removing the Japan 2005 exhaust emission standard and replacing it with the Japan 2018 emission standard from 2025.

Euro 6. Light vehicles.

The definition of Euro 6 in the draft Rule is that only Euro 6d is allowed. When Euro 5 is removed by the draft rule obsolescence timing it by default removes any vehicle that is already or could be complying with Euro 6b/6c emission levels. Yes, there are differences in the exhaust gas emissions between these Euro 6b/6c/6d standards but the practical numbers are minor and far better than a Japan 2005 emission level taking test stringency into consideration.

We would like to see Euro 6b/6c emission levels being allowed between 2026 to 2028 for existing new vehicles to ensure continuity of supply for these vehicles with low emission level limits but currently excluded in the draft rule. This anomaly is an unintentional consequence of the draft rule in its current wording.

Recommendation
Allow the continued importation of vehicles (existing models only) meeting Euro 6b/6c until 2028.

Real Driving Emission
The Real Driving Emission (RDE) test as a component of this Rule is a costly and unnecessary step at this early phase of Euro 6 requirements for NZ.

Some vehicle manufacturers might consider the need of a RDE component to be a trade barrier and stop supplying vehicles to the New Zealand market.

MMNZ would recommend the RDE portion be removed and development of a new Rule covering just RDE where we can pick up on new developments under the ADR program and include Euro 6d etc.

Future Exhaust Emission Standards.

We do not believe that this Rule amendment should include or expect the automatic update to future standards especially around the steps to Euro 6e and Euro 7. These standards have not yet been put in place and there is no knowledge of the costs or practicality of implementing them in practice. We should take a wait and see approach and review the Exhaust Emission Rule at a future date after further research into NZ air quality such as the HAPINZ report to determine the next steps.

22 June 2023

SUBMISSION

The proposed changes to the Land Transport Rule: Vehicle Exhaust Emissions 2007

SOC NZ Ltd is a New Zealand company which works with the vehicle industry, New Zealand Ministry of Transport, New Zealand Transport Agency and New Zealand motoring organisations, to confirm vehicle build standards and consult on industry concerns and other technical scenarios. SOC NZ Ltd is partnered with TÜV SÜD in Germany to provide specific technical data and information.

Introduction

SOC NZ Ltd supports the development of national policies which promote the reduction of harmful emissions and greenhouse gasses, aligning with other countries of similar wealth, population density and specific environment, while accepting and considering the minimal worldwide impact of the total harmful emissions produced from New Zealand.

It is our opinion, a more effective way of reducing vehicle emissions from our transport fleet would be to deal with the heavily polluting, aged existing fleet. We accept that this is a more difficult process, and that public pushback would be greater. An initial first step would be to add a requirement for tailpipe emissions testing at the point of the annual Warrant of Fitness, operated correctly, with the correct specific requirements and with suitable enforcement, this process should start to reduce high emitting vehicles on the road in New Zealand.

Due to the unique nature (for an OECD country) that New Zealand employs to satisfy the demand for vehicles, meaning that high volumes of used vehicles are sourced from different countries to be re-registered on the roads in New Zealand, we find that the specific set of regulatory standards designed for those different countries have to be accommodated within New Zealand regulation, unfortunately this means that compromises have to be made and that accurate defined standards are difficult to achieve, particularly in respect to emissions, where different countries have contradictory methods of identifying values of harmful emitted gasses and greenhouse gasses.

This consultation should be considered in two parts and regulated accordingly, the requirements for new cars and the requirements for used cars entering the fleet.

SOC NZ LIMITED

Executive Summary

The simplest way to deal with a summary is to answer the bullet pointed questions in the submission proposal document.

1. *Are you an importer of light vehicles?*
    - No, our company provides technical vehicle data (including Emissions data) in conjunction with German Type Approval company TÜV SÜD.
2. *Other, see 3*
3. *Do you consider the proposed timeframes to require stronger standards for harmful emissions from light vehicles should:*
    - For New cars we believe that consideration should given to the Australian market implementation schedule for these standards and feasibility of being able to implement these standards, still allowing manufacturers to comply with their obligations within Europe.
    - For Used light vehicles, we support the schedule.
4. *Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?*
    - We support fixed implementation dates for specific groups of international standards and accept that there is no clear equivalence across standards, so some compromises have to be made.
5. *If you are a vehicle importer, what impact will this proposal have on your ability to supply light vehicles to Aotearoa?*
    - N/A
6. *Europe has agreed a stronger Euro 6e standard apply from September 2023. Euro 6e is anticipated to be harmonised into a global standard named UNECE Regulation 83 Series 08 around the middle of 2023, which countries can then adopt. Europe has drafted a proposal for Euro 7 to take effect from 2025 that would reduce diesel vehicle emissions significantly from Euro 6. The U.S. have proposed Euro 7-ambition requirements from 2027, and China from mid 2023. When should Aotearoa require the Euro 6e and UNECE R83/08, and Euro 7 standards on light vehicles, which would further reduce harmful emissions, and why?*
    - To ensure supply of new European vehicles and accepting the small size of our market, we think it is important that New Zealand aligns with Australia on new vehicle emission standards, to ensure continued supply. Used vehicles should follow with a suitable delay behind new vehicles.

7. *The proposed Amendment Rule includes the Japan emissions standard 5BA under the definition of Japan 2018 Low Harm. From your perspective, what would the impact on supply be if 5BA was included or excluded from the Amendment Rule?*
    - The exclusion of 5BA would obviously have an impact on vehicle supply, but as we are not importers, we have no idea of the extent of that impact. Whatever is decided, it should be equitable across the changes to the rule.
8. *The proposed Amendment Rule does not include the Japan emissions standard CBA under the definition of Japan 2005 Low Harm. From your perspective, what would the impact on supply be if CBA was included or excluded from the Amendment Rule?*
    - The testing methodology of CBA partially includes a proportion of the outlawed Japan 10-15 test cycle, therefore CBA should be excluded from allowed emission standards. This is clearly identified in all technical documentation on the subject. We believe the impact of excluding CBA on the import volumes would be low.
9. *Te Manatū Waka also notes that there may be inconsistencies if 5BA is included and not CBA, however 5BA is subject to stronger testing standards so the impacts are not clear. Do you foresee any inconsistencies if 5BA is included and CBA is not?*
    - With limited knowledge of the volume of 5BA vehicles this would affect, it is difficult to comment.

10,11,12,13,14,15

- We have limited knowledge of the heavy vehicle industry in New Zealand and feel it would be unfair of us to comment, further than :- If New Zealand moves out of step with Australia, supply issues may occur.

16,17,18,19,20

- We have limited knowledge of the motorcycle/moped industry in New Zealand and feel it would be unfair of us to comment, further than :- If New Zealand moves out of step with Australia, supply issues may occur.

21,22,23,24,25

- We have limited knowledge of the disability vehicle industry in New Zealand and feel it would be unfair of us to comment.

26. *Do you agree with the comparison of other standards with Euro standards presented here?*

- The tables set out reflect the known and accepted view of these standards and given that there can be no direct comparisons due to the testing methodology, it is probably as good as can be found. We are concerned that Japan 2018 does not measure Particulate Number (PN) and this is considered an important component of the testing in Europe.

After answering all of the questions, we can state that we generally support the proposal for used cars, with the exception of Japan 05 Low harm being accepted after 1st January 2026.

With regard to new vehicles, we have concerns that the required testing of vehicles, allowing them to claim EU 6 status may not be able to be met locally and therefore cause supply issues

and the difficulties that will arise if New Zealand is not in synchronisation with the Australian implementation, making it likely that no suitable models will be manufactured for our small market.

New Light Vehicles

New vehicles entering the New Zealand Market currently have a minimum emissions requirement of EU 5/EU V (or a similar standard by equivalence from different countries). Within Europe, EU 5/ EU V was introduced as the minimum standard by Type Approval in 2009 and first registration in 2011, with EU 6/ EU VI following in 2014 and 2015 respectively. This means that New Zealand is currently nine years out of step with the EU6 European regulations, which will only increase, the longer EU6 (or equivalent) conformity is delayed.

When implementing a later emission standard, it has to be accepted that there are a lot of commercial and technical considerations which need to be assessed early in the process and a protocol framework developed to ensure all can be met.

For any vehicle to be granted or able to claim a Euro emission standard, it has to rigidly follow the requirements for the specific standard and for EU 6 (in any iteration), there is a requirement for 'In Service Conformity Testing' and access to 'Service and Repair' information. It is my understanding that the testing has to be completed on market specific vehicles and ideally in the market they were supplied into (Australia and NZ are considered the same market). It should also be noted that for the later versions of EU 6 Real Driving Emissions (RDE) become a mandatory part of the In-Service Conformity Testing.

A further note should be that by the proposed time of release, EU 6d will be an obsolete European standard, please see below the schedule of release of EU 6e.

EA	Euro 6e	Euro 6-2	M, N1, N2	PI, CI	1.9.2023	1.9.2024	31.12.2025
EB	Euro 6e-bis	Euro 6-2	M, N1, N2	PI, CI	1.1.2025	1.1.2026	31.12.2027
EC	Euro 6e-bis-FCM	Euro 6-2	M, N1, N2	PI, CI	1.1.2027	1.1.2028	

file:///C:/Users/OEM/AppData/Local/Microsoft/Windows/INetCache/Content.Outlook/FN9POU4B/Legiswrite%20Euro%206e%20Act%20LM.pdf

We all agree that EU 6d certified vehicles give better emissions results than the earlier EU 6 standards and definitely better than EU 5, however my concern is that with no Australasian certified test facility, EU 6 vehicles will not be able to be 'In Service Conformity Tested' as required by the various EU 6 standards.

Euro 6

Euro 6b or Euro VI Step C means: (a) Commission Regulation (EC) No 715/2007 of the European Parliament and of the Council of 20 June 2007 on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information, as amended by Commission Regulation (EC) No 692/2008 of 18 July 2008, and meeting Euro 6 emissions limits set out in Annex I;

EC 692/2008 :- https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:199:0001:0136:EN:PDF

Article 9 requires 'In Service Conformity Testing'

Or

ECE/R83 :- https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:042:0001:0207:EN:PDF

UN/ECE Regulation No. 83, uniform provisions concerning the approval of vehicles with regard to the emission of pollutants according to engine fuel requirements (E/ECE/324E/ECE/TRANS/505/Rev. 1/Add.82/Rev.4) in

Appendix 3 requires 'In Service Conformity Testing'

Or

EC 595/2007:- https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:188:0001:0013:EN:PDF

Commission Regulation (EC) No 595/2009 of the European Parliament and of the Council of 18 June 2009 on type-approval of motor vehicles and engines (with respect to emissions from heavy-duty vehicles and access to vehicle repair and maintenance information), together with the technical requirements of Commission Regulation 6 Land Transport Rule Draft: version 2.6 (9 May 2023) (EU) No 582/2011 of 25 May 2011, incorporating all amendments up to and including those adopted in Commission Regulation (EU) No 627/2014 of 12 June 2014

Article 4 point 2 :-

2. Manufacturers shall ensure that type-approval procedures for verifying conformity of production, durability of pollution control devices and in-service conformity are followed.

ECE/R 49

This test procedure is predominantly for engines and for this to be translated to a complete vehicle, manufacturers' representatives need to apply for a type approval, through an approved Testing Authority.

You will note from the testing procedures within this standard, that the differing speed tests relate to engine speeds and torque, not road speed and drive cycles.

This Regulation applies to the emission of gaseous and particulate pollutants from C.I. and NG engines and P.I. engines fuelled with LPG, used for driving motor vehicles having a design speed exceeding 25 km/h of categories (1) (2) M1 having a total mass exceeding 3,5 tonnes, M2, M3, N1, N2 and N3

Euro 6d or Euro VI Step E means:

Ec 2017/1151 : https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R1151&qid=1686785560770

(a) *Commission Regulation (EC) No 2017/1151 of the European Parliament and of the Council of 1 June 2017 supplementing Regulation (EC) No 715/2007 of the European Parliament and of the Council on type-approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information, amending Directive 2007/46/EC of the European Parliament and of the Council, Commission Regulation (EC) No 692/2008 and Commission Regulation (EU) No 1230/2012 and repealing Commission Regulation (EC) No 692/2008, and, meeting the requirements of 'Euro 6d' meaning 'RDE testing against final conformity factors, otherwise full Euro 6 emission requirements'*

Article 9, sets out the requirement for In Service Conformity Testing

I could go on and show examples and specifics from each regulation identified in the draft legislation.

All specific regulations show that to comply with the requirements of that regulation, in service conformity testing must be completed.

It should be accepted that as the tailpipe emissions from EU 5b all the way through to EU 6d for petrol engines are identical (with the exception of Particulate Number PN, which is not measured in the Japan 2018 test regime, so it must be assumed, is not considered important, as Japan 2018 is proposed to be accepted), so it is the processes behind gaining and confirming those tailpipe emissions, including the durability requirements and testing, which have improved the overall outcome from EU 5b through to EU 6d

EXHAUST OBD CO2/FE FUELS EVAP ELECTRIFICATION MOTORCYCLE Delphi Technologies 10

EUROPEAN UNION

EURO 5-6

Emissions	Unit	PC M[1], LCV N1 CL 1			LCV N1 CL 2			LCV N1 CL 3, N2		
		Euro 5a	Euro 5b/b+	Euro 6b, 6c, 6d-Temp, 6d	Euro 5a	Euro 5b/b+	Euro 6b, 6c, 6d-Temp, 6d	Euro 5a	Euro 5b/b+	Euro 6b, 6c, 6d-Temp, 6d
EURO 5-6 Positive ignition emissions limits ((EC) 715/2007 as amended (EC) 692/2008)										
THC	mg/km	100	100	100	130	130	130	160	160	160
NMHC		68	68	68	90	90	90	108	108	108
NOx		60	60	60	75	75	75	82	82	82
CO		1000	1000	1000	1810	1810	1810	2270	2270	2270
PM[2][3]		5.0	4.5	4.5	5.0	4.5	4.5	5.0	4.5	4.5
PN[2]	Nb/km	–	–	$6x10^{11}$[4]		–	$6x10^{11}$[4]	–	–	$6x10^{11}$[4]
EURO 5-6 Compression ignition emissions limits ((EC) 715/2007 as amended (EC) 692/2008)										
NOx	mg/km	180	180	80	235	235	105	280	280	125
HC+NOx		230	230	170	295	295	195	350	350	215
CO		500	500	500	630	630	630	740	740	740
PM[3]		5.0	4.5	4.5	5.0	5.0	4.5	5.0	5.0	4.5
PN[3]	Nb/km	–	$6x10^{11}$	$6x10^{11}$		$6x10^{11}$	$6x10^{11}$	–	$6x10^{11}$	$6x10^{11}$

1) For compression ignition only: exempted M1 vehicles have to comply w/ N1 CL3 test l limits. No more exemption for pass cars for Euro 6
2) Test procedure defined in UN Reg 83 Suppl 7
3) Applicable to PI DI engines only.
4) Until 3 years after the dates for TA/FR particle emission limit of 6*E12 may be applied for Euro 6b positive ignition DI vehicles upon request of manufacturer.

In Service Conformity Testing

The Ministry of Transport has acknowledged that they are aware of 'In Service Conformity Testing' requirements but have stated that they don't want to implement that part of the standards for New Zealand. It is my belief that The Ministry of Transport do not have the ability to make that call, as it is a requirement of the standards and the manufacturers will get penalised if they do not comply to the requirements of the specific standard.

In service conformity testing has to be completed by an approved EU Inspecting Organisation/ Type Approval Authority at a certified facility.

To my knowledge, the only partially approved local facility belongs to Ford in Queensland, Australia and the certification they hold may not cover all of the standards identified in the draft legislation.

It is my understanding that it would currently be impossible to conform to the requirements of the various standards locally and that it may be necessary for manufacturers to return vehicles to overseas testing facilities to complete their In Service Conformity Testing, as required by the regulations. It is also my understanding that for manufacturers to be able to label a vehicle EU 6*, a percentage of vehicles from the market of registration need to be tested.

Access to vehicle repair and maintenance information

As far as I am aware, access to repair and maintenance information is not mandated within New Zealand, and this is also a requirement of all of these standards.

Conclusion on EU6d being appropriate.

At this point, there is a possibility that if Waka Kotahi enforce the minimum requirement to be EU 6d on February 1st 2025, without the consideration of the specific manufacturer/importer supply agreements and also not considering the implications of stepping out of line with the requirements in Australia, some European products may not be available and in extreme cases the manufacturer might exit the market.

If New Zealand aligns the implementation dates of EU 6 with Australia, then it is likely that a suitable solution for the 'In Service Conformity Testing' scenario will be found, as it would become viable to have a local Australasian testing facility, due to greater volume of vehicles requiring testing and available for testing.

It should also be noted that for new vehicles, with first opportunity to be registered on the New Zealand database is when they are entered by the manufacturers agent in New Zealand after clearing customs, and this can be a significant time after manufacture (due to transport and shipping), therefore the point at which new vehicles need to meet the proposed standard should be manufacture date.

Another point worth noting, is that Japan 2018 does not measure Particulate Number (PN), whereas EU 6 test procedures do. PN is used as a calculating factor, along with Particulate Matter (PM), which then gives a better understanding of the harmful particulates produced by a vehicles exhaust emissions. Another fact which identifies that test regimes and protocols are generally difficult to compare, if not all of the same factors are measured.

Used Light Vehicles

Research we have completed over the past few years on comparisons of emission standards has shown that in reality, it is very difficult to compare emissions standards from different countries, as the test regimes differ so radically, for a specific example, the Japan JC08 test regime, which is designed to replicate a small engine car driving in a very urban environment is very difficult to compare with European NEDC test regime which was designed to replicate larger engine vehicles driving under a mixture of driving conditions, which has led us to agree with the ICCT report commissioned by MOT, which clearly points this out and recommends that any comparison calculations should only be used for a very limited time and that no real equivalence can be reached until Japan has introduced WLTP testing with Real Driving Emissions (RDE), which can then be compared by a simple equation to EU standards, using WLTP with RDE test procedures (three stage test compared to four stage test).

With the above accepted, we all have to understand that the test process and methodology has a massive impact on the recorded, measured emissions values, therefore we can't accept the tailpipe emissions being like for like across different test regimes.

Some local industry commentators appear to have attempted a different methodology around defining the harm caused by vehicle emissions and appear to have neglected the well-researched and accepted processes, developed by the ICCT and other international experts, which find the European test process to be one of the more robust and accurate methods of defining the harmful pollutants produced as transport emissions. I have attempted to understand the basis of their argument, but with limited information, we find the conclusions weak and formed using limited data.

Accepted technical information shows that the Japan 2005 3 digit emission codes have been used to identify the different Japanese test methods employed and results gained from those tests. It has long been known that any part of the Japan 10-15 testing regime is unreliable and should not be accepted to prove emissions, if we are trying to align those results with other more accurate test protocols, such as the European test regimes, as identified on page 13 of the February 2021 :-

CabinetDecisionsOnTheChangesSoughtByTheVehicleIndustryToTheProposedCleanCarStandard,

Vehicles tested to the outdated Japanese 10/15 test cycle will not be permitted because their emissions data is too variable. Hybrid and electric vehicles, if they are tested to the Japanese 10/15 test cycle will be permitted, because despite their uncertainty over exact emission values, their importation would lead to lowering New Zealand vehicle emissions in an affordable price bracket. Hybrids have been available for a long time; the Toyota Prius for example was first manufactured almost 25 years ago.

