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

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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

For further contact in relation to this submission:

Kit Wilkerson
Head of Policy and Strategy
VIA - Imported Motor Vehicle Industry Association (Inc.)

Mobile: 021 040 3780

Email: kit@via.org.nz
Web: www.via.org.nz

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.

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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:

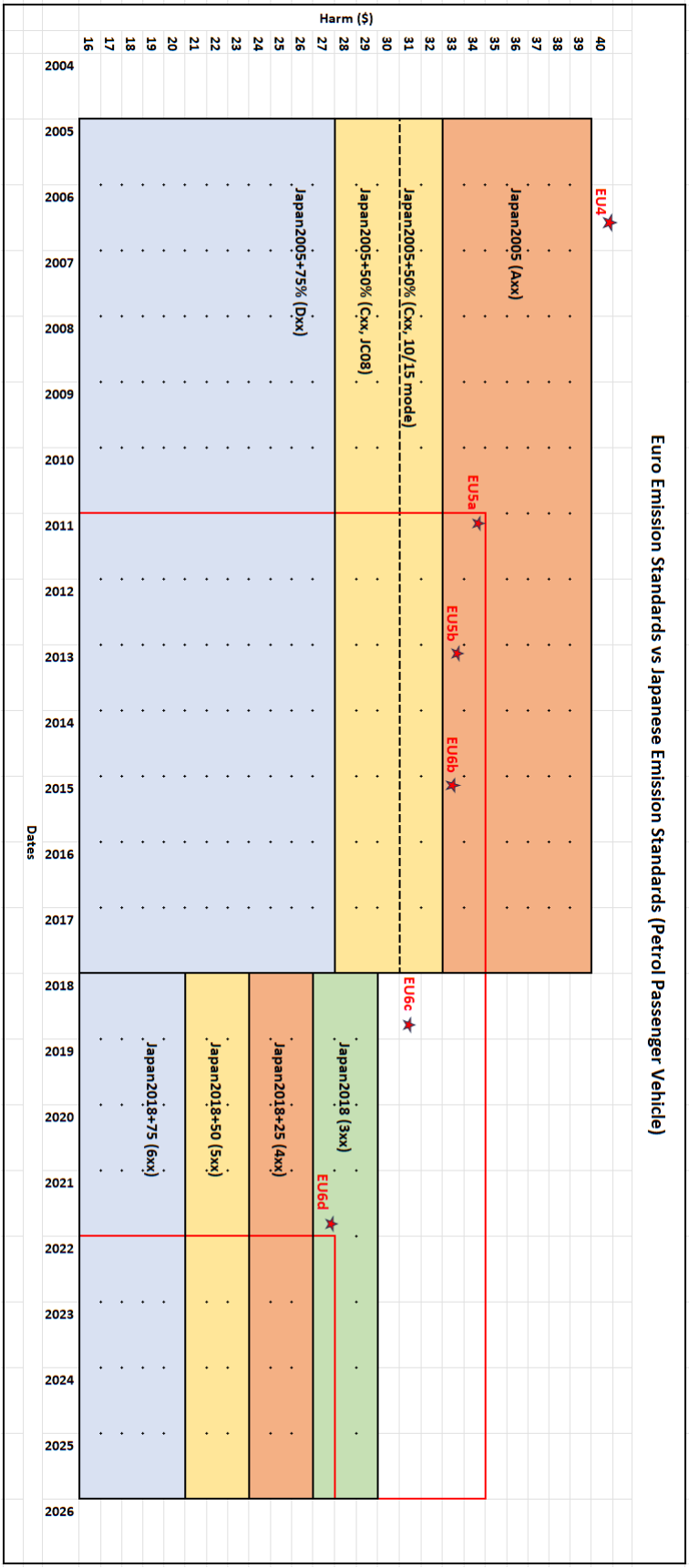
1. VIA represents the interests of vehicle importers, usually focused on used cars from Japan, including light vehicles. We do not represent the interests of vehicle manufacturers.
2. The options are too simple:
    a. If, the government accepts and harmonises with our harm metric then we accept the 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.