



27 November 2020

OC200931

Hon Michael Wood
Minister of Transport

Action required by:
Thursday, 3 December 2020

THE HEADLINE TARGET FOR THE CLEAN CAR STANDARD

Purpose

To provide more analysis to inform your decision on the headline