Therefore, as D** emission code could include Japan 10-15 hot start testing until a registration date of 01 October 2011 and should not be included, as shown below:-

JAPAN

OTHER REQUIREMENTS

Test Mode		Exhaust emissions are calculated as follows: From Oct 2005: 10-15 mode hot start x 0.88 + 11 mode cold start x 0.12. From Oct 2008: 10-15 mode hot start x 0.75 + JC08 mode cold start x 0.25. Since Oct 2011: JC08 mode hot start x 0.75 + JC08 mode cold start x 0.25. From 2019: WTLP. Japan has a plan to introduce RDE regulation for some diesel vehicles. (GVW < 2.5 t, or less than 9 people) from Oct 2022 for new Type Approvals, and from Oct 2024 for Continuous Production Vehicles. RDE test procedure will differ from RDE in Europe due to different driving conditions. RDE method will be based on 3 phases WLTC.
In-use Vehicle Emission Limit		PC: Idle CO: 1%, Idle HC: 300 ppm. Small car (K-car) : Idle CO: 2%, Idle HC: 500 ppm. Diesel Smoke: non-load acceleration limit 25% / max PM: 0.8 m^{-1}.
Durability		PC, truck and bus GVW < 3.5 t: 80,000 km.
Evaporative Emissions – Gasoline and LPG		Test similar to EC 2000 Evap test: Test limit: 2.0 g/test. 1 h hot soak at 27 ± 4°C HSL test + 48 h diurnal (20-35°C) DBL test. Preparation driving cycle for EVAP: JC08 mode.
OBD – Gasoline and LPG		J-OBDII obligation: Enhanced OBD: detect any malfunctions causing excessive emissions on the test cycle.
Fuel Quality	Gasoline	Lead: Not detected (JIS K2255-4,5) MTBE: max. 7 vol.% Sulfur: max. 0.001 mass% Oxygen: max. 1.3 vol.% (JIS K2536-2,4,6) Benzene: max. 1 vol.%
	Diesel	Sulfur: max. 0.001 mass% Distillation at 90%: max. 360°C (JIS K2254) Cetane index: min. 45 (JIS K2280)

We agree that A** and C** emission codes should be omitted as a proof of emission acceptability and D** before 2012 registration date should also be omitted.

Identification of used vehicles should be by date of first registration, as predominantly, this is the only date available to the buyer when purchasing.

The scheduled dates of meeting the new requirements appear to be suitable for used vehicles, with the exeption of Japan 05 low harm being accepted after 2026.

Disclaimer

All reasonable endeavours are made to ensure the accuracy of the information in this document. However, the information is provided without warranties of any kind including accuracy, completeness, timeliness or fitness for any particular purpose.

EUROPEAN
COMMISSION

Brussels, XXX
[…](2022) XXX draft

COMMISSION REGULATION (EU) …/…

of XXX

amending Commission Regulation (EU) 2017/1151 as regards the emission type approval procedures for light passenger and commercial vehicles

(Text with EEA relevance)

COMMISSION REGULATION (EU) …/…

of XXX

amending Commission Regulation (EU) 2017/1151 as regards the emission type approval procedures for light passenger and commercial vehicles

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EC) No 715/2007 of the European Parliament and of the Council of 20 June 2007 on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information[1], and in particular Articles 5(3) and 14(3) thereof,

Whereas:

(1) Regulation (EC) No 715/2007 regulates type approval of motor vehicles with regard to their emissions. To that end, it requires new light passenger and commercial vehicles to comply with certain emission limits. The specific technical provisions necessary to implement that Regulation are contained in Commission Regulation (EU) 2017/1151[2]. Given that Regulation (EU) 2018/858[3] regulates the type approval of motor vehicles, it is appropriate to align the definitions of Commission Regulation (EU) 2017/1151 with those of Regulation (EU) 2018/858 in order to achieve a uniform understanding in type approval legislation[2].

(2) The provisions on access to vehicle on-board diagnostics (OBD) information and vehicle repair and maintenance information laid out in Chapter III of Regulation EC No 715/2007 have been integrated in Chapter XIV of Regulation (EU) 2018/858, which applies since 1 September 2020. In order to align the legislation, it is appropriate to delete, the provisions in Regulation (EU) No 2017/1151 relating to access to such information.

(3) Since the introduction of the real driving emission (RDE) methodology in the requirements for vehicle testing by Regulation (EU) 2016/427, which was taken over in Annex IIIA to Regulation (EU) 2017/1151 , all vehicles may be tested at low ambient temperatures. The specific requirement to present information that the nitrogen oxides (NOx) pollution control devices reach sufficiently high temperature within 400 seconds at -7 °C is therefore redundant and should be deleted.

[1] OJ L 171, 29.6.2007, p. 1.

[2] Commission Regulation (EU) 2017/1151 of 1 June 2017 supplementing Regulation (EC) No 715/2007 of the European Parliament and of the Council on type-approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information, amending Directive 2007/46/EC of the European Parliament and of the Council, Commission Regulation (EC) No 692/2008 and Commission Regulation (EU) No 1230/2012 and repealing Regulation (EC) No 692/2008 (OJ L 175, 7.7.2017, p.1).

(4) In order to allow monitoring the consumption of fuel and/or electric energy for all types of vehicles covered by this Regulation, the requirements for such monitoring should apply to vehicles of N_2 category. As this is a new requirement for that category, it is appropriate to allow vehicle manufacturers sufficient time to comply with that requirement.

(5) In order to identify whether a tested vehicle operates in the base emission strategy (BES) or in an auxiliary emission strategy (AES) an appropriate indication of AES activation should be introduced in vehicles informing when an AES is used. Therefore, appropriate lead time is needed in order to introduce such indicator in all new vehicles.

(6) A formal documentation package should be made available to allow other type approval authorities, technical services, third parties, the Commission or market surveillance authorities to understand whether higher emissions than expected during testing under certain conditions could be attributed to an AES.

(7) Given that Regulation (EU) 2018/858 allows third parties for the in-service conformity (ISC) testing, the provisions for ISC checks need to be adapted.

(8) The application of ISC checks is to be facilitated by an electronic platform on ISC. The development of this platform showed the need for certain changes in the transparency lists. At the same time, the transparency lists should be streamlined to contain only the necessary elements for ISC testing.

(9) A UN Regulation on Real Driving Emissions (RDE) is being developed in the UN World Forum for Harmonization of Vehicle Regulations with improvements in the structure and other elements of the RDE methodology. Those improvements have not yet been formally adopted, but as they represent the latest technical developments, it is necessary to introduce them in Regulation (EU) 2017/1151.

(10) The Joint Research Centre published two review reports in 2020[3] and 2021[4] on the assessment of the PEMS margins used in the RDE procedure representing the latest state of knowledge on the performance of portable emission measurement systems. It is therefore appropriate to lower the PEMS margins in line with the best available scientific knowledge contained in these reports. The lowering of the PEMS margins should be accompanied by changes in the methodology of the calculation of the results of an RDE test.

(11) The Worldwide Harmonised Light-duty Test Procedure (WLTP) was first adopted in the UN World Forum for Harmonization of Vehicle Regulations as Global Technical Regulation (GTR) No 15[5] and later as UN Regulation No 154[6]. Certain amendments have been introduced to the WLTP methodology in the UN in order to take into account the latest developments of technical progress. It is therefore appropriate to align the WLTP methodology laid down in this Regulation with the UN Regulation.

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3 Valverde Morales, V., Giechaskiel, B. and Carriero, M., Real Driving Emissions: 2018-2019 assessment of Portable Emissions Measurement Systems (PEMS) measurement uncertainty, EUR 30099 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-16364-0, doi:10.2760/684820, JRC114416.

4 Giechaskiel, B., Valverde Morales, V. and Clairotte, M., Real Driving Emissions (RDE): 2020 assessment of Portable Emissions Measurement Systems (PEMS) measurement uncertainty, EUR 30591 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-30230-8, doi:10.2760/440720, JRC124017.

5 Global technical regulation No. 15 on Worldwide harmonized Light vehicles Test Procedure

6 [Publication office please enter the confirmed reference]

(12) UN Regulation No 154 covers two sets of regional requirements, termed Level 1A and Level 1B. Although the majority of the requirements of that UN Regulation are applicable to both Level 1A and Level 1B, certain of them are specific to a particular level. For application of UN Regulation No 154 in the Union, only the level 1A requirements are relevant as only this level is based on the four phase test cycle (low, medium, high and extra-high speed) used in the Union.

(13) To minimise complexity of this Regulation and to avoid duplication of regulatory provisions, rather than transposing the provisions of UN Regulation No 154 to this Regulation, reference to that UN Regulation should be introduced to Regulation (EU) 2017/1151.

(14) Based on recommendations by the Joint Research Centre, it is appropriate to amend the respective test procedure for the conformity of production (CoP) assessment of carbon dioxide (CO_2) emissions of vehicles, including the run-in procedure in order to allow for technical progress.

(15) In order to reduce testing flexibilities, some specific provisions should be introduced, such as provisions on the use of computational fluid dynamics (CFD) simulation tools and its validation, as well as on the setting of a coasting functionality in dynamometer operation.

(16) An additional gearshift calculation tool, developed by the Joint Research Centre, should be introduced as reference tool.

(17) An update to the Type 5 test for verifying the durability of pollution control devices and updated OBD requirements is necessary to reflect the changes from the previous test, based on the New European Driving Cycle (NEDC) to the WLTP.

(18) Recent studies show a significant difference between the average real-world CO_2 emissions of plug-in hybrid electric vehicles and their CO_2 emissions determined by WLTP. In order to ensure that the CO_2 emissions determined for such vehicles are representative of real driver behaviour, the utility factors applied for the purpose of the CO_2 emission determination at type approval should be revised. As a first step, new utility factors should be specified on the basis of available data. As a second step, those factors should be further revised, taking into account data from fuel consumption monitoring devices on-board such vehicles and collected in accordance with Commission Implementing Regulation (EU) 2021/392[7].

(19) Some requirements introduced in this amendment, such as the indicator for AES activation, require adaptation of the vehicle. Therefore those requirements should be introduced in three distinct steps.

(20) It is therefore appropriate to amend Regulation (EU) 2017/1151.

(21) In order to provide Member States, national authorities and economic operators with sufficient time to prepare for the application of the rules introduced by this Regulation, the date of application of this Regulation should be deferred.

(22) The measures provided for in this Regulation are in accordance with the opinion of the Technical Committee - Motor Vehicles,

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[7] Commission Implementing Regulation (EU) 2021/392 of 4 March 2021on the monitoring and reporting of data relating to CO2 emissions from passenger cars and light commercial vehicles pursuant to Regulation (EU) 2019/631 of the European Parliament and of the Council and repealing Commission Implementing Regulations (EU) No 1014/2010, (EU) No 293/2012, (EU) 2017/1152 and (EU) 2017/1153 (OJ L 77, 5.3.2021, p. 8).

HAS ADOPTED THIS REGULATION:

Article 1

Regulation (EU) 2017/1151 is amended as follows:

(1) Article 2 is amended as follows:

(a) the introductory phrase is replaced by the following:

'For the purposes of this Regulation, the definitions in Regulation (EU) 2018/858* of the European Parliament and the Council shall apply.

The following definitions shall also apply:';

(b) point 1 is amended as follows:

(1) the introductory phrase is replaced by the following:

''vehicle type with regard to emissions' means a group of vehicles which:" ';

(2) point (a) is replaced by the following:

'(a) do not differ with respect to the criteria constituting an "interpolation family" as specified in paragraph 6.3.2 of UN Regulation No 154*;';

*Regulation (EU) 2018/858 of the European Parliament and of the Council of 30 May 2018 on the approval and market surveillance of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles, amending Regulations (EC) No 715/2007 and (EC) No 595/2009 and repealing Directive 2007/46/EC (OJ L 151, 14.6.2018, p. 1).

**UN Regulation No 154 – Uniform provisions concerning the approval of light duty passenger and commercial vehicles with regards to criteria emissions, emissions of carbon dioxide and fuel consumption and/or the measurement of electric energy consumption and electric range (WLTP) ([OJ L xxx, xx.xx.2022, p. xx. [to be completed by the Publications Office before adoption, as soon as OJ publication of the 02 series of amendment to UN Regulation 154 has taken place]).

(3) point (b) is replaced by the following:

'(b) fall in a single "CO_2 interpolation range" within the meaning of paragraph 2.3.2 of Annex B6 to UN Regulation No. 154 or paragraph 4.5.1. of Annex B8 to UN Regulation 154;';

(4) in point (c), the second indent is replaced by the following:

'–exhaust gas recirculation (with or without, internal/external, cooled/non-cooled, low/high/combined pressure)';

(c) point 2 is replaced by the following:

'(2) 'EC type-approval of a vehicle with regard to emissions' means an EU type-approval of the vehicles with regard to their tailpipe emissions, crankcase emissions, evaporative emissions and fuel consumption; ';

(d) point 8 is amended as follows:

(a) point (a) is replaced by the following:

‘(a) number and kind of substrates, structure and material;’

(b) the following point (i) is added:

‘(i) required reagent (if applicable);’;

(e) point 10 is replaced by the following:

‘ (10) ‘mono fuel gas vehicle’ means a mono-fuel vehicle that is designed primarily for permanent running on LPG or NG/biomethane or hydrogen, but may also have a petrol system for emergency purposes or starting only, where the nominal capacity of the petrol tank does not exceed 15 litres; ’;

(f) point 11 is replaced by the following:

‘ (11) ‘bi-fuel vehicle’ means a vehicle with two separate fuel storage systems that is designed to run primarily on only one fuel at a time most of the time;’;

(g) point 17 is replaced by the following:

‘ (17) ‘properly maintained and used’ means, for the purpose of a test vehicle, that such a vehicle satisfies the criteria for acceptance of a selected vehicle laid down in Appendix 1 of Annex II’;

(h) point 20 is replaced by the following:

‘ (20) ‘malfunction’ means the failure of an emission-related component or system that would result in emissions exceeding the thresholds in Table 4A of paragraph 6.8.2 of UN Regulation No. 154 or if the OBD system is unable to fulfil the basic monitoring requirements set out in Annex C5 to UN Regulation No. 154; ’;

(i) point 22 is replaced by the following:

‘(22) ‘driving cycle’ means, in respect of vehicle OBD systems, the key-on, a driving mode where a malfunction would be detected if present, and key-off’;

(j) point 23 is deleted;

(k) the following point 23a is inserted:

‘(23a) ‘third party’ means a third party complying with the requirements of Commission Implementing Regulation (EU) 2022/163*’

*Commission Implementing Regulation (EU) 2022/163 of 7 February 2022 laying down the rules on the application of Regulation (EU) 2018/858 of the European Parliament and of the Council as regards functional requirements for market surveillance of vehicles, systems, components and separate technical units (OJ L 27, 8.2.2022, p. 1).;

(l) point 25 is replaced by the following:

‘ (25) ‘deteriorated replacement pollution control device’ means a pollution control device as defined in Article 3(11) of Regulation (EC) No 715/2007 that has been aged or artificially deteriorated to such an extent that it fulfils the requirements laid out in paragraph 1 of Appendix 1 of Annex C4 to UN Regulation No. 154’;

(2) Article 3 is amended as follows:

(a) paragraph 1 is replaced by the following:

'1. In order to receive an EC type-approval with regard to emissions, the manufacturer shall demonstrate that the vehicles comply with the requirements of this Regulation when tested in accordance with the test procedures specified in Annexes IIIA to VIII, XI, XVI, XX, XXI and XXII. The manufacturer shall also ensure that the reference fuels comply with the specifications set out in Annex IX.';

(b) in paragraph 2, the following subparagraph is added:

'In all references to UN Regulation No. 154, only the European Union related requirements characterised by level 1A shall apply. References in UN Regulation No. 154 to 'criteria emissions' shall be understood as references to 'pollutant emissions' in this Regulation.';

(c) in paragraph 3, the second subparagraph is replaced by the following:

'The emissions tests for roadworthiness purposes set out in Annex IV and the tests for fuel consumption and CO_2 emissions set out in Annex XXI shall be required to obtain EC type-approval with regard to emissions under this paragraph.';

(d) paragraph 7 is replaced by the following:

'7. Mono-fuel gas vehicles shall be tested in the Type 1 test for variation in the composition of either LPG or NG/biomethane, as set out in Annex B6 to UN Regulation No 154 for pollutant emissions, with the fuel used for the measurement of the net power in accordance with Annex XX of this Regulation.

Bi-fuel gas vehicles shall be tested with petrol and either LPG or NG/biomethane. The tests on LPG or NG/biomethane shall be performed for variation in the composition of LPG or NG/biomethane, as set out in Annex B6 to UN Regulation No. 154 for pollutant emissions, and with the fuel used for the measurement of the net power in accordance with Annex XX of this Regulation.'

(e) paragraph 10, second and fifth subparagraph are deleted;

(f) paragraph 11, the first and the second subparagraphs are replaced by the following:

'11. The manufacturer shall ensure that, throughout the normal life of a vehicle which is type approved in accordance with Regulation (EC) No 715/2007, its final RDE emission results as determined in accordance with Annex IIIA and emitted at any Type 1a test performed in accordance with that Annex, do not exceed the emission limits for NOx and PN.

Type approval in accordance with Regulation (EC) No 715/2007 may only be issued if the vehicle is part of a validated PEMS test family in accordance with point 3.3 of Annex IIIA.';

(3) In Article 4, paragraphs 4, 5 and 6 are replaced by the following:

'4. When tested with a defective component in accordance with Appendix 1 of Annex C5 to UN Regulation No. 154, the OBD system malfunction indicator shall be activated.

The OBD system malfunction indicator may also activate during this test at levels of emissions below the OBD thresholds specified in Table 4A of paragraph 6.8.2 of UN Regulation No. 154.

5. The manufacturer shall ensure that the OBD system complies with the requirements for in-use performance set out in Section 1 of Appendix 1 to Annex XI under all reasonably foreseeable driving conditions.

6. In-use performance related data to be stored and reported by a vehicle's OBD system according to the provisions of Section 1 of Appendix 1 to Annex XI shall be made readily available by the manufacturer to national authorities and independent operators without any encryption.';

(4) In Article 4a, the –introductory phrase is replaced by the following:

'The manufacturer shall ensure that the following vehicles of categories M1, N1 and N2 are equipped with a device for determining, storing and making available data on the quantity of fuel and/or electric energy used for the operation of the vehicle:';

(5) Article 5 is amended as follows:

(a) the title is replaced by:

'Application for EC type-approval of a vehicle with regard to emissions';

(b) paragraph 1 is replaced by the following:

'1. The manufacturer shall submit to the approval authority an application for EC type-approval of a vehicle with regard to emissions.';

(c) paragraph 3 is amended as follows:

(1) point (a) is replaced by the following:

'(a) in the case of vehicles equipped with positive-ignition engines, a declaration by the manufacturer of the minimum percentage of misfires out of a total number of firing events that either would result in emissions exceeding the OBD thresholds laid out in Table 4A of paragraph 6.8.2 of UN Regulation No. 154 if that percentage had been present from the start of a type 1 test as chosen for the demonstration in accordance with Annex C5 to UN Regulation No. 154 or could lead to an exhaust catalyst, or catalysts, overheating prior to causing irreversible damage;';

(2) points (d) to (g) are replaced by the following:

'(d) a declaration by the manufacturer that the OBD system complies with the provisions of section 1 of Appendix 1 to Annex XI relating to in-use performance under all reasonably foreseeable driving conditions;

(e) a plan describing the detailed technical criteria and justification for incrementing the numerator and denominator of each monitor that must fulfil the requirements of paragraphs 7.2 and 7.3. of Appendix 1 to Annex C5 of UN Regulation No 154, as well as for disabling numerators, denominators and the general denominator under the conditions outlined in paragraph 7.7 of Appendix 1 to Annex C5 of UN Regulation No 154;

(f) a description of the provisions taken to prevent tampering with and modification of the emission control systems, including the emission control computer and odometer including the recording of mileage values for the purposes of the requirements of Annexes XI and XVI;

(g) if applicable, the particulars of the vehicle family as referred to in paragraph 6.8.1. of UN Regulation No 154;';

(d) in paragraph 6, the first and the second subparagraph are replaced by the following:

'For the purposes of paragraph 3, points (d) and (e) of, approval authorities shall not approve a vehicle if the information submitted by the manufacturer is inappropriate for fulfilling the requirements of section 1 of Appendix 1 to Annex XI.

Paragraphs 7.2, 7.3 and 7.7 of Appendix 1 to Annex C5 of UN Regulation No 154 shall apply under all reasonably foreseeable driving conditions.';

(e) paragraph 11 is amended as follows:

(a) the following second subparagraph is inserted:

'For vehicles approved under the character EB and EC as defined in Table 1, Appendix 6 to Annex I, the manufacturer shall introduce an indicator (AES Flag or Timer) to indicate when a vehicle runs in AES mode instead of BES mode. The indicator shall be available via the serial port of a standard diagnostic connector upon request of a generic scan-tool. The AES that is running shall be identifiable via the formal documentation package.'

(b) the sixth subparagraph is replaced by the following:

'The approval authority may test the functioning of AES. '

(c) the following subparagraphs are added:

'A list of AES which were deemed non-acceptable by type approval authorities shall be compiled yearly by the Forum for Exchange of Information on Enforcement and made available to the public by the Commission at the latest by end of March of the following year, in case there were AES which were deemed non-acceptable.

The manufacturer shall also provide to the approval authorities a formal documentation package, as in Appendix 3a to Annex I, containing information on AES/BES that would allow an independent tester to identify if the emissions measured can be attributed to an AES or BES strategy or are potentially due to a defeat device. The formal documentation package shall be made available to all type approval authorities, technical services, market surveillance authorities, third parties and the Commission upon request.

Vehicles of category M1 or N1 shall be approved with emission characters EA, EB or EC as specified in Table 1, Appendix 6 to Annex I, taking into account the utility factors determined in accordance with the values specified in Table A8.App5/1 of point 3.2. of Annex XXI.';

(f) paragraph 12 is replaced by the following:

'12. The manufacturer shall also provide the type approval authority which granted the emission type-approval under this Regulation ('granting type approval authority') with a package on testing transparency containing the necessary information in order to allow the performance of testing in accordance with point 5.9 of Annex II.

Once the electronic platform for ISC is ready, the manufacturer shall also upload all required data into the platform for all its vehicles. The information in the transparency lists shall be limited to the prescribed information required by Appendix 5 of Annex II.'

(6) Article 6 is amended as follows:

(a) the title is replaced by the following:

'Administrative provisions for EC type-approval of a vehicle with regard to emissions';

(b) paragraph 1 is replaced by the following:

'1. If all the relevant requirements are met, the approval authority shall grant an EC type-approval and issue a type-approval number in accordance with the numbering system set out in Annex IV to Regulation (EU) 2020/683*.

Without prejudice to the provisions of Annex IV to Regulation (EU) 2020/683, Section 3 of the type-approval number shall be drawn up in accordance with Appendix 6 to Annex I.

An approval authority shall not assign the same number to another vehicle type.'

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* Commission Implementing Regulation (EU) 2020/683 of 15 April 2020 implementing Regulation (EU) 2018/858 of the European Parliament and of the Council with regards to the administrative requirements for the approval and market surveillance of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles, C/2020/2138 (OJ L 163, 26.5.2020, p. 1).;

(c) paragraph 2 is replaced by the following:

'2. By way of derogation from paragraph 1, at the request of the manufacturer, a vehicle with an OBD system may be accepted for type-approval with regard to emissions, even though the system contains one or more deficiencies such that the specific requirements of Annex XI are not fully met, provided that the specific administrative provisions set out in Section 3 of that Annex are complied with.

The approval authority shall notify the decision to grant such a type approval to all approval authorities in the other Member States in accordance with the requirements set out in Article 27 of Regulation (EU) 2018/858.';

(7) in Article 7, the first paragraph is replaced by the following:

'Articles 27, 33 and 34 of Regulation 2018/858 shall apply to any amendments to the type-approvals granted in accordance to Regulation (EC) No 715/2007.';

(8) in Article 8, paragraph 1 is replaced by the following:

'1. Measures to ensure the conformity of production shall be taken in accordance with Article 31 of Regulation (EU) 2018/858.

The provisions laid down in Section 4 of Annex I to this Regulation and the relevant statistical method in Appendix 2 of UN Regulation No. 154 shall apply.';

(9) Article 9 is amended as follows:

(a) the title is replaced by the following:

'In-service conformity';

(b) paragraph 1 is replaced by the following:

'1. Measures to ensure in-service conformity of vehicles type-approved under this Regulation shall be taken in accordance with the conformity of production arrangements as laid down in Article 31 of Regulation (EU) 2018/858,Annex IV to Regulation (EU) 2018/858 and Annex II to this Regulation.';

(c) in paragraph 4, the second sentence is replaced by the following:

'For such families, the manufacturer shall provide the approval authority with a report of any emissions related warranty and relevant repair as set out in point 4 of Annex II.';

(d) paragraph 5 is replaced by the following:

'The manufacturer and the granting type approval authority shall perform in-service conformity checks in accordance with Annex II. Other type approval authorities, technical services, the Commission and third parties may perform parts of the in-service conformity checks in accordance with Annex II. The data required to perform such checks are regulated in the Commission Implementing Regulation 2022/163* and Annex II of this Regulation.'

*Commission Implementing Regulation (EU) 2022/163 of 7 February 2022 laying down the rules on the application of Regulation (EU) 2018/858 of the European Parliament and of the Council as regards functional requirements for market surveillance of vehicles, systems, components and separate technical units (OJ L 27, 8.2.2022, p. 1).;

(e) paragraph 7 is replaced by the following:

'7. If a type approval authority, technical service, the Commission or a third party has established that an in-service conformity family fails the in-service conformity check, it shall notify without delay the granting type approval authority, in accordance with Article 54(1) of Regulation (EU) 2018/858.

Following that notification and subject to the provisions of Article 54(5) of Regulation (EU) 2018/858, the granting approval authority shall inform the manufacturer that an in-service conformity family fails the in-service conformity checks and that the procedures laid out in points 6 and 7 of Annex II shall be followed.

If the granting approval authority establishes that no agreement can be reached with a type approval authority that has established that an in-service conformity family fails the in-service conformity check, the procedure pursuant to Article 54(5) of Regulation (EU) 2018/858 shall be initiated. ';

(f) paragraph 8 is replaced by the following:

'8. In addition to paragraphs 1 to 7, the following shall apply to vehicles type approved in accordance with Annex II.

(a) vehicles submitted to multi-stage type-approval, as defined in Article 3(8) of Regulation EU 2018/858, shall be checked for in-service conformity in accordance with the provisions for multistage approval set out in point 5.10.6 of Annex II to this Regulation.

(b) hearses as specified in Appendix 1 of Part III of Annex II to Regulation EU 2018/858, armoured vehicles as defined in Appendix 2 of Part III of Annex II to Regulation EU 2018/858 and wheelchair accessible vehicles as defined in Appendix 3 of Part III of Annex II to Regulation EU 2018/858 shall not be subject to the provisions of this Article. All other special purpose vehicles as defined in Appendix 4 of Part III of Annex II to Regulation EU 2018/858, shall be checked for in- service conformity in accordance with the rules for multistage type-approvals set out in Annex II to this Regulation. ';

(10) in Article 10 (1) third subparagraph, the introductory phrase is replaced by the following:

'The relevant requirements shall be deemed to be met if the replacement pollution control devices have been approved according to UN/ECE Regulation No 103*.

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* Regulation No 103 of the Economic Commission for Europe of the United Nations (UNECE) — Uniform provisions concerning the approval of replacement pollution control devices for power- driven vehicles [2017/1446] (OJ L 207, 10.08.2017, p. 30).';

(11) in Article 11 paragraph 3 the second subparagraph is replaced by the following:

'The test vehicles shall comply with the requirements set out in Section 2.3 of Annex B6 to UN Regulation No 154.';

(12) Article 13 is deleted;

(13) Article 14 is deleted;

(14) in Article 15 the following paragraph 12 is added:

'12. For vehicle types with an existing valid type approval issued before 1 September 2023, new type approval testing shall not be required if the manufacturer declares to the type approval authority that compliance with the requirements of this Regulation is ensured. Requirements not related to the testing of the vehicle, including required declarations and data requirements, apply.

13. For vehicle types with an existing valid type approval issued according to emission standard Euro 6e[8] for which a manufacturer requests an approval according to emission standard Euro 6e-bis[9], new type approval testing shall not be required if the manufacturer declares to the type approval authority that compliance with the requirements of the Euro 6e-bis emission standard is ensured. Requirements not related to the testing of the vehicle, including required declarations and data requirements, apply.

14. For vehicle types with an existing valid type approval issued according to emission standard Euro 6e-bis for which a manufacturer requests an approval according to emission standard Euro 6e-bis-FCM[9], new type approval testing shall not be required if the manufacturer declares to the type approval authority that compliance with the requirements of the Euro 6e-bis-FCM emission standard is ensured. Requirements not related to the testing of the vehicle, including required declarations and data requirements, apply.'

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[8] as specified in Appendix 6 to Annex I

(15) List of Annexes and Annex I is amended as set out in Annex I to this Regulation;

(16) Annex II is replaced by the text in Annex II to this Regulation;

(17) Annex IIIA is replaced by the text in Annex IIIA to this Regulation;

(18) Annex V is amended as set out in Annex IV to this Regulation;

(19) Annex VI is amended as set out in Annex V to this Regulation;

(20) Annex VII is amended as set out in Annex VI to this Regulation;

(21) Annex VIII is amended as set out in Annex VII to this Regulation;

(22) Annex IX is amended as set out in Annex VIII to this Regulation;

(23) Annex XI is replaced by the text in Annex IX to this Regulation;

(24) Annex XII is amended as set out in Annex X to this Regulation;

(25) Annex XIII is amended as set out in Annex XI to this Regulation;

(26) Annex XIV is deleted;

(27) Annex XVI is replaced by the text in Annex XII to this Regulation;

(28) Annex XX is amended as set out in Annex XIII to this Regulation;

(29) Annex XXI is replaced by the text in in Annex XIV to this Regulation;

(30) Annex XXII is replaced by the text in Annex XV to this Regulation.

Article 2

This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

It shall apply from 1 September 2023.

However, from 1 March 2023, national authorities shall not refuse to grant EU type approval for a new type of vehicle or grant extension for an existing type of vehicle, or prohibit registration, placing on the market or entry into service of a new vehicle, where the vehicle concerned complies with this regulation, if a manufacturer so requests.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels,

For the Commission
The President
Ursula von der Leyen

MTA Submission

To Te Manatū Waka – the Ministry of Transport on proposed changes to the Land Transport Rule: Vehicle Exhaust Emissions 2007

Date: 22 June 2023

Tēnā koutou

Submission Name: Motor Trade Association (MTA) response to the Consultation on Euro 6/VI vehicle emissions standards

This submission is from:
Motor Trade Association (Inc)
PO Box 9244
Marion Square
Wellington 6141

The contact person in respect of this submission is:

Name: Brian Anderton
Phone: s 9(2)(a)
Email: s 9(2)(a)

Thank you for the opportunity for MTA to provide comment on the proposed changes to the *Land Transport Rule: Vehicle Exhaust Emissions 2007 – the 'Vehicle Exhaust Emissions Amendment Rule' (the Amendment Rule).*

Ngā mihi

Brian Anderton

Advocacy and Stakeholder Manager

Introduction

The Motor Trade Association (Inc) (MTA) was founded in 1917 and has maintained over 100 years of trust with the NZ motoring community. MTA currently represents over 3,800 businesses within the New Zealand automotive industry and its allied services. Members of our Association operate businesses including automotive repairers (both heavy and light vehicle), collision repair, service stations, vehicle importers and distributors and vehicle sales. The automotive industry employs approximately 60,000 New Zealanders and contributes around $3.5 billion to the New Zealand economy.

Recommendations

MTA supports the adoption of Euro 6/VI vehicle emissions standards in New Zealand. We continue to advocate for practical solutions that reduce the emissions of New Zealand's vehicle fleet—both current and future. For instance, and as expressed in our recently released discussion document - *Driving New Zealand Forward: Future Proofing the Automotive Industry* - MTA calls on the next government of Aotearoa New Zealand to mandate emissions testing.

The automotive industry is going through its greatest transformation in 100 years – with MTA and its members are up for the challenge. Yet it is equally important that change is managed carefully, which is why MTA recommends that:

1. **New Zealand's adoption of Euro 6 standards (and equivalents) aligns with Australia's transition.** Both countries' respective car markets are highly interlocked, meaning it is impractical for New Zealand to go ahead on its own. Due to New Zealand's small market volumes (1/7th the size of the Australian market), the cost of change could result in the withdrawal of some models.
2. **A pragmatic approach is taken to avoid potential unintended consequences**. With New Zealand's market much smaller than Australia's, different entry requirements and standards could become prohibitive, impacting affordability. With cost-of-living issues front of mind for most New Zealanders, the MTA questions the merits of this approach.

The MTA has also taken time to address specific proposals in the following pages, with recommendations listed in bold.

Proposals relating to New Light Vehicles

MTA supports the submission of the Motor Industry Association (MIA) in reference to new light vehicles.

In addition to the points raised by MIA submission, the MTA has three of its own points that we see as requiring further consideration, including:

1. Capacity of New Zealand market to handle required change
2. Practical implications of Emission testing requirements
3. Cost of higher fuel specification for Euro 6D.

Capacity of New Zealand market to handle required change

Up until now, New Zealand has broadly synchronised with entry standards set by Australia. The new vehicle market across the Tasman is close to seven times that of New Zealand's (1.1 million versus 160,000). Australia is therefore much better placed to absorb the cost impacts of moving to Euro 6D.

Because of the disparity in size, moving ahead of Australia is not straightforward. The challenge is navigating the potential unintended consequences, which include:

- The potential market withdrawal of some models and maybe even brands simply on the basis that the changes will be cost and process prohibitive.
- Smaller lower priced new vehicles will likely be impacted most given the limited price elasticity that exists in those sectors.
- There is a possibility some brands may switch away from ADR compliance and over to Japan 2018 build compliance (which is a poorer emissions standard than the proposed Euro 6D).

Recommendation:

- ***New Zealand should defer change exhaust emission entry standards for the new vehicle light and heavy sectors at this time and follow Australia's timetable – which we understand is currently under consideration.***

Practical implications in service conformity testing requirements

Euro 6D requires in service conformity testing across several years after first registration on behalf of the respective manufacturer. However, MTA is concerned that there is no suitable testing service in New Zealand or Australia.

This may create a situation where, in order to comply with Real Driving Emissions ('RDE') testing protocols, vehicles need to be sent back to Europe for testing. Assuming the requirement is unavoidable, this will be problematic and costly, as our market volumes may be insufficient to absorb and spread such costs.

Considering RDE obligations it may become uneconomic for some brands to even remain in the New Zealand market.

Our understanding is you cannot opt Euro 6D and just say you adopt out of in service conformity testing. It is either a Euro 6D car, or it is not. If it is a requirement it may well rest on the respective manufacturer, as distinct from the local importer. The manufacturer might arguably include the cost of compliance within vehicle supply pricing, or simply see it as uneconomic to retain a presence in the NZ market given our miniscule market by world standards. We are obviously highlighting possible outcomes with no real knowledge about how things might land.

Recommendation:

- ***The MTA asks officials to examine the practical implications of requiring in service conformity testing across several years after first registration on behalf of the respective manufacturer. What impacts, if any, will there be on both businesses and consumers?***

Cost of higher fuel specification for Euro 6D:

The cost impacts in aligning to Euro 6D compliance standards (in the form of additional in-vehicle technologies) may be greater than predicted within the consultation paper. Refer MIA submission for detail.

Euro 6D requires higher fuel specification – 95 Octane as a minimum. Most new light vehicles in NZ are Japan based brands and able to operate on lower cost 91 Octane petrol. A change to 95 Octane adds to owner operating costs – typically 11c/litre additional, or 5% fuel price increase. This may be a cost worth bearing in the pursuit of lower exhaust emissions, but when added to other cost impacts of the change, it is still a point to note. We acknowledge price increase may be offset to some degree through improved operating efficiency. That said, any cost increase will add to inflationary pressures, and may not always be viewed positively by the populace at large, particularly in the current cost of living crisis.

Another aspect to consider is to need to upgrade our fuel specification requirements – we understand that 6D compliant fuel is currently in the New Zealand market because of where our fuel is currently bought from but there is no requirement for that to remain the case.

Recommendation:

- ***In line with MIA's submission, the MTA asks officials to consider the cost impacts of higher fuel specifications for Euro 6D. With Road User Chargers and Fuel Excise set to be raised in the coming years, it is important that extra costs can be adequately managed by businesses and consumers***.

Proposals relating to Used Import Light Vehicles

Many of MTA's dealer members actively sell used import vehicles. Several dealers still actively buy used vehicles in Japan for import. A significant proportion (both new and used) also source used import stock within New Zealand via the larger importers—suppling the industry at a wholesale level. We therefore ask that officials to take note of the following.

Timing

The implementation schedule of Euro 5 and Euro 6d (or equivalent standards from other source pathways) across the used import sector is broadly acceptable. The 'line' must be drawn somewhere. A shorter time frame would impact market access and supply, particularly for lower priced vehicles. In general, the replacement of an existing older vehicle with a newer vehicle brings net positive outcomes (whether that be via lower fuel use, reduced emissions, and improved safety profile).

The proposed initial implementation step taking effect 1 Feb 2024 is based on the oldest date Japan 2005 Low Harm took full effect in Japan. MTA supports this proposal, subject to the following points:

Age of imports.

Vehicle age is a useful indicator of vehicle specification and technology. Reference is often made to the comparatively old age of New Zealand's fleet (average age 15 years) versus other OECD countries. On that basis, we support New Zealand setting an age limit as an under-arching control measure for used import purposes.

Reference to a date cap within proposed regulations for used imports of vehicle, whereby 'first registration not older than 1 January 2012' by default, addresses this need. While MTA supports that initiative, reliance on a static date setting is problematic.

Recommendation:

- ***MTA recommends the cited age control date be amended to a rolling annual change rather than a static position. Otherwise, we will still potentially be accepting 2012 first registered vehicles in 2027, by which time those vehicles will be up to 15 years old. Vehicle performance in general, deteriorates over time, and reliance on a fixed entry criteria (i.e., 2012) may defeat the purpose of what the programme is trying to achieve.***

To note:

- A similar age limit could be included as part of the 1 Jan 2028 change when the Japan 2018 Low Harm standard becomes mandatory for used imports. The age limit could follow the same 12-year lag proposed within the first step on the schedule taking effect 1 February 2024.

Date of manufacture.

Step one (1 Feb 2024) references Date of First Registration (DoFR) as a qualifying criterion. DoFR is usually accessible within the data available at time of auction in Japan. On the contrary, MTA understands that 'Date of Manufacture', as set out within the 1 Feb 2026 implementation point, is not usually accessible at time of auction.

Recommendation:

- ***To ensure consistency of approach, MTA recommends the date-based selection criteria proposed on 1 Feb 2026 be changed from date of manufacture to date DoFR.***

Other relevant proposals

Emissions standards

- ***MTA does not support acceptance of emissions standard CBA. CBA is an inferior standard.***
- ***MTA does support acceptance of emissions standard 5BA. .***

Heavy vehicles

- ***MTA supports the MIA submission in reference to heavy new vehicles.***

Disability Vehicles

- ***MTA supports the existing proposals contained within the consultation document.***

Motorcycles

- ***MTA supports the MIA submission in reference to new and used import motorcycles and mopeds.***

Final comment

If these policies go ahead, the consequence will likely be an influx of older vehicles in New Zealand.

mta ASSURED

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Fasttrack Automotive Compliance Ltd
27A Cain Road, Penrose, Auckland
s 9(2)(a)

23rd June 2023

Support for VIA's submission on proposed Amendments to Vehicle Exhaust Emissions Rule

Dear Sir/Madam,

I am writing to express my support for the Imported Motor Vehicle Industry Association (VIA)'s submission on the proposed amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007. I understand and support the government's efforts to reduce noxious emissions and minimise harm caused by vehicles. I believe it is essential to consider the points raised by VIA to achieve these objectives.

VIA's submission emphasises the need to prioritise total harm reduction, maintain a fair market, and address the transport needs of New Zealanders. I fully support VIA's position on these matters. It is crucial to reduce noxious emissions and their detrimental effects on public health. As responsible members of industry, it is our duty to supply vehicles that minimise total harm.

I understand that VIA supports most of the proposed policy but has concerns about certain factual errors. VIA has offered corrections, particularly regarding the equivalency between Euro and Japanese standards. VIA has provided a quantified model that compares the equivalency of standards and argue that policies should be adjusted accordingly. I urge the government to carefully consider these corrections and make the necessary adjustments to ensure a fair market and equity.

VIA has also offered a more radical redesign of the proposed standard that would lead to even more harm reduction. This approach prioritises harm reduction by proportionally restricting vehicles based on the amount of harm they cause. I believe that this approach would be beneficial in achieving a greater reduction in overall harm and facilitating a smooth transition to the strategies used in Euro 7.

In conclusion, I believe that the objectives of reducing noxious emissions and minimising harm caused by vehicles are of utmost importance. I encourage the government to consider VIA's suggestions, make the necessary adjustments to ensure effective legislation that achieves its objectives.

Thank you for considering my views on this matter.

Yours sincerely,

Stu Blackburn

MOTOR INDUSTRY ASSOCIATION
INCORPORATED

26 June 2023

Ministry of Transport
3 Queens Wharf
Wellington, 6011

Email: emissions@transport.govt.nz

Vehicle Exhaust Emissions Amendment 2023

Please find below the MIA's submission on the draft Vehicle Exhaust Emissions Amendment.

The Motor Industry Association (MIA) is a voluntary trade association set up to represent the interests of the new vehicle industry specifically the official representatives of overseas vehicle manufacturers. Members account for over 98% of all new vehicles imported and sold in New Zealand across the passenger car, light and heavy commercial vehicle and motorcycle (including on and off-road) sectors. In 2021 and 2022, approximately 165,000 new light and heavy vehicles were sold in NZ (nearly 96% being light vehicles).

The Association has over 44 members (official distributors appointed by vehicle manufacturers) covering 82 different marques.

The MIAs submission primarily focusses on the proposals relating to *new* vehicles, covering light vehicles, heavy vehicles and motorcycles/mopeds.

Nothing in this submission is confidential, and the MIA permits it to be published in full.

Yours sincerely

Aimee Wiley
Chief Executive Officer

Mark Stockdale
Principal Technical Adviser

Contents

Executive summary

The Motor Industry Association (MIA) welcomes the opportunity to provide feedback on the proposed amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007 – the 'Vehicle Exhaust Emissions Amendment 2023'.

The MIA supports the need to reduce vehicle emissions to improve both climate impacts (CO2) and human health impacts (air quality). The latest release of the updated HAPINZ report is welcome and shows that more can be done to reduce harmful emissions from both the current and future New Zealand (NZ) fleet.

The MIA's support for reducing harmful vehicle emissions, ensuring we all have healthier air to breathe, extends to taking action to clean up our entire fleet (both current and future):

- For existing older vehicles in our fleet, the MIA supports and encourages the urgent development of a strategy and policy actions to help improve air quality and current emissions in NZ.
- For used light vehicles about to enter our fleet, the MIA supports lifting standards from Euro 4 to Euro 5 but does not support the inclusion of Japan 2005 Low Harm from February 2024, instead recommending Japan 2018 be adopted sooner. This is because the Japan 2005 standard means these vehicles could be up to 18 years old, whereas the Japan 2018 standard has already been in place for six years and is unlikely to negatively impact the supply of used vehicles. Further, delivering real world emission and air quality improvements is difficult to achieve if the used market continues feeding the NZ fleet with higher polluting vehicles.
- For all new vehicles, the MIA supports a pragmatic, feasible and balanced transition to Euro 6/VI (and equivalent) standards.

As of 2021, there were 4.5 million vehicles in the NZ motor vehicle fleet. The highest fleet size to date, equating to 889 vehicles per 1000 people. This is one of the highest rates of vehicle ownership in the world, illustrating that vehicles are fundamental to the Kiwi way of life. More than just our preferred transport choice - for many people, businesses, and entire industries - vehicles are fundamental to being in business and making a living.

The MIA wishes to strongly emphasise the absolute need for a pragmatic, feasible and balanced approach to the timing of vehicle exhaust emission rule changes. An approach that carefully considers both the real-world benefits and impacts upon consumers – everyday New Zealanders. It is crucial for NZ to maintain a steady supply of suitable product at price points Kiwis can afford to buy.

NZ is both a technology taker and destination market. As such, we need to ensure we are best positioned to leverage all available low emission technologies, ensure a priority allocation of future higher standard product whilst carefully balancing and mitigating supply risks, market disruption and cost impacts for everyday New Zealanders. This will ensure we achieve the desired rapid reductions in transport-related pollution.

The MIA's preference is for NZ to be a very close follower of Australia in mandating Euro 6 standards. In the discussion that follows, the likely costs and impacts to industry, business, and consumers outweigh the benefits of mandating Euro 6 ahead of Australia. Particularly when the timing difference is likely months and not years.

Impact & consideration for Light Vehicles

The MIA supports moving to Euro 6d. The concern for our members is all about timing. The MIA's preference is that Euro 6d should not be mandated in NZ until such time as it is adopted in Australia.

We understand from our Australian counterparts at the Federal Chamber of Automotive Industries (FCAI) that the Australian government has recently advised that Euro 6d commencement date in Australia will be aligned with fuel standards determination. The Euro 6d regulation will follow UN harmonisation pathway, transposed into three UN regulations. The current timing for 'newly introduced models' (as advised by FCAI and not an official government date) is July 2025. The Australian government has advised that 'all existing models' commencement date will not change from the 1 July 2028 date proposed in their RIS. The decision to implement is currently with the Australian transport minister.

MIA members require a 24-month notice period from the adoption of any new rule due to production planning timeframes. This is a minimum requirement for MIA members, is consistent with prior MIA positions and has an established precedent from prior Rule changes. It also very closely aligns with expected timing for Australia, based on the feedback from FCAI.

Why are we so concerned about timing?
Forcing compliance with standards ahead of Australia, creates significant and complex challenges that wouldn't otherwise exist. Several volume brands advise that they will be forced to drop models from their line-up if these dates are implemented, with further models at risk due to the timing and engineering support required to convert to the new standard. These brands won't be able to rely on Australian-market volumes to absorb the costs of re-engineering. The development costs associated with the changes, and NZ's relatively low volume compared to other markets, means that even if some models are able to be retained, the added expense will need to be passed onto the consumer.

Volume and margin drive vehicle allocation. Historically, NZ and Australian product standards have aligned. Combining our vehicle volumes (for many of the MIA members) improves vehicle allocation options for both of our markets. If NZ standards get out of sync with Australian standards, then NZ's position is considerably weakened. Without the support of Australian volumes, NZ has neither volume or margin to drive priority allocation on a global basis (high demand and restricted supply). If this occurs, local distributors are forced to undertake the following:

1. Seek alternative global product.
   For some MIA members, access to alternative compliant global product is uncertain, has severe production limitations, very high price points and no guarantee of volume allocation. For other MIA members, there may be no alternative product, and they would face black-out production periods or permanent removal of models for sale in NZ.

2. Seek re-engineering and design changes ahead of an ADR change.
   The full cost of re-engineering, re-design, and manufacturing facility tooling changes ahead of an ADR change will be spread across NZ volumes only. This will prove cost prohibitive for many vehicles, as the resulting per unit cost will be too high for the vehicle to remain competitive in the NZ market. The outcome will likely be withdrawal of numerous models (including low-emission models) from the market in NZ.

3. Euro 6d vehicles will cost more – but how much more?
A Euro 6d petrol vehicle will cost consumers more to initially buy and operate because of the change in standards to Euro 6d compared to Euro 5.

   i. The cost of each Euro 6d petrol vehicle will increase somewhere between $300 – $4,000 (depending upon make and model) including the gasoline particulate filters that need to be added.

   ii. A Euro 6d vehicle must run on 95 Octane not 91 Octane fuel. Therefore, the cost to consumers will increase by approx. $0.17 cents per litre (according to MBIE fuel price monitoring[1]), with no added benefits for reducing harmful emissions (NOx or PM).

   iii. The extent of disruption that will be caused to the new vehicle industry if NZ forces Euro 6d compliance ahead of Australia with no clear benefit for petrol vehicles is extremely concerning to the MIA.

   A Euro 6d diesel vehicle will cost between $2,700 – $5,000 more to initially buy (depending upon make and model), in part due to the mandatory addition of a Selective Catalyst Reduction system.

   In addition to the costs above, if product is manufactured for NZ only, those units will also need to pay for the additional engineering and WLTP testing costs. On a per unit basis, the cost will be a significant burden for the NZ consumer (if not cost prohibitive). Alternatively, the ability to share these costs with Australia, spread over a much larger vehicle volume, is a far more beneficial outcome for the NZ consumer.

4. Further negative impacts and dis-benefits
A loss of volumes and models causes distributor viability concerns, places additional strain on the existing dealer network, provides less choice for consumers, less competition in the market, and increased prices. All of which negatively impacts consumers and likely achievement of real-world emission improvements from the Rule change.

5. Range of vehicles likely impacted
Some of the models likely to be impacted are lower-priced light and small cars for which there are few affordable Euro 6d alternatives, meaning owners may not be able to afford to upgrade these models, and either retain them for longer or replace them with a second-hand model within their budget, with no benefit to reducing vehicle emissions.

   Light commercials will be further disproportionately impacted due to a lack of alternatives and majority not complied to Euro standards. Limited model choice will likely result in the productive sector retaining their existing vehicles for longer with no benefit to reducing vehicle emissions.

   At the very least, there should be consideration for an exemption process for certain critical/important models which have a unique function within the NZ market.

[1] https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-statistics-and-modelling/energy-statistics/weekly-fuel-price-monitoring/

Proposed minimum requirements for Light Vehicles

1. For any new Rule, MIA members need a 24-month notice period prior to its adoption, due to production planning timeframes. At a minimum the proposed date of 1 Feb 2025 for 'newly introduced models' would need to be moved out accordingly.

2. The MIAs preference is that Euro 6d should not be mandated in NZ until such time as it is adopted in Australia.

3. The MIA does not support mandating Euro 6e or Euro 7 until it has been mandated in Australia. The further cost increase per vehicle (in addition to the cost increase associated with Euro 6-d) to meet the Euro 7 standard would prove cost prohibitive, meaning many models would cease to be imported to NZ.

4. The MIA recommends revoking new clause 6.1. We oppose the point of compliance being when the vehicle is 'certified for entry into service' and urges retention of the existing Rule protocol of the point of compliance being the 'date of manufacture', as provided in existing clause 2.2(1). The tables in schedule 1 will need to be redrafted to refer to 'date of manufacture' (for new vehicles).

5. The MIA supports the inclusion of the '5BA' suffix in the definition of Japan 2018 Low Harm.

6. The NZ Engine Fuel Specifications Regulations currently permit aromatic levels which exceed the levels required for optimum running in Euro 6d petrol engines. These regulations need to be revised before Euro 6d can be mandated.

Impacts & consideration for Heavy Vehicles

Euro VI-c

The MIA supports moving to Euro VI-c. The only concern for our members is the timing. MIA members require a 24-month notice period from the adoption of any new rule due to production planning timeframes. This is a minimum requirement for MIA members, is consistent with prior MIA positions and has an established precedent from prior Rule changes.

This required lead time is similar to Australia and other mature markets and has been a standard protocol with previous Emissions Rule amendments. This means that the current proposed dates for Euro VI-c for 'newly introduced models' and for 'existing models' would need to be moved out accordingly.

Euro VI-e: why are we so concerned about timing?

The MIA does not support moving to Euro VI-e as proposed. The MIA is concerned with both the timing for the proposed introduction of Euro VI-e and the removal of ADR 80/04 as an accepted standard for all new heavy vehicles from 1 November 2026. If Euro VI-e is introduced, as currently proposed, we estimate that a significant portion of currently planned heavy vehicle model ranges will be at risk, leading to significant and severe curtailing in choice and availability of new heavy vehicles. This is because some of the biggest suppliers of volume-selling (light) trucks into NZ can only supply models that meet the Australian (ADR) standards Some high-GVM truck models are also uniquely manufactured for the Australasian market.

Australia is a key source market, and manufacturers will not re-engineer models for NZ's small market size. Instead, some MIA members may be able to source some similar (light truck) models to Japan 2016 specification (based on Japanese market models), but the model choice is more limited and generally not suited to NZ. Some MIA members estimate their model choice would be reduced by 50%, some models or whole brands dropped entirely, and annual sales volume would drop by half if ADR 80/04 is removed from the Rule from November 2026.

The Australian Truck Industry Council advises that if Euro VI-d was adopted (instead of VI-c which it supports), model choice could be cut by up to 50% and that five low volume selling truck brands may withdraw from Australia completely. The same risk applies if NZ adopts Euro VI-e. Some other source markets are also only adopting Euro VI-c but not VI-e.

Equivalent Standards

The three emissions standards proposed are not wholly equivalent. The so-called 'US Tier 3' (same as US 2007 in the current Rule), is approximate to Euro V, whilst the so-called 'Japan 2016' is approximate to Euro VI-a and has inferior On-Board Diagnostics (OBD) requirements. Both standards are lower than proposed in ADR 80/04 (which specifies US 2013 and the Japanese standard they refer to as 'Japan 2017'). This puts heavy vehicles sourced from European markets to a higher standard compared to heavy vehicles complied to the US or Japanese standards, resulting in a significant financial penalty for European truck, bus, and engine manufacturers, which will ultimately be passed on to heavy vehicle operators.

The reason that US 2013 (or later) is specified in ADR 80/04 is that this USA regulation has the updated, more stringent OBD requirement (similar to Euro VI-c and Japan 2017). There is no change in the NOx and PM limits for US 2013 and later emission standards, nor is there any change in the OBD requirement.

In Service-Conformity Test

The MIA is unsure what the emissions benefit of introducing Euro VI-e is as the NOx and particulate matter values are the same as for VI-c (and VI-a for that matter), and the laboratory test cycle is the same, as are the OBD system requirements for the engine/exhaust aftertreatment system. The main change of Euro VI-e is introducing the requirement for in-service conformity testing, for which there are no facilities in NZ capable of performing this, and so the Rule would need to exempt heavy vehicles from this additional requirement anyway.

Further, we are unsure if heavy vehicle manufacturers can simply opt-out of in-service conformity testing for vehicles certified to Euro VI-e. Euro VI-e (UNECE 49R/07, Annex 8) requires conformity of in-service engines or vehicles. The engines and vehicles shall be used and registered in the region. The consultation document does not discuss this.

MIA seeks clarification from MoT that the NZ government has sought and received an exemption from the EU that OEMs complying vehicles to Euro VI-e are not subject to the requirement for in-service conformity testing for vehicles sold into the NZ market (which will inevitably differ in specification from those sold – and tested – in Europe).

Euro VII standards

The MIAs strong preference is to follow Australia timeframes for the adoption of (subsequent) emissions standards to retain access to supply and choice of heavy commercial vehicles. Furthermore, it is our understanding that Euro VII will lead to an increase in CO2 emissions due to increased fuel consumption resulting from the need to warm up the catalyst from cold starts[2]. This is counterproductive to goals to reduce CO2 emissions.

Point of compliance

The MIA recommends revoking new clause 6.1. We oppose the point of compliance being when the vehicle is 'certified for entry into service' and urges retention of the existing Rule protocol of the point of compliance being the 'date of manufacture', as provided in existing clause 2.2(1). The tables in schedule 1 will need to be redrafted to refer to 'date of manufacture' instead (for new vehicles).

Requiring vehicles to comply with new emissions standards when *certified* for entry into service is challenging for new vehicle importers because:

- there are long lead-times to place product orders, and to obtain production slots.
- there may be unforeseen shipping delays before vehicles land in NZ.
- heavy vehicles are high cost and low turnover so may remain on dealer yards for many months.
- local modifications are required to comply with the Vehicle Dimensions & Mass Rule, and it can take time to undertake engineering work and obtain certification.
- many heavy vehicles are cab/chassis only and need bodies built on them to customers specifications. It can take months to get a bodybuilder slot, and then months to complete the build. Feasibly, it could be six months or more before a truck enters service.

The revision in the draft Rule to 'certified for entry into service' could result in many hundreds of trucks being manufactured to existing emissions standards, but not entering service until after new emissions standards come into force, potentially rendering millions of dollars' worth of commercial vehicles non-compliant.

[2] https://www.frontier-economics.com/uk/en/news-and-articles/news/news-article-i10318-regulatory-costs-of-euro-7-matter/

Other comments:
The MIA recommends removing the reference to Class ME in table 2A of Schedule 1 of the Rule (relating to light vehicles, likely a drafting error), and only include in Table 2B (as also listed).

Proposed minimum requirements for Heavy Vehicles

1. Euro VI-c: MIA members require a minimum 24-month notice period to comply from the adoption of any new Rule, and this has been standard protocol with previous Emissions Rule amendments. We recommend that the current proposed date of 1 Nov 2024 for Euro VI stage C 'newly introduced models' be moved out accordingly and for 'existing models' to follow by a further 12 months thereafter.

2. The MIAs recommendation is that emissions standards for heavy vehicles aligns with the Australian ADR 80/04 standard but does not exceed them.

3. Euro VI-e: The MIA is concerned with the timing for the proposed introduction of Euro VI-e and the removal of ADR 80/04 as an accepted standard for all new heavy vehicles from 1 November 2026. If this is introduced, as currently proposed, it would very likely severely restrict models available for sale in New Zealand. This is because some of the biggest suppliers of trucks into NZ can only supply models that meet the Australian (ADR) standards (Australia being a key source market, and NZ being too small a market to influence vehicle specification). Some high-GVM truck models are uniquely manufactured for the Australasian market.

4. The MIA is unsure what the emissions benefit of introducing Euro VI-e is as the NOx and particulate matter values are the same as for VI-c (and VI-a for that matter), and the laboratory test cycle is the same, as are the On-Board Diagnostics system requirements for the engine/exhaust aftertreatment system. The main change of Euro VI-e is introducing the requirement for in-service conformity testing, for which there are no facilities in NZ capable of performing this, and so the Rule would need to exempt heavy vehicles from this additional requirement anyway.

5. Point of compliance: The MIA recommends revoking new clause 6.1. We oppose the point of compliance being when the vehicle is 'certified for entry into service' and urges retention of the existing Rule protocol of the point of compliance being the 'date of manufacture', as provided in existing clause 2.2(1). The tables in schedule 1 will need to be redrafted to refer to 'date of manufacture'.

6. Requiring vehicles to comply with new emissions standards when *certified* for entry into service is challenging for new vehicle importers because:
   - there are long lead-times to place product orders, and to obtain production slots;
   - there may be shipping delays before vehicles land in NZ.
   - heavy vehicles are high cost and low turnover so may remain on dealer yards for many months.
   - local modifications are required to comply with the Vehicle Dimensions & Mass Rule, and it can take time to undertake engineering work and obtain certification.

- many heavy vehicles are cab/chassis only and need bodies built on them to purchasers' specifications. It can take months to get a bodybuilder slot, and then months to complete the build. Feasibly, it could be six months or more before a truck enters service.

The revision in the draft Rule to 'certified for entry into service' could result in many hundreds of trucks being manufactured to existing emissions standards, but not entering service until after new emissions standards come into force, rendering millions of dollars of commercial vehicles non-compliant.

7. Estimated Cost for manufacture of a heavy vehicle to Euro VI standard: The MIA understands that costs associated with meeting Euro VI standard range (depending on the manufacturer) from approximately: $4,000 – $5,000 for a light truck and $8,000 – $20,000 for a heavy truck.

8. The Australian Truck Industry Council advises that if Euro VI-d was adopted (instead of VI-c which it supports), model choice in Australia could be cut by up to 50% and that five low volume selling truck brands may withdraw from Australia completely. The same risk applies if NZ adopts Euro VI-e. Some other source markets are also only adopting Euro VI-c but not VI-e.

9. MIA recommends removing the reference to Class ME in table 2A of Schedule 1 of the Rule (relating to light vehicles, likely a drafting error), and only include in Table 2B (as also listed).

Impacts & consideration for Motorcycles & Mopeds

MIA supports proposed timeframes for introducing emissions standards for motorcycles, but mopeds should be exempted.

The MIA can support the proposed dates for the adoption of Euro 4 and Japan and US equivalents, and subsequently Euro 5 and equivalents, with the exception of mopeds (vehicle class LA and LB). Low-cost moped/scooter models will be impacted by the introduction of these emissions standards, and as they are unlikely to be re-engineered just for the NZ market, we can expect that the choice and availability of these affordable commuter vehicles will be severely restricted.

This type of vehicle is ideally suited to electrification, due to the small battery size keeping costs low, and an increasing range of electric mopeds will become available regardless of emissions standards, so the MIA believes it is unnecessary to introduce an emission standard for class LA and LB that will restrict choice in the short term until electric models become widespread.

Point of compliance

The MIA recommends revoking new clause 6.1. We oppose the point of compliance being when the vehicle is 'certified for entry into service' and urges retention of the existing Rule protocol of the point of compliance being the 'date of manufacture', as provided in existing clause 2.2(1). The tables in schedule 1 will need to be redrafted to refer to 'date of manufacture' instead (for new vehicles).

Requiring vehicles to comply with new emissions standards when *certified* for entry into service is challenging for new vehicle importers because:

- there are long lead-times to place product orders, and to obtain production slots;
- there may be shipping delays before vehicles land in NZ.

Other comments:

The MIA supports the inclusion of new exemptions for certain motorcycle types under clause 2.2(3):

- enduro motorcycles
- farm motorcycles
- special interest motorcycles
- trial motorcycles

Proposed minimum requirements for Motorcycles & Mopeds

1. The MIA supports the proposed dates for the adoption of Euro 4 and Japan and US equivalents, and subsequently Euro 5 and equivalents, except for mopeds (vehicle class LA and LB). Low-cost moped/scooter models will be impacted by the introduction of these emissions standards, and as they are unlikely to be re-engineered just for the NZ market, we can expect that the choice and availability of these affordable commuter vehicles will be severely restricted.

2. The MIA supports the amendments to clause 2.2(3), adding the following motorcycle types as exempted from the Rule:

   - enduro motorcycles
   - farm motorcycles
   - special interest motorcycles
   - trial motorcycles

3. The MIA recommends revoking new clause 6.1. We oppose the point of compliance being when the vehicle is 'certified for entry into service' and urge retention of the existing Rule protocol of the point of compliance being the 'date of manufacture', as provided in existing clause 2.2(1). The tables in schedule 1 will need to be redrafted to refer to 'date of manufacture' (for new vehicles).

Specific questions, clarifications, and further points

1. In Service-Conformity Test
   Euro 6d/VI-e requires an in-service conformity test, for which no suitable facilities exist in NZ to perform this. The Rule would need to exempt vehicles from this requirement. The MIA seeks confirmation of this requirement.

   Further, we are unsure if vehicle manufacturers can simply opt-out of in-service conformity testing for vehicles certified to Euro 6/VI-e. The consultation document does not discuss this. The MIA seeks clarification from MoT that the NZ government has sought and received an exemption from the EU that vehicle manufacturers complying vehicles to Euro 6d/VI-e are not subject to the requirement for in-service conformity testing for vehicles sold into the NZ market (which will inevitably differ in specification from those sold – and tested – in Europe).

2. Euro 6e and UNECE R83/08, and Euro 7 standards
   The MIA does not support mandating Euro 6e or Euro 7 until it has been mandated in Australia.

   If Euro 7 was adopted ahead of Australia, the required cost increase per vehicle to meet the Euro 7 standard would prove cost prohibitive, meaning many models would cease to be imported.

3. Japan emissions standard 5BA under the definition of Japan 2018 Low Harm
   The '5BA' suffix applies to conventional petrol ICE. The MIA supports its inclusion in the draft Rule definition. If 5BA were excluded, this would significantly curtail the range and choice of vehicles available from Japanese marques and would in effect amount to a prohibition on conventional ICE vehicles from February 2025.

4. Point of compliance
   The MIA recommends revoking new clause 6.1. We oppose the point of compliance being when the vehicle is 'certified for entry into service' and urges retention of the existing Rule protocol of the point of compliance being the 'date of manufacture', as provided in existing clause 2.2(1). The tables in schedule 1 will need to be redrafted to refer to 'date of manufacture' instead (for new vehicles).

5. NZ fuel quality standards must be updated for Euro 6d
   The current Engine Fuel Specifications Regulations are not at a standard required for WLTP quality, namely due to aromatics parameters (45%) being higher than permitted for optimum running in Euro 6d (petrol) engines (32% maximum aromatics under the WLTP test criteria[3], and a 35% maximum permitted under EU fuel quality standards, EN228[4]).

   The most recent report (2020-21) published by Trading Standards on retail fuel quality monitoring[5] shows that whilst all fuel samples were under the current aromatics cap specified in the regulations, several fuel samples were over the maximum aromatics levels required for WLTP or under EN228. Considering New Zealand's reliance on imported fuel, there is the very real possibility that batches of fuel could be imported that do not meet the requirements of WLTP, unless there is protection under law. An inferior fuel could potentially

[3] www.transportpolicy.net/wp-content/uploads/2021/08/WLTP-1st-act.pdf (ref. annex XI)
[4] www.envirochem.hu/www.envirochem.hu/documents/EN_228_benzin_JBg37.pdf
[5] https://fuelquality.tradingstandards.govt.nz/about-us/fuel-quality-monitoring-annual-reports/

result in significant damage to Euro 6d petrol engines and/or exhaust systems, potentially rendering emissions control systems ineffective, and also presenting vehicle owners with costly repair bills. It should also be noted that Euro 6d (petrol) engines require 95 octane minimum, adding further cost to consumers (approximately 17 cents per litre) which may not have been factored into the MoTs cost:benefit analysis (note also, the WLTP test criteria requires an E10 95 octane blend, which is not currently retailed in NZ).

6. Access to vehicle repair and maintenance information

   The definition of Euro 6d in the Rule also refers to 'access to vehicle repair and maintenance information'. There is currently no formal process for vehicle importers to provide public access to repair manuals and technical service information (although light vehicle MIA members are signatories to an MIA voluntary code of practice). It would take considerable time and expense to implement public access portals if this is required to meet Euro 6d obligations. We seek clarification from the MoT on whether vehicle importers will be exempt from this requirement, as with the in-service conformity testing.

7. The European standards included in the definitions of Euro 6d require clarification

   The draft Rule specifies EC 2017/1151 as an equivalent European regulation. However, 2017/1151 covers all Euro 6d variations, not any specific variation. The latest mandated level in Europe is Euro 6/VI-d AP.

   The MIA seeks clarification for the following questions and/or what is specifically meant:

   - Which levels of EU WLTP regulation are permitted under the draft Rule?
   - Will this also include amendment (EU) 1832/2018)?
   - Under UN R154, there is no reference to the series of this regulation that is accepted.
   - Under the definition of Euro 6d in clause 2.6(8) of the draft Rule, subsection (a) refers to *"…meeting the requirements of 'Euro 6d' meaning 'RDE testing against final conformity factors, otherwise full Euro 6 emissions requirements*". What is meant by this criteria?

8. Acceptable additional alternative standard

   The MIA requests BS6 Phase 2 be added as an acceptable alternative standard in addition to Euro 6d, US Tier 3 and Japan 2018. BS6 Phase 2 covers RDE standards and its limit (1.43 for NOx and 1.5 for PM) falls between Euro 6d and Japan 2018. (Euro 6d without OBD functions).

   The reason for requesting this additional standard from a differing jurisdiction? Timeframe pressure for new standards combined with high global demand for product, compromises some NZ distributors' positions for priority product allocation from existing manufacturing facilities. Accepting an additional alternative standard could assist with securing product from a new jurisdiction without the complications of additional costs and delays of testing that product to another standard.

Appendix A.

Emissions standard comparison

EURO 5-6

Emis-sions	Unit	PC M[1], LCV N1 CL 1			LCV N1 CL 2			LCV N1 CL 3, N2		
		Euro 5a	Euro 5b/b+	Euro 6b, 6c, 6d-Temp, 6d	Euro 5a	Euro 5b/b+	Euro 6b, 6c, 6d-Temp, 6d	Euro 5a	Euro 5b/b+	Euro 6b, 6c, 6d-Temp, 6d
EURO 5-6 Positive ignition emissions limits ((EC) 715/2007 as amended (EC) 692/2008)										
THC	mg/km	100	100	100	130	130	130	160	160	160
NMHC		68	68	68	90	90	90	108	108	108
NOx		60	60	60	75	75	75	82	82	82
CO		1000	1000	1000	1810	1810	1810	2270	2270	2270
PM[2][3]		5.0	4.5	4.5	5.0	4.5	4.5	5.0	4.5	4.5
PN[2]	Nb/km	–	–	$6x10^{11}$[4]	–	–	$6x10^{11}$[4]	–	–	$6x10^{11}$[4]
EURO 5-6 Compression ignition emissions limits ((EC) 715/2007 as amended (EC) 692/2008)										
NOx	mg/km	180	180	80	235	235	105	280	280	125
HC+NOx		230	230	170	295	295	195	350	350	215
CO		500	500	500	630	630	630	740	740	740
PM[1]		5.0	4.5	4.5	5.0	5.0	4.5	5.0	5.0	4.5
PN[1]	Nb/km	–	$6x10^{11}$	$6x10^{11}$	–	$6x10^{11}$	$6x10^{11}$	–	$6x10^{11}$	$6x10^{11}$

The above table shows that, for petrol vehicles, there is no change in the parameters for NOx and PM for petrol vehicles from Euro 5b to Euro 6 onwards. The reductions under Euro 6d referred to in the MoT consultation document are due to the introduction of the RDE test regime under Euro 6d, not the standards.

The MoT consultation document refers to a European Commission (EC) study[6] that showed that the shift from Euro 5/V to Euro 6d/VI over the last decade caused dramatic reductions of multiple pollutants on a per-vehicle basis.

The EC study notes that:

- the introduction of the Worldwide Harmonised Light Vehicles Test Procedure (WLTP) played a positive role by introducing a more representative driving cycle.
- the main contributor was the introduction of the RDE testing (introduced from Euro 6d-temp)
- the available evidence from various studies shows that RDE testing has led to additional significant reductions in real-world emissions of NOx, CO and PN that helped ensure that real world emissions are more in line with the emission limits.
- in-service conformity (ISC) requirements and market surveillance have also helped ensure that, at least within the context set by the RDE boundary conditions, use of defeat devices that deactivate emissions control equipment in the real world are not applied.

The EC study also says:

- The analysis also points to ongoing limitations of the existing testing procedures for Euro VI which mean that they can lead to misleading conclusions in terms of the actual level of emissions generated under normal conditions of use.

The conclusion is that the emissions reductions hinge on WLTP testing which the Japan and US jurisdictions don't do, coupled with in-service conformity testing. It is only an assumption that NZ could experience the same reductions in pollutants the EC study refers to. Even if it did, they would only apply to vehicles complied to Euro 6d and not the other standards.

[6] https://op.europa.eu/en/publication-detail/-/publication/a9a2eadb-5f1d-11ed-92ed-01aa75ed71a1/language-en

Consultation on Euro6/VI Vehicle Emissions Standards

Submission from Spokes Canterbury

Tēnā koutou katoa

Thank you for the opportunity to comment on the proposed changes to the vehicle emissions standards

Introduction

Spokes Canterbury (http://www.spokes.org.nz/) is a local cycling advocacy group with approximately 1,200 followers. Spokes is affiliated with the national Cycling Action Network (CAN – https://can.org.nz/). Spokes is dedicated to including cycling as an everyday form of transport in the greater Christchurch and Canterbury areas. Spokes has a long history of advocacy in this space including writing submissions, presenting to councils, and working collaboratively with others in the active transport space. We focus on the need for safe cycling for those aged 8 to 80.

Proposal

Spokes strongly supports the proposed changes to the Land Transport Rule: Vehicle Exhaust Emissions 2007 and would prefer it go further. The 'Vehicle Exhaust Emissions Amendment Rule' (the Amendment Rule) will reduce emissions from motor vehicles that cause significant harm to our health. This is an opportunity to strengthen these proposed changes further to not only reduce harmful NOx and CO emissions but also reduce CO2 to meet our climate change goals.

We seriously question the desire to align with Australia who has been a notable laggard in clean car and emissions standards. Aotearoa should prioritise the health and wellbeing of our people in the first instance, in particularly the health of our tamariki. As an example Asthma is particularly high in Aotearoa and has serious lifelong health consequences.

We support a just transition to a low carbon future. International research has shown that a fast transition that lowers pollutants quicker has the most impact on the health in low-income communities. Rather than reducing the standards that will benefit all New Zealanders the government should provide support for some businesses and individuals to comply with a more stringent standard.

The best outcome is strict emission standards in line with Europe, the promotion of active transport including cycling, and an overall reduction of the current vehicle fleet.

Vehicles that comply with the most recent standards are also more likely to have a higher safety rating and collision avoidance features that are important to more vulnerable active transport users such as cyclists and pedestrians as these features reduce the likelihood of a crash resulting in death or serious injury.

These emission standards should take into account not only the reduction in pollution but also increased safety and the impact on climate change.

Proposal One - Requiring a Stronger Standard for Harmful Emissions from Light Vehicles

Q2: Do you consider the proposed timeframes to require stronger standards for harmful emissions from light vehicles should:

b) Be bought forward

We support Proposal One to require a stronger standard for harmful emission from light vehicles as it will enable better health outcomes from Aotearoa.

We support

- the rapid shift to Euro 5/V immediately,
- the move to Euro 6d, US Tier 3, and Japan 2028 Low Harm by the end of **2025 for both new and used vehicles**
- No exemption for existing models

With the expectation of a full phase out of ICE new and used importation by 2035.

Europe, Japan and California already have higher standards and are moving to the next stage. There should already be appropriate models available so there should be no exemption for existing models. The market is rapidly moving to battery electric and Aotearoa should not be a dumping ground for ICE (and in particular diesel) vehicles that cannot be legally be sold elsewhere for very good reason.

While this may increase the up-front cost of vehicles in the short term, it will reduce the indirect costs on whanau and all New Zealanders who will be paying through their taxes every year for the harm caused.

Proposal Two: Requiring a Stronger Standard for Harmful Emissions from Heavy Vehicles

Q11: Do you consider the proposed timeframes to require stronger standards for harmful emissions from heavy vehicles should

b) Be brought forward

We support the introduction of emissions standards for heavy vehicles that align with the new California CARB and EU standards. Aotearoa requires stronger standards to reduce harmful emissions.

It is not clear how the proposal contributes in achieving the Emissions Reduction Target of “reduce emission from freight in transport by 35% by 2035”.

There should be three separate targets:

1. Buses and other passenger transport (with a special, more stringent, category for school buses)
2. Medium goods vehicles
3. Heavy vehicles

Once purchased trucks and buses remain on our roads for a long time, averaging over 16 years, and the majority are diesel. Older vehicles are less efficient and have more emissions.

With the expectation of a full phase out of ICE importation by 2035.

Proposal Three: Requiring Motorcycles and Mopeds to Meet Minimum Exhaust Emissions Standard

Q17: Do you consider the proposed timeframes to require stronger standards for harmful emissions from motorcycles and/or mopeds should:

c) Process as proposed

This is a new category so may take longer to implement. Any standard should encourage the move to battery electric.

Proposal Four: Provisions for Disability Vehicles

Q22: Do you consider the proposed timeframes to require stronger standards for harmful emissions from disability vehicles should:

c) Proceed as proposed

It would be best to protect our most vulnerable from emissions, however this proposal indicates there is an issue with supply that cannot be practically met in any other way. Those who depend on a modified vehicle are limited in their ability to reduce their emissions by modal change. Given the numbers of vehicles should be relatively small, the most affected community should have the strongest say in this provision.

Spokes appreciates the opportunity to submit. Please direct any questions to Anne Scott, submissions.org.nz (contact phone number in email)

Anne Scott
Submissions Co-ordinator
Spokes Canterbury
submissions@spokes.org.nz

Michael Doherty
Red Stag Trading Limited
172D Wither Road, Blenheim
s 9(2)(a)

25/06/23

Support for VIA's submission on proposed Amendments to Vehicle Exhaust Emissions Rule

Dear Sir/Madam,

I am writing to express my support for the Imported Motor Vehicle Industry Association (VIA)'s submission on the proposed amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007. I understand and support the government's efforts to reduce noxious emissions and minimise harm caused by vehicles. I believe it is essential to consider the points raised by VIA to achieve these objectives.

VIA's submission emphasises the need to prioritise total harm reduction, maintain a fair market, and address the transport needs of New Zealanders. I fully support VIA's position on these matters. It is crucial to reduce noxious emissions and their detrimental effects on public health. As responsible members of industry, it is our duty to supply vehicles that minimise total harm.

I understand that VIA supports most of the proposed policy but has concerns about certain factual errors. VIA has offered corrections, particularly regarding the equivalency between Euro and Japanese standards. VIA has provided a quantified model that compares the equivalency of standards and argue that policies should be adjusted accordingly. I urge the government to carefully consider these corrections and make the necessary adjustments to ensure a fair market and equity.

VIA has also offered a more radical redesign of the proposed standard that would lead to even more harm reduction. This approach prioritises harm reduction by proportionally restricting vehicles based on the amount of harm they cause. I believe that this approach would be beneficial in achieving a greater reduction in overall harm and facilitating a smooth transition to the strategies used in Euro 7.

In conclusion, I believe that the objectives of reducing noxious emissions and minimising harm caused by vehicles are of utmost importance. I encourage the government to consider VIA's suggestions, make the necessary adjustments to ensure effective legislation that achieves its objectives.

Thank you for considering my views on this matter.

Yours sincerely,

Michael Doherty

RED STAG TRADING LIMITED

SUBMISSION

Submission:	Consultation on Euro 6/VI vehicle emissions standards
To:	Ministry of Transport, Te Manatū Waka
Date:	26 June 2023
Contact:	Dom Kalasih, Interim CEO Ia Ara Aotearoa Transporting New Zealand s 9(2)(a)
	Billy Clemens, Policy Advisor Ia Ara Aotearoa Transporting New Zealand s 9(2)(a)

About Ia Ara Aotearoa Transporting New Zealand

1 Ia Ara Aotearoa Transporting New Zealand is a national membership association representing the road freight transport industry. Our 1,200 members (with a combined fleet of 14,000 heavy vehicles) operate urban, rural and inter-regional commercial freight transport services throughout the country.

2 Transporting New Zealand's purpose is creating the environment where trucking operators can drive successful, safe, sustainable businesses. Our strategic priorities are:

- Providing one industry voice for advocacy
- Promoting the road freight transport industry
- Attracting talent and promoting workforce development
- Supporting our members and customers
- Sustainability, safety and responsible emissions reduction

3 New Zealand's road freight transport industry employs 33,000 people (1.2 percent of the total workforce), and has a gross annual turnover in the order of $6 billion. This is part of a wider transport sector that employs 108,000 people and contributes 4.8 percent of New Zealand's GDP. Road freight transport accounts for 92.8 percent of the total tonnage of freight moved in New Zealand or about 75 percent of the surface freight activity measured in tonne-kilometres (MoT National Freight Demands Study 2018).

Submission on Euro 6/VI vehicle emissions standards

4 Transporting New Zealand appreciates the opportunity to make a submission on the draft amendments to the Land Transport Rule: Vehicle Exhaust Emissions 2007.

5 Transporting New Zealand is supportive of regulatory and policy measures that reduce harmful emissions from New Zealand's vehicle fleet. Our members operate a significant number of light vehicles to support their heavy fleets. However, our focus in this submission is the heavy vehicle proposals.

6 Transporting New Zealand has consulted with several other industry bodies when preparing this submission, as the proposed regulations raise common concerns across the heavy vehicle sector. Transporting New Zealand understands that our submission broadly aligns with those of the Motor Industry Association (MIA), Motor Trade Association and National Road Carriers Association.

7 Transporting New Zealand hopes that Ministry of Transport will undertake further cross-industry engagement in order to refine the proposed amendments. Transport New Zealand urge the Ministry of Transport to take full consideration of the expert advice coming from vehicle importers, particularly the MIA.

8 In terms of heavy fleet, the costs associated with fleet capital typically make up somewhere in the range of 10-15 percent of the total transport costs. Our members' fleet replacement strategies depend largely on vehicle supply and costs. Ultimately these costs are borne by the procurers of transport services and further downstream by consumers. As a

consequence, these changes will impact the performance of the economy and New Zealand's standard of living.

9 The Ministry of Transport has estimated the social cost of air pollution from transport at $10.5 billion. This is considerably higher than the total social cost of road crashes that result in deaths and serious injuries, at $8 billion (Consultation Document pp. 9-10). The Ministry of Transport predict the proposed policy intervention will abate the harmful emission social costs out to 2050 by upward of $6.7 billion.

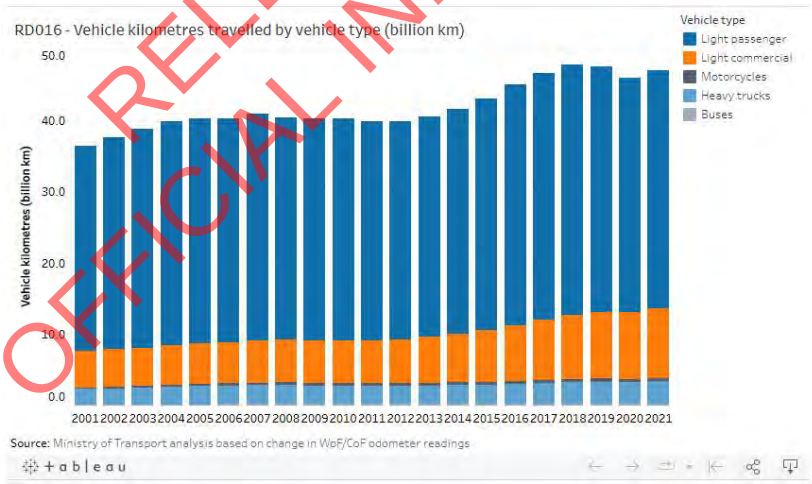
10 Transporting New Zealand is disappointed the Ministry has not demonstrated the relative value for money and return on investment for its interventions in the respective areas of road trauma compared to air pollution. This would have provided important contextual information to the discussion.

11 Transporting New Zealand was also constrained in preparing this submission because the benefits and cost information provided was not only limited, but also lacked balance. For example, the social costs provided in Annex 2 of the Ministry of Transport's Consultation Document provides social cost information for cars, vans and small trucks on a per 10,000km. It would have helpful to us if information on large trucks had also been included.

12 The Ministry of Transport does not appear to have taken into consideration the respective energy intensity of the respective vehicle categories. As is referred in the Road and Rail Report that Transporting New Zealand produced in December 2021, compared to a car, a truck typically burns 6 times the amount of fuel however, it moves 181 times more in payload.

13 A more balanced view would also be presented had the Ministry included its data on vehicle kilometre travel by respective vehicle type (Figure 1).

Figure 1



Source:https://www.transport.govt.nz/statistics-and-insights/fleet-statistics/sheet/vehicle-kms-travelled-vkt-2

14 It is vital that the Ministry of Transport provide more relevant contextual information when proposing policy interventions. Without this, meaningful consideration of the proposals is difficult.

15 As stated in our answers to the Ministry of Transport's consultation questions below, Transporting New Zealand considers the proposed timeframes to require stronger standards for harmful emissions from heavy vehicles should be pushed back, in line with the position of the MIA.

16 However, Transporting New Zealand's support for this option is contingent on the data and assumptions underpinning the cost benefit analysis being provided by Ministry of Transport, and receiving an assurance that the impacts on freight movement have received full consideration.

17 Transporting New Zealand's responses to Ministry of Transport's consultation questions follow below.

Response to Ministry of Transport consultation survey

Reference	Question	Response
Proposal one: Requiring a stronger emissions standard for light vehicles	1. – 9.	Transporting New Zealand members operate a significant number of light support vehicles. However, our predominant focus is on heavy vehicles. Transport New Zealand urge the Ministry of Transport to take full consideration of the expert advice coming from light vehicle importers, particularly the MIA.
Proposal two: Requiring a stronger emissions standard for heavy vehicles	10. Are you an importer of heavy vehicles?	Transporting New Zealand is not an importer of heavy vehicles. Our 1,200 members operate a combined fleet of 14,000 heavy vehicles throughout the country.
	11. Do you consider the proposed timeframes to require stronger standards for harmful emissions from heavy vehicles should: A. Be pushed back B. Be bought forward C. Proceed as proposed D. Not be implemented at all	The proposed timeframes to require stronger standards for harmful emissions from heavy vehicles should be pushed back. Transporting New Zealand supports Option 3c (described as the "MIA Approved Option") contained in the Regulatory Impact Statement dated 17 August 2022 (RIS). Transporting New Zealand's support for this option is contingent on the data and assumptions underpinning the cost benefit analysis being provided by Ministry of Transport, as noted at paragraph 16 of our submission.
	12. Please explain your answer for question 11.	**Proposed amendments** Transporting New Zealand is supportive of regulatory and policy measures that reduce harmful emissions from New Zealand's heavy vehicle fleet. However, the proposed timeframes must be pushed back in order to avoid unacceptable pressures on heavy vehicle supply and freight costs.

		Subject to the Ministry of Transport providing further information to clearly demonstrate the differentiation and respective impacts of the Euro VI stages C, D and E, Transporting New Zealand supports the MIA's position that: • The introduction of Euro VI stage C (or equivalent international standard) should be extended 1 May 2025 for newly introduced models and 1 May 2026 for existing models. This will give sufficient notice to vehicle manufacturers and suppliers. • Euro VI stage E should only be introduced after Australian adoption, to avoid considerable supply disruption. Our understanding is that the difference in real world NOx and PM emissions between Euro VI stage D and E is also nominal. **Road freight considerations** *Concern over cost benefit analysis calculation* The cost benefit analysis appears to dramatically understate the likely costs to road freight businesses and consumers (up to $200 million out to 2050, across all vehicle types). Transporting New Zealand would appreciate a briefing from the Ministry of Transport to better understand the assumptions in the analysis, that are not explained in detail. Assuming approximately 7,000 heavy commercial vehicle registrations a year, and MIA estimating a manufacturing cost premium of between $8,000-$20,000 per heavy vehicle, the cost to road freight businesses and their customers out to 2035 (when 100 percent of imports would be Euro VI compliant with no regulatory intervention) will be considerable. There is also a difference between the manufacturing cost premium and the eventual retail price (including margins) that road freight companies will have to pay. *Current cost pressures on road freight companies*

		Road freight companies are already under considerable cost pressure. The Transporting New Zealand Transport Cost Index (Quarter Ending December 2022), prepared by Grant Thornton, shows that the cost movements of the typical components that contribute to transport rates increased 12.34 percent between December 2022 to December 2023. This compares to the CPI increase of 7.22 percent for the same time period. A copy of the Cost Index is **attached**, subject to an obligation of confidence (section 9(2)(ba) Official Information Act 1982). Given this context, it is concerning to read the flippant comment in the RIS [para. 105] that "Between the moderate and slow options, the trade-off is a couple of years of bigger profits for industry, and for wider model availability for consumers…". Given the considerable cost pressures that road freight companies are under, additional vehicles costs will either be reluctantly passed onto customers, or threaten the viability of many small and medium sized freight businesses. *Lack of vehicle supply* If appropriate replacements cannot be sourced, road freight companies have no choice but to retain older vehicles in their fleet. This is the worst possible harmful emissions outcome. Our members are already reporting delays of up to two years when purchasing heavy vehicles from original equipment manufacturers, which makes them particularly sensitive to further delays. *Lack of complementary policy incentives* The RIS [para. 74] states that complementary policies for accelerating the uptake of low and zero-emission vehicles are still being worked through by other policy teams in government. This siloed approach makes it difficult for Transporting New Zealand to assess the impact of the proposal on our members.

		Given the estimated $6.7 billion dollar abatement in social costs to 2050 that the proposal will produce, it is disappointing that there are no complementary policy incentives being considered in parallel with this proposal. Transporting New Zealand has consistently advocated for accelerated depreciation on Euro VI vehicles in our engagement with Ministry of Transport. A delay in the proposed timeframes would allow various policy teams in government to coordinate on policies that would assist road freight businesses reduce the emissions profile of their fleets (both harmful and carbon emissions).
	13. Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?	Transporting New Zealand does not have any feedback on this proposal.
	14. If you are a vehicle importer, what impact will this proposal have on your ability to supply heavy vehicles to Aotearoa?	Transporting New Zealand is not an importer of heavy vehicles.
	15. Europe has drafted a proposal for Euro VII to take effect from mid 2027 that would reduce diesel vehicle emissions significantly from Euro VI. The U.S. have enacted Euro VII-ambition requirements from	Considerable preparatory work is required before the introduction of a Euro VII standard will be commercially viable and not cause substantial disruption to New Zealand's supply chain. Before Transporting New Zealand could support the adoption of an Euro VII standard for heavy vehicles, the following pre-conditions would have to be met:

	2027, and China from mid-2023. When should Aotearoa in principle require the Euro VII standard for heavy vehicles and why?	1. Evidence of successful adoption by other jurisdictions. 2. Purchase incentives for Euro VII heavy vehicles. 3. Regulatory flexibility to enable the import of Euro VII vehicles without significant modification, including vehicle dimensions and mass. 4. Substantial investment in New Zealand's heavy vehicle electric charging network. 5. Substantial investment in roads and bridges to ensure our roading network is prepared for bigger, heavier low and zero emission vehicles. Until a timeline for these pre-requisites is set out, considering a Euro VII implementation date is unhelpful.
Proposal three: Requiring motorcycles and mopeds to meet minimum exhaust emissions standard	16. – 20.	Transporting New Zealand does not have any feedback on this proposal.

Grant Thornton

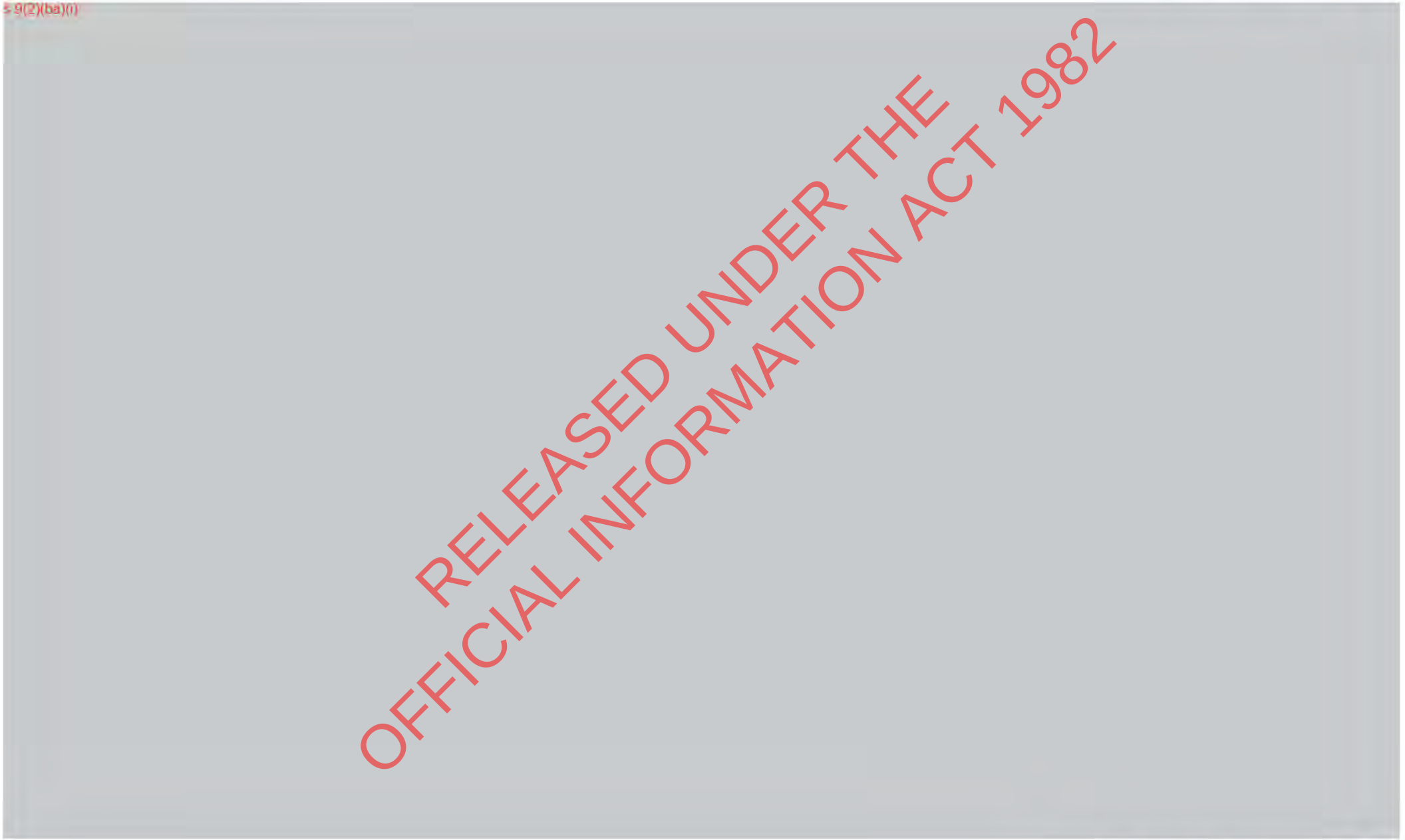
Ia Ara Aotearoa Transporting NEW ZEALAND

s 9(2)(ba)(i)

Grant Thornton

Ia Ara Aotearoa Transporting NEW ZEALAND

s 9(2)(ba)(i)



Grant Thornton

Ia Ara Aotearoa Transporting NEW ZEALAND

s 9(2)(ba)(i)

Response ID ANON-SA2H-UCFF-J

Submitted to Consultation on Euro 6/VI vehicle emissions standards
Submitted on 2023-06-21 10:41:24

Your details

What is your name?

Name:
JAMIE ROSE

What is your email address?

Email:
s 9(2)(a)

What is your organisation?

Organisation:
Japan Direct Limited

Details of the Proposal

Proposal one: Requiring a stronger emissions standard for light vehicles

1 Are you an importer of light vehicles?

Yes – newly imported used light vehicles

2 Do you consider the proposed timeframes to require stronger standards for harmful emissions from light vehicles should:

Be bought forward

3 Please explain your answer for question for question two.

Type your answer here :

I would describe the current proposal to be a combination of too easy in the beginning and tough at the final 2028 implementation. To improve the quality of used cars coming in from Japan there needs to be an implementation of an age rule of eleven years rolling over each year. Implementing an age rule will better prepare used car importers for the 2028 Japan 2018 5xx, 6xx, and 7xx emission standards. As it is proposed at the moment dealers will continue to buy older and older hybrid vehicles which would decrease the quality of the fleet in New Zealand. for instance, in 2027 dealers would be able to import and sell a fifteen-year-old Aqua. Then 2028 will roll around and dealers will unprepared for the change to 2018 low-harm emission codes.
Also, there is been nothing done with the current twenty-year exemption rule for emissions. I recommend that this also be updated so that it mirrors the CCS and CCD forty-year-old classic rule.
On a final note, the SIV scheme needs to be expanded by 2028 as many sportier performance cars will not be able to imported due to most only meeting 3XX emission standards.

4 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

No – and why

If you said no, please explain why :

I am not sure why the proposal allows for 2026 used cars newer than 2024 must be Japan 2018. This seems unnecessary as virtually all of the Japanese market cars had moved to Japan 2018 in 2021. The table should be corrected to reflect this.

5 If you are a vehicle importer, what impact will this proposal have on your ability to supply light vehicles to Aotearoa?

Type your answer here :

I believe if the regulations continue as proposed there is a significant risk of supply shock when dealers move from being able to import fifteen-year-old vehicles in 2027 to a minimum of ten-year-old vehicles in 2028 (the earliest implementation of Japan 2018 is in 2018 in some Mazda's)
By applying a rolling age ban this will better prepare the market for the significant step change in 2028. it would prevent budget dealers from coming into the used market in 2026 and 2027 and then closing down in 2028 as the change in age and price range of vehicles disrupts their business model. That being said there is still a plethora of affordable existing cars in the New Zealand fleet.

6 Europe has agreed a stronger Euro 6e standard apply from September 2023. Euro 6e is anticipated to be harmonised into a global standard named UNECE Regulation 83 Series 08 around the middle of 2023, which countries can then adopt. Europe has drafted a proposal for Euro 7 to take effect from 2025 that would reduce diesel vehicle emissions significantly from Euro 6. The U.S. have proposed Euro 7-ambition requirements from 2027, and China from mid 2023. When should Aotearoa require the Euro 6e and UNECE R83/08, and Euro 7 standards on light vehicles, which would further reduce harmful emissions, and why?

Please explain in the box below. :

Any new standard introduced in Japan should be timed so it is implemented for used cars imported into New Zealand a minimum of seven years later.

Japan Low Harm Standards

7 The proposed Amendment Rule includes the Japan emissions standard 5BA under the definition of Japan 2018 Low Harm. From your perspective, what would the impact on supply be if 5BA was included or excluded from the Amendment Rule?

Type your answer here :

If 5BA is removed as an accepted emission code there would be a substantial reduction in the availability of efficient non-hybrid cars. The code still means that emissions are only 50% of the Japan 2018 requirement. I cannot see why if 5BA is removed, why not 5AA (hybrid) or 5LA (PHEV).

8 The proposed Amendment Rule does not include the Japan emissions standard CBA under the definition of Japan 2005 Low Harm. From your perspective, what would the impact on supply be if CBA was included or excluded from the Amendment Rule?

Type your answer here :

Removal of emission standard CBA would have virtually no impact on used vehicles from Japan. Only older European cars and pre VSC Japanese cars have this code.

9 Te Manatū Waka also notes that there may be inconsistencies if 5BA is included and not CBA, however 5BA is subject to stronger testing standards so the impacts are not clear. Do you foresee any inconsistencies if 5BA is included and CBA is not?

Type your answer here :

I do not think it is inconsistent. There are virtually no cars coming in with the CBA emission standard. However, removing 5BA would remove a significant number of popular used cars in Japan from being able to be imported.
There is a point in the future with more and more cars being offered as solely hybrid/PHEV models in Japan where 5BA or 6BA should be removed. Possibly 2030.

Proposal two: Requiring a stronger emissions standard for heavy vehicles

10 Are you an importer of heavy vehicles?

No – I import other vehicles

11 Do you consider the proposed timeframes to require stronger standards for harmful emissions from heavy vehicles should:

Proceed as proposed

12 Please explain your answer for question for question two.

Type your answer here :

No Comment

13 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Yes

If you said no, please explain why :

14 If you are a vehicle importer, what impact will this proposal have on your ability to supply heavy vehicles to Aotearoa?

Type your answer here :

15 Europe has drafted a proposal for Euro VII to take effect from mid 2027 that would reduce diesel vehicle emissions significantly from Euro VI. The U.S. have enacted Euro VII-ambition requirements from 2027, and China from mid 2023. When should Aotearoa in principle require the Euro VII standard for heavy vehicles and why?

Please explain in the box below. :

Proposal three: Requiring motorcycles and mopeds to meet minimum exhaust emissions standard

16 Are you an importer of motorcycles and/or mopeds?

No – I import other vehicles

17 Do you consider the proposed timeframes to require stronger standards for harmful emissions from motorcycles and/or mopeds should:

Proceed as proposed

18 Please explain your answer for question for question two.

Type your answer here :

19 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Not Answered

If you said no, please explain why :

20 If you are a vehicle importer, what impact will this proposal have on your ability to supply motorcycles and/or mopeds to Aotearoa?

Type your answer here :

Proposal four: Provisions for disability vehicles

21 Are you an importer of disability vehicles?

No – I import other vehicles

22 Do you consider the proposed timeframes to require stronger standards for harmful emissions from disability vehicles should:

Proceed as proposed

23 Please explain your answer for question for question two.

Type your answer here :

24 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Not Answered

If you said no, please explain why :

25 If you are a vehicle importer, what impact will this proposal have on your ability to supply disability vehicles to Aotearoa?

Type your answer here :

Accepted standards from other jurisdictions

26 Do you agree with the comparison of other standards with Euro standards presented here?

Yes

27 If you answered "no", what would you change?

Type your answer here :

Response ID ANON-SA2H-UCFM-S

Submitted to Consultation on Euro 6/VI vehicle emissions standards
Submitted on 2023-06-22 03:57:22

Your details

What is your name?

Name:
s 9(2)(a)

What is your email address?

Email:
s 9(2)(a)

What is your organisation?

Organisation:
Cummins Inc.

Details of the Proposal

Proposal one: Requiring a stronger emissions standard for light vehicles

1 Are you an importer of light vehicles?

Not Answered

2 Do you consider the proposed timeframes to require stronger standards for harmful emissions from light vehicles should:

Not Answered

3 Please explain your answer for question for question two.

Type your answer here :

4 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Not Answered

If you said no, please explain why :

5 If you are a vehicle importer, what impact will this proposal have on your ability to supply light vehicles to Aotearoa?

Type your answer here :

6 Europe has agreed a stronger Euro 6e standard apply from September 2023. Euro 6e is anticipated to be harmonised into a global standard named UNECE Regulation 83 Series 08 around the middle of 2023, which countries can then adopt. Europe has drafted a proposal for Euro 7 to take effect from 2025 that would reduce diesel vehicle emissions significantly from Euro 6. The U.S. have proposed Euro 7-ambition requirements from 2027, and China from mid 2023. When should Aotearoa require the Euro 6e and UNECE R83/08, and Euro 7 standards on light vehicles, which would further reduce harmful emissions, and why?

Please explain in the box below. :

Japan Low Harm Standards

7 The proposed Amendment Rule includes the Japan emissions standard 5BA under the definition of Japan 2018 Low Harm. From your perspective, what would the impact on supply be if 5BA was included or excluded from the Amendment Rule?

Type your answer here :

8 The proposed Amendment Rule does not include the Japan emissions standard CBA under the definition of Japan 2005 Low Harm. From your perspective, what would the impact on supply be if CBA was included or excluded from the Amendment Rule?

Type your answer here :

9 Te Manatū Waka also notes that there may be inconsistencies if 5BA is included and not CBA, however 5BA is subject to stronger testing standards so the impacts are not clear. Do you foresee any inconsistencies if 5BA is included and CBA is not?

Type your answer here :

Proposal two: Requiring a stronger emissions standard for heavy vehicles

10 Are you an importer of heavy vehicles?

No – I am not a vehicle importer

11 Do you consider the proposed timeframes to require stronger standards for harmful emissions from heavy vehicles should:

Be pushed back

12 Please explain your answer for question for question two.

Type your answer here :

We want to clarify that Cummins is in favour of all the proposed timeframes except for the final one starting on 1 Nov 2026.
Since Australia will phase in Euro VI stage C starting on 1 Nov 2024 for new models, and 1 Nov 2025 for existing models, it makes sense for Aotearoa to harmonize its requirement to continue sharing the supply base to ensure continuous product availability with minimal impact on costs.
However, starting on 1 Nov 2026, if Aotearoa is to require Euro VI Phase E, it will create a misalignment with the Australian requirement which is still Euro VI stage C. This in turn will have a negative impact on the supply of new heavy vehicles into Aoteraoa, as both countries share the same supply base.
Also, by requiring Euro VI stage E, which has a more stringent real world emissions requirement than the Japan 2016 and US Tier 3 standards thus creating an uneven playing field, it is possible that vehicles with engine systems certified to the Japan 2016 and US Tier 3 standards will be imported in favour of vehicles equipped with the Euro VI stage E engine system, rendering all projected environmental and public health benefits that would come with the adoption of Euro VI stage E moot, while creating more constraints to the supply of heavy vehicles. Both of which have undesirable effects on the community.
In fact, it is worth noting that previously, Australian authorities have found that the costs of adopting the stage D or E requirements would outweigh the public health benefits to the community compared to stage C.

13 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

No – and why

If you said no, please explain why :

Although the gaseous pollutants limits for all Euro VI standards are exactly the same and considered to be equivalent to Japan 2016 and US Tier 3, Euro VI stage E should be considered to be substantially more stringent when it comes to real world emissions.
The real-world emissions for Japan 2016 standards may be weaker than Euro VI stage C because it does not have a Particulate Numbers (PN) limits and it also does not require any in-service or PEMS testing for certification. In fact, the new Japan 2023 standards, which will only be enforced starting in Oct 2023, will include PN limits that is similar to that of Euro VI stage C, yet PEMS testing is still not required. In our opinion, Euro VI Phase C is more similar to Japan 2023 than Japan 2016. Thus, grouping Japan 2016 with Euro VI Stage E will create an uneven standard favouring the Japanese standards.
As for the US Tier 3 standards, we consider the stringency of the NTE testing to be equivalent to the stringency of the PEMS testing in Euro VI Phase C, as the testing condition requirements are similar. The increased stringency of the PEMS testing requirements in Euro VI stage E such as measuring emissions from cold starts, at a lower minimum power, and at a wider payload range are not accounted for in the US Tier 3 standards NTE test.
Thus, if the US Tier 3 standards is treated as an acceptable alternative to Euro VI Stage E, then Euro VI stage C should also be accepted because the main difference between Euro VI stage C and stage E is in the stringency in the PEMS testing, while the gaseous pollutants limits stayed the same.

14 If you are a vehicle importer, what impact will this proposal have on your ability to supply heavy vehicles to Aotearoa?

Type your answer here :

Although Cummins is not a vehicle importer, we supply engines to vehicle manufacturers whose vehicles will be imported into or assembled in Aotearoa. Most of our engines that end up in Aotearoa are imported from Australia. If there is a misalignment between Australia and Aotearoa, it could potentially affect our ability to supply engines for the heavy vehicles destined for Aotearoa without incurring a significantly higher cost.

15 Europe has drafted a proposal for Euro VII to take effect from mid 2027 that would reduce diesel vehicle emissions significantly from Euro VI. The U.S. have enacted Euro VII-ambition requirements from 2027, and China from mid 2023. When should Aotearoa in principle require the Euro VII standard for heavy vehicles and why?

Please explain in the box below. :

In principle, Cummins supports tough, clear, and enforceable emissions regulations all over the world wherever feasible. Although Aotearoa can technically require Euro 7 standards for heavy vehicles shortly after it has taken effect in EU, Cummins do not recommend it for the following reasons.
1. Japan has not announced its plan for the next generation emission standards. So, the Euro 7 requirement will eliminate Japan certified heavy vehicles from the supply base.
2. The misalignment with Australian regulations also means that the supply base for Aotearoa is further constrained.

3. The limited supply could potentially drive up costs significantly, resulting in operators retaining older vehicles for a longer period of time, which in turn would negate all the expected environmental and public health benefits of adopting Euro 7.
A more practical approach would be to collaborate with Australia to implement Euro 7 level regulations together one or two years after EU to create a bigger common market, which may help control costs and allow the supply base to stabilize. It will also allow the vehicle manufacturers/assembler/importers to adequately recoup the investments made to prepare for the sales, service, and support of Euro VI regulations.
However, it is also important to reiterate that Euro 7 equivalent standards have not been announced in Japan, and if Aotearoa would like to continue relying on Japan as a supply base, it would be beneficial to wait for Japan to announce their next generation emissions regulations before setting a timeframe to adopt Euro 7 regulations.
We would also like to clarify that the emission standards to be enacted by China from mid 2023 is not at the same stringency as Euro 7 or the 2027 standards in the US. It can be considered equivalent to Euro VI, with some unique requirements in PEMS testing, diagnostics and remote sensing. Similar to Japan, China's next generation emission standards have not been announced yet.

Proposal three: Requiring motorcycles and mopeds to meet minimum exhaust emissions standard

16 Are you an importer of motorcycles and/or mopeds?

Not Answered

17 Do you consider the proposed timeframes to require stronger standards for harmful emissions from motorcycles and/or mopeds should:

Not Answered

18 Please explain your answer for question for question two.

Type your answer here :

19 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Not Answered

If you said no, please explain why :

20 If you are a vehicle importer, what impact will this proposal have on your ability to supply motorcycles and/or mopeds to Aotearoa?

Type your answer here :

Proposal four: Provisions for disability vehicles

21 Are you an importer of disability vehicles?

Not Answered

22 Do you consider the proposed timeframes to require stronger standards for harmful emissions from disability vehicles should:

Not Answered

23 Please explain your answer for question for question two.

Type your answer here :

24 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Not Answered

If you said no, please explain why :

25 If you are a vehicle importer, what impact will this proposal have on your ability to supply disability vehicles to Aotearoa?

Type your answer here :

Accepted standards from other jurisdictions

26 Do you agree with the comparison of other standards with Euro standards presented here?

No

27 If you answered "no", what would you change?

Type your answer here :

Our response will only focus on heavy vehicles and as an independent engine manufacturer that develops engines for all international standards, Cummins is well verse in the requirements for each of them.
We agree that Japan 2016, US Tier 3, ADR80/04, and UNECE R49/07 are similar in strength in terms of their pollutant limits in their laboratory emission tests.
However, Japan 2016 does not require PEMS testing, so it's impossible to postulate that the real-world emissions from a Japan 2016 engine to be superior to ADR80/04 (Euro VI stage C) engine.
As for US Tier 3, NTE testing is used to account for real-world emissions, but we can only consider it to be equivalent in stringency to the ADR 80/04 (Euro VI stage C) PEMS testing as the NTE zone is very similar to the testing conditions for Euro VI stage C PEMS testing. It does not take into consideration the emissions from a cold start engine, and lower end of the torque curve, which is required by Euro VI stage E.
Therefore, we disagree that ADR80/04 is marked as "initially aligned" while Japan 2016, and US Tier 3 are marked "similar" to Euro VI stage E.
We believe all three standards (Japan 2016 or 2023, US Tier 3, and ADR80/04) should be considered as equivalent and graded in the same manner as either "similar" or "initially aligned" with Euro VI stage E.

Response ID ANON-SA2H-UCTW-H

Submitted to Consultation on Euro 6/VI vehicle emissions standards
Submitted on 2023-06-22 11:35:09

Your details

What is your name?

Name:
Sean Selby

What is your email address?

Email:
s 9(2)(a)

What is your organisation?

Organisation:
Healthy Auckland Together

Details of the Proposal

Proposal one: Requiring a stronger emissions standard for light vehicles

1 Are you an importer of light vehicles?

No – I am not a vehicle importer

2 Do you consider the proposed timeframes to require stronger standards for harmful emissions from light vehicles should:

Be bought forward

3 Please explain your answer for question for question two.

Type your answer here :

Healthy Auckland Together recommends that the proposed timeframes to require stronger standards should be brought forward to 2024 for all imported light vehicles in the interest of health equity in Tāmaki Makaurau. Light vehicle emissions make up a majority of Aotearoa New Zealand's fleet and contribute significantly to the harms of poor air quality in Tāmaki Makaurau, with Pacific Peoples having higher exposure and being more at risk to the negative health effects.6 Introduction of the higher vehicle emission standards as proposed or delayed will increase the avoidable harm experienced by the population of Tāmaki Makaurau by a significant amount compared to introduction in 2024.

4 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Yes

If you said no, please explain why :

5 If you are a vehicle importer, what impact will this proposal have on your ability to supply light vehicles to Aotearoa?

Type your answer here :

6 Europe has agreed a stronger Euro 6e standard apply from September 2023. Euro 6e is anticipated to be harmonised into a global standard named UNECE Regulation 83 Series 08 around the middle of 2023, which countries can then adopt. Europe has drafted a proposal for Euro 7 to take effect from 2025 that would reduce diesel vehicle emissions significantly from Euro 6. The U.S. have proposed Euro 7-ambition requirements from 2027, and China from mid 2023. When should Aotearoa require the Euro 6e and UNECE R83/08, and Euro 7 standards on light vehicles, which would further reduce harmful emissions, and why?

Please explain in the box below. :

We recommend that Aotearoa New Zealand introduce Euro 6e and Euro VII standards in a manner consistent with global standards. Keeping with the latest standards allows Aotearoa New Zealand to reduce the harm of vehicle emissions in an efficient manner. Not implementing global standards may result in an increase in higher emitting, used vehicles within Aotearoa New Zealand as the market will accept them where other countries will not.

Japan Low Harm Standards

7 The proposed Amendment Rule includes the Japan emissions standard 5BA under the definition of Japan 2018 Low Harm. From your perspective, what would the impact on supply be if 5BA was included or excluded from the Amendment Rule?

Type your answer here :

8 The proposed Amendment Rule does not include the Japan emissions standard CBA under the definition of Japan 2005 Low Harm. From your perspective, what would the impact on supply be if CBA was included or excluded from the Amendment Rule?

Type your answer here :

9 Te Manatū Waka also notes that there may be inconsistencies if 5BA is included and not CBA, however 5BA is subject to stronger testing standards so the impacts are not clear. Do you foresee any inconsistencies if 5BA is included and CBA is not?

Type your answer here :

Proposal two: Requiring a stronger emissions standard for heavy vehicles

10 Are you an importer of heavy vehicles?

No – I am not a vehicle importer

11 Do you consider the proposed timeframes to require stronger standards for harmful emissions from heavy vehicles should:

Be bought forward

12 Please explain your answer for question for question two.

Type your answer here :

We recommend that the proposed timeframes to require stronger standards should be brought forward to 2024 for all imported heavy vehicles in the interest of health equity in Tāmaki Makaurau. Heavy vehicles produce a disproportionate amount of harmful emissions, causing 17.4 times more harm through emissions per kilometre travelled when compared to a petrol light vehicle. Tāmaki Makaurau is a centre for shipping and freight, which results in a disproportionate amount of heavy vehicles within our communities compared with the rest of Aotearoa New Zealand. By 2028, it is expected that there will be a 5% increase in vehicle emissions from a 2019 baseline, with 85% due to increased heavy vehicle demand. The introduction of the higher vehicle emission standards as proposed or delayed will increase the avoidable harm experienced by the population of Tāmaki Makaurau by a significant amount compared to introduction in 2024.

13 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Yes

If you said no, please explain why :

14 If you are a vehicle importer, what impact will this proposal have on your ability to supply heavy vehicles to Aotearoa?

Type your answer here :

15 Europe has drafted a proposal for Euro VII to take effect from mid 2027 that would reduce diesel vehicle emissions significantly from Euro VI. The U.S. have enacted Euro VII-ambition requirements from 2027, and China from mid 2023. When should Aotearoa in principle require the Euro VII standard for heavy vehicles and why?

Please explain in the box below. :

We recommend that Aotearoa New Zealand introduce Euro VII standards for heavy vehicles in a consistent manner with global standards. Keeping with the latest standards allows Aotearoa New Zealand to reduce the harms of vehicle emissions in an efficient manner. Not implementing global standards may result in an increase in higher emitting, used vehicles within Aotearoa New Zealand as the market will accept them where other countries will not.

Proposal three: Requiring motorcycles and mopeds to meet minimum exhaust emissions standard

16 Are you an importer of motorcycles and/or mopeds?

No – I am not a vehicle importer

17 Do you consider the proposed timeframes to require stronger standards for harmful emissions from motorcycles and/or mopeds should:

Be bought forward

18 Please explain your answer for question for question two.

Type your answer here :

We recommend to use a consistent approach and introduce minimum vehicle emissions standards for motorcycles and mopeds to keep up with the global standard.

19 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

No – and why

If you said no, please explain why :

20 If you are a vehicle importer, what impact will this proposal have on your ability to supply motorcycles and/or mopeds to Aotearoa?

Type your answer here :

Proposal four: Provisions for disability vehicles

21 Are you an importer of disability vehicles?

No – I am not a vehicle importer and I do not purchase or use disability vehicles.

22 Do you consider the proposed timeframes to require stronger standards for harmful emissions from disability vehicles should:

Be bought forward

23 Please explain your answer for question for question two.

Type your answer here :

Healthy Auckland together supports, in principal, the definitions used for disability vehicles. We recommend a consistent approach to vehicle emissions standards to protect those most vulnerable to poor air quality.

24 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Yes

If you said no, please explain why :

25 If you are a vehicle importer, what impact will this proposal have on your ability to supply disability vehicles to Aotearoa?

Type your answer here :

Accepted standards from other jurisdictions

26 Do you agree with the comparison of other standards with Euro standards presented here?

Yes

27 If you answered "no", what would you change?

Type your answer here :

Response ID ANON-SA2H-UCF5-1

Submitted to Consultation on Euro 6/VI vehicle emissions standards
Submitted on 2023-06-22 18:07:49

Your details

What is your name?

Name:
s 9(2)(a)

What is your email address?

Email:
s 9(2)(a)

What is your organisation?

Organisation:
Isuzu New Zealand & General Motors Australia & New Zealand

Details of the Proposal

Proposal one: Requiring a stronger emissions standard for light vehicles

1 Are you an importer of light vehicles?

Yes – new light vehicles

2 Do you consider the proposed timeframes to require stronger standards for harmful emissions from light vehicles should:

Be pushed back

3 Please explain your answer for question for question two.

Type your answer here :

General Motors New Zealand strongly advocates that the New Zealand and Australian regulations / roll out strategy remain aligned. General Motors develops Light vehicles for the New Zealand and Australian regulations together, s 9(2)(b)(ii) .

4 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Yes

If you said no, please explain why :

General Motors New Zealand supports grouping of the timing for the international standards

5 If you are a vehicle importer, what impact will this proposal have on your ability to supply light vehicles to Aotearoa?

Type your answer here :

General Motors develops vehicles for the New Zealand and Australian regulations together, and certifies Light Vehicles to US Tier 3 emissions in Australia. It's critical that the US Tier 3 regulation remains available as an international standard to certify against and does not include a BIN level requirement, s 9(2)(b)(ii)

6 Europe has agreed a stronger Euro 6e standard apply from September 2023. Euro 6e is anticipated to be harmonised into a global standard named UNECE Regulation 83 Series 08 around the middle of 2023, which countries can then adopt. Europe has drafted a proposal for Euro 7 to take effect from 2025 that would reduce diesel vehicle emissions significantly from Euro 6. The U.S. have proposed Euro 7-ambition requirements from 2027, and China from mid 2023. When should Aotearoa require the Euro 6e and UNECE R83/08, and Euro 7 standards on light vehicles, which would further reduce harmful emissions, and why?

Please explain in the box below. :

General Motors New Zealand recommends MOT to align timing of introduction of new standards with Australia to ensure maximum consumer choice.

s 9(2)(b)(ii) [redacted]

Japan Low Harm Standards

7 The proposed Amendment Rule includes the Japan emissions standard 5BA under the definition of Japan 2018 Low Harm. From your perspective, what would the impact on supply be if 5BA was included or excluded from the Amendment Rule?

Type your answer here :

No comment

8 The proposed Amendment Rule does not include the Japan emissions standard CBA under the definition of Japan 2005 Low Harm. From your perspective, what would the impact on supply be if CBA was included or excluded from the Amendment Rule?

Type your answer here :

No comment

9 Te Manatū Waka also notes that there may be inconsistencies if 5BA is included and not CBA, however 5BA is subject to stronger testing standards so the impacts are not clear. Do you foresee any inconsistencies if 5BA is included and CBA is not?

Type your answer here :

No comment

Proposal two: Requiring a stronger emissions standard for heavy vehicles

10 Are you an importer of heavy vehicles?

Yes – new heavy vehicles

11 Do you consider the proposed timeframes to require stronger standards for harmful emissions from heavy vehicles should:

Be pushed back

12 Please explain your answer for question for question two.

Type your answer here :

Isuzu New Zealand strongly advocates that the New Zealand and Australian regulations / roll out strategy remain aligned. Isuzu develops Heavy vehicles for the New Zealand and Australian regulations together, s 9(2)(b)(ii) [redacted]

New Zealand commercial vehicle customers have a unique set of requirements, and this has led to vehicles being sourced from all round the world and under different emission regulations with a very large proportion aligned more closely to Japan, USA and Australian specifications & emissions solutions. A minimum phase in period for 2 years for New Models to be developed to Euro VI-C and a further 5 years to develop Euro VI-E solutions (similar to the original Europe phase in).

13 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

No – and why

If you said no, please explain why :

Whilst we support improving emissions standards, we do not believe the step up to Euro VI-e is practicable for NZ – the 1 Nov-2026 introduction of Euro VI-e would lead to significant reductions in choice for customers, decreasing competition in the market. The Isuzu truck dealer network, made up of many independent franchised dealers, employs approximately 600 staff nationwide s 9(2)(b)(ii) [redacted]

We also request to please add EPA10 alongside the existing USA Tier 3, and PPNLT alongside Japan 2016 to all tables for Heavy Commercial Vehicles for all implementation dates, including post 1st November 2026

14 If you are a vehicle importer, what impact will this proposal have on your ability to supply heavy vehicles to Aotearoa?

Type your answer here :

Isuzu Japan develops vehicles for the New Zealand and Australian regulations together, s 9(2)(b)(ii) [redacted] The Isuzu truck dealer network, made up of many independent franchised dealers, employs

approximately 600 staff nationwide s 9(2)(b)(ii)

15 Europe has drafted a proposal for Euro VII to take effect from mid 2027 that would reduce diesel vehicle emissions significantly from Euro VI. The U.S. have enacted Euro VII-ambition requirements from 2027, and China from mid 2023. When should Aotearoa in principle require the Euro VII standard for heavy vehicles and why?

Please explain in the box below. :

Isuzu Japan develops vehicles for the New Zealand and Australian regulations together, s 9(2)(b)(ii) . Isuzu NZ strongly recommends any further emissions regulation beyond the current proposal needs to align to Australia.

Proposal three: Requiring motorcycles and mopeds to meet minimum exhaust emissions standard

16 Are you an importer of motorcycles and/or mopeds?

No – I import other vehicles

17 Do you consider the proposed timeframes to require stronger standards for harmful emissions from motorcycles and/or mopeds should:

Not Answered

18 Please explain your answer for question for question two.

Type your answer here :

19 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Not Answered

If you said no, please explain why :

20 If you are a vehicle importer, what impact will this proposal have on your ability to supply motorcycles and/or mopeds to Aotearoa?

Type your answer here :

Proposal four: Provisions for disability vehicles

21 Are you an importer of disability vehicles?

No – I import other vehicles

22 Do you consider the proposed timeframes to require stronger standards for harmful emissions from disability vehicles should:

Not Answered

23 Please explain your answer for question for question two.

Type your answer here :

24 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

Not Answered

If you said no, please explain why :

25 If you are a vehicle importer, what impact will this proposal have on your ability to supply disability vehicles to Aotearoa?

Type your answer here :

Accepted standards from other jurisdictions

26 Do you agree with the comparison of other standards with Euro standards presented here?

Yes

27 If you answered "no", what would you change?

Type your answer here :

Response ID ANON-SA2H-UCTN-8

Submitted to Consultation on Euro 6/VI vehicle emissions standards
Submitted on 2023-06-22 20:34:51

Your details

What is your name?

Name:
Alex Dyer

What is your email address?

Email:
s 9(2)(a)

What is your organisation?

Organisation:
Cycling Action Network

Details of the Proposal

Proposal one: Requiring a stronger emissions standard for light vehicles

1 Are you an importer of light vehicles?

No – I am not a vehicle importer

2 Do you consider the proposed timeframes to require stronger standards for harmful emissions from light vehicles should:

Be bought forward

3 Please explain your answer for question for question two.

Type your answer here :

If the premises presented in the introduction of this consultation that describe such harmful impacts across society from vehicle air pollution are to be taken seriously, the highest level of emissions standards needs to be put into effect as soon s possible.

New Zealand has one of the highest levels of car dependency in the world. We need to cap the harmful particulate air pollution as soon as possible. Waiting 4.5 years until the full restrictions are in effect is irresponsible given the public health impacts.

4 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

No – and why

If you said no, please explain why :

Our recommendation is that all vehicles should be brought up to the highest standards as soon as possible. There should be no delay based on new or existing models that come onto the market.

5 If you are a vehicle importer, what impact will this proposal have on your ability to supply light vehicles to Aotearoa?

Type your answer here :

6 Europe has agreed a stronger Euro 6e standard apply from September 2023. Euro 6e is anticipated to be harmonised into a global standard named UNECE Regulation 83 Series 08 around the middle of 2023, which countries can then adopt. Europe has drafted a proposal for Euro 7 to take effect from 2025 that would reduce diesel vehicle emissions significantly from Euro 6. The U.S. have proposed Euro 7-ambition requirements from 2027, and China from mid 2023. When should Aotearoa require the Euro 6e and UNECE R83/08, and Euro 7 standards on light vehicles, which would further reduce harmful emissions, and why?

Please explain in the box below. :

As soon as possible. NZ is been woefully behind on air pollution controls from motorised transport for decades. While it may be inconvenient for vehicle dealerships, and would create challenges for supplying vehicles in the short term, we need to come up to speed on this situation as soon as we are able.

In order to not let the air pollution problem from road transport become unmanageable, New Zealand needs to be in a position to adopt as high a set of standards as is able, as soon as they come into effect from vehicle manufacturers. Otherwise, we become the dumping ground for older polluting models like we are currently.

Japan Low Harm Standards

7 The proposed Amendment Rule includes the Japan emissions standard 5BA under the definition of Japan 2018 Low Harm. From your perspective, what would the impact on supply be if 5BA was included or excluded from the Amendment Rule?

Type your answer here :

We should not be trading air quality for vehicle availability. New Zealand needs to prepare for a reduction of supply of private vehicles and view it as a sign of progress. Signing up to higher emissions standards sooner will help do this.

8 The proposed Amendment Rule does not include the Japan emissions standard CBA under the definition of Japan 2005 Low Harm. From your perspective, what would the impact on supply be if CBA was included or excluded from the Amendment Rule?

Type your answer here :

no comment.

9 Te Manatū Waka also notes that there may be inconsistencies if 5BA is included and not CBA, however 5BA is subject to stronger testing standards so the impacts are not clear. Do you foresee any inconsistencies if 5BA is included and CBA is not?

Type your answer here :

no comment

Proposal two: Requiring a stronger emissions standard for heavy vehicles

10 Are you an importer of heavy vehicles?

No – I am not a vehicle importer

11 Do you consider the proposed timeframes to require stronger standards for harmful emissions from heavy vehicles should:

Be bought forward

12 Please explain your answer for question for question two.

Type your answer here :

We can't work fast enough to clean up the harmful emissions from road transport. Especially in cities and other residential areas.

13 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

No – and why

If you said no, please explain why :

All dates should come forward with fewer groupings.

14 If you are a vehicle importer, what impact will this proposal have on your ability to supply heavy vehicles to Aotearoa?

Type your answer here :

15 Europe has drafted a proposal for Euro VII to take effect from mid 2027 that would reduce diesel vehicle emissions significantly from Euro VI. The U.S. have enacted Euro VII-ambition requirements from 2027, and China from mid 2023. When should Aotearoa in principle require the Euro VII standard for heavy vehicles and why?

Please explain in the box below. :

As soon as possible. Even if it harms availability. New Zealand needs to prepare for much fewer vehicles that burn fuels period.

Proposal three: Requiring motorcycles and mopeds to meet minimum exhaust emissions standard

16 Are you an importer of motorcycles and/or mopeds?

No – I am not a vehicle importer

17 Do you consider the proposed timeframes to require stronger standards for harmful emissions from motorcycles and/or mopeds should:

Be bought forward

18 Please explain your answer for question for question two.

Type your answer here :

19 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

No – and why

If you said no, please explain why :

All dates should be brought forward with fewer groupings.

20 If you are a vehicle importer, what impact will this proposal have on your ability to supply motorcycles and/or mopeds to Aotearoa?

Type your answer here :

Proposal four: Provisions for disability vehicles

21 Are you an importer of disability vehicles?

No – I am not a vehicle importer and I do not purchase or use disability vehicles.

22 Do you consider the proposed timeframes to require stronger standards for harmful emissions from disability vehicles should:

Be bought forward

23 Please explain your answer for question for question two.

Type your answer here :

4.5 years is too long to wait to expect for newly imported vehicles to not harm others by their operation. Any shortage impacts due to the new standards should give priority to meeting the needs of disability mobility users.

24 Do you agree with the grouping on international standards for each implementation date? Are the requirements and limitations of each international standard appropriately aligned?

No – and why

If you said no, please explain why :

All dates should be sooner, with fewer groupings.

25 If you are a vehicle importer, what impact will this proposal have on your ability to supply disability vehicles to Aotearoa?

Type your answer here :

Accepted standards from other jurisdictions

26 Do you agree with the comparison of other standards with Euro standards presented here?

Not Answered

27 If you answered "no", what would you change?

Type your answer here :

Margaret Hawkes

Director: Vehicle Adaptions Ltd, and Freedom Mobility Ltd

Submission:

Proposed changes to Vehicle Importation Emissions Standards, as they apply to People with Disabilities.

I was invited to a consultation meeting looking at government law changes with regard to much stronger emission standards for the importation of vehicles. The theory is that our NZ emissions are much more dangerous than " the majority of other countries in the world." Therefore, to ensure everyone's health, MoT Te Manatū Waka are working toward a legal change where vehicles with high diesel/petrol emissions will not be allowed to be imported.

MoT Te Manatū Waka appear to be somewhat exempting the disability sector from the initial emissions law, but by 2028 no second-hand vans of the type we use for lotteries grant clients will be allowed to come into the country. At this point only new low emission vans, or vans less than 4 years old with low emissions profiles will be allowed to be imported for use in our sector.

Comparing New Zealand to other 'developed countries' can seem a sensible and logical way forward. However, when looking at the impacts of low emission vehicles on New Zealand passengers needing to travel in their wheelchairs, we must ask ourselves:

"What transport options are in place for New Zealand wheelchair users, and how do these compare to the options available in other so called developed countries?"

The answer is that we have a highly inequitable system for wheelchair users based on the background reason for their disability.

There are 2 categories:

1. Disability caused by an accident:
   These wheelchair passengers are covered by the Accident Compensation Corporation. Most people needing to travel in their wheelchair receive a fully funded new vehicle approximately every 10 years.
   This can be a van with a wheelchair hoist, or a lowered floor vehicle with a ramp. If the person is deemed able to self-drive, they are often set up to drive from their wheelchair, or using a 6 way transfer seat, with specially modified hand controls. These vehicles can cost between $70 000 – $200 000, each, and are, at the moment, based on Mercedes Sprinter, VW Transporter, Renault Master, or the Toyota Hiace, ZX (old shape) or Gen 6. All of these new vehicles currently fit the Euro6 criteria.

2. Disability caused by a genetic condition or a medical condition
   These wheelchair passengers are covered by Ministry of Health, and/or Enable NZ funding. There is no entitlement for any individual to receive funds for a suitable vehicle in which they can travel as a wheelchair passenger.

These wheelchair passengers can apply to the Lotteries Board and Enable to fund a wheelchair van of their own. Decisions are made on Lotteries Board applications every 2 months. Only a third of the applications in any funding round are successful. It can take years of repeated applications before an applicant receives a lotteries grant, if ever. In a successful application one of the strongest criteria is to look to see whether the applicant is highly involved in their community and 'giving back' in that space. This is, of course, a 'chicken and egg situation'. (How can the wheelchair user get out into the community to 'give back' when they have little to no transport to do so?)

The lotteries system and MoH funding mean that very few of these wheelchair passengers ever end up owning a suitable vehicle.

Lotto/Enable funded van applicants were for 20 years given $31 000. For the last ten years this has not covered the cost of a base vehicle and the modifications needed. Applicants would resort to 'give a little' pages, asking Service Clubs for help, or attempting to get a bank loan in to raise the amount needed for an adapted van.

In order to fit the available funds, Lotto/Enable base vans often need to be 10-12 years old Toyota Hiace Welcabs under 150 000km. When the ESC importation rules kicked in, base vans became very scarce and difficult to procure. I made a strong application to the Ministry of Internal Affairs and the base amount was put up to $41 000. However, this proved still not enough to cover the costs for an adapted van, or to make the modifier/importer even a tiny profit.

There was an importation exemption for Lottery funded wheelchair van users, however the time taken to process these exemptions by NZTA was so long-winded as to be, in reality, unaffordable, so that one by one, all the small businesses involved in importing these vans stopped doing this type of work. To my knowledge, there is only one major mobility van importer still bringing vans into the country, and he has considerable other resources behind him.

Looking forward to a time, such as to 2028, when all light (under GVM: 3500kg) imported vehicles must be Euro 6 standard or above, I think we need to ask;

What base vehicles will Lotteries funded MOH wheelchair passengers be using in 2028?

Given, at the moment, lotteries funded wheelchair vans are based on the 10-12 year old Toyota Hiace Welcabs used in the local Japanese market, I can only assume that in 2028 these wheelchair passengers will still only be able to afford 10-12 year old Toyota Hiace Welcab vans. (ie, in 2028 we will need to buy 2016-2018 Hiace Welcab vans). These vans do not fit the Japanese equivalent of the Euro 6 standard. And therefore, according to your proposal, they will not be allowed to be imported into NZ.

My research leads me to believe there will be no Euro 6 compliant vans in 2028 which will be affordable for lotteries funded wheelchair passengers. Furthermore, my Japanese contacts believe that there are no plans for locally used Japanese Hiace Welcab vans to need to fit low emissions standards into the future. This then means that our one affordable van option will not be allowed into the country, and there will be *no base vans at all* available for lotteries funded users from 2028 onwards.

So, from 2028, if the present funding model for MoH/Lotteries funded clients stays the same, what transport options will these users have?

Let's assume that they will have the options they have at present, in 2023:

- Very limited accessible public transport, eg in recent times there was *no accessible bus* from Wellington airport into the city, and the local accessible taxi service is abysmal and unreliable.
- Public transport in NZ is unreliable. Due to a lack of suitable drivers at present, thousands of journeys per day are being cut. Not all public busses are accessible to wheelchair passengers.
- Trains within Auckland on certain lines have been stopped for over a year, while Kiwirail upgrades the tracks.
- In NZ there is no legal requirement for NZ Taxi Companies, or Companion Driving Services to have a certain proportion of their fleet accessible to wheelchair passengers. Eg There is just one wheelchair taxi available in the whole of the Southern Lakes area.
- Where taxi companies do have mobility taxis, these are most often run on a contract model. Ie the contractor owns the mobility van, they choose whether they want a particular job, they cancel whenever they wish, and they have no obligation to work all or any of the jobs. (This is the nature of being a Contractor, but it provides no certainty or trust for wheelchair passengers.) There are no penalties when drivers let people down. It is very common for Christchurch wheelchair passengers to book a taxi from Christchurch airport to home when they fly in from overseas. When they arrive at midnight they find, after repeated phone calls, that the contract taxi driver has decided not to fulfil that booking, or they say they 'can't drive because they have already done too many hours today'.
- Often NZ wheelchair taxis provide regular services to schools or to get intellectually disabled customers routinely to their day programmes. Because of this, many wheelchair users can only book rides between 10am and 2pm. To my knowledge there are at least 3 large NZ cities where wheelchair users cannot book rides after 5pm at night, as this is when the contractor taxi drivers choose to stop being available. Imagine never being able to go out at night?!?
- Because of the lack of reliable taxi services, I know of 3 illegal wheelchair taxi services which have started running in the last 18 months. These companies use vans which are not legal for the transport of power wheelchair users, they are not PSV certified, their owners have no TSL and their drivers have no P Licenses.
- Disability Vehicle Rental Companies provide temporary hire vehicles driven by family / caregivers for those without their own transport. (Especially if they need to travel out of their immediate locality.) However, the ESC importation laws have severely curtailed the ability of these companies to find suitable fleet vehicles, where the daily rental rate is possible/palatable for clients. In the last 4 years, base vans are twice as scarce and three times the previous price.

  Because van scarcity and transport difficulties have escalated for everyone in wheelchairs, my disability vehicle hire company has had to look in crazy places for ways to provide people with the options they need. Among our more outrageous manoeuvres have been to:

  -buy high mileage vehicles and change their engines out for new ones
  -gut campervans and set them up as disability vans
  -buy and re configure old tourism minibuses during covid times
  -seek out retirement village minibuses when these companies were upgrading

Compared to earlier times, the amount we spend in over-maintaining these vehicles is astounding. I am certainly not proud of that the average age of our fleet has gone down and the emissions are certainly a lot worse than in earlier times. However, I am pleased that we have been able to provide disability transport options during a time when people have felt truly without other options.

You might say: that doesn't sound very fair. These transport options are incredibly limited.

How do these options compare to options in the 'developed countries' we compare ourselves to?

- In the UK, people with disabilities are funded a new vehicle through Motability every 5 years, as of right. And public transport options are plentiful and accessible in most urban areas.
- In the USA, veterans receive a new vehicle every 2 years and others get a vehicle according to their health insurance and any litigation payout taken against those who have caused their injury. On top of this, urban areas have 'Transit' – accessible minivans which can be booked at short notice. Depending on the urban area local public transport can also be plentiful and accessible.
- In Australia, 20% of all taxi fleets must be accessible to wheelchair passengers, and generous NDIS gives people the option to fund their own vehicle.
- In Europe –I've seen some of the most innovative personal transport options and I assume this is because wheelchair passengers can afford them. Once again public transport is plentiful and most often completely accessible.

I need to point out that it is completely false for MoT Te Manatū Waka and Waka Kotahi to assume New Zealanders with disabilities have similar options to those in the countries mentioned above.

I believe that, if MoT and their Minister go ahead with their emissions proposal, and nothing else in the disability transport landscape changes, by 2028 and beyond there will be a large number of wheelchair users stuck at home without any transport options, albeit perhaps breathing slightly cleaner air.

To me, this is a serious and farcical downside if the proposed emissions importation plan, as it affects wheelchair passengers, goes ahead. In 2028, there will be uproar, a mutiny, where the media have a field- day revealing this incredibly unfair law.

If you are determined to have the whole community covered by the new emissions importation standards, I would ask you to put all of your efforts into changing our two tier disability funding system, and thereby find the support to finance all wheelchair passengers to have recent model Euro6 vans from 2028.

Thank you for the opportunity to submit my views on this matter.

-Margaret Hawkes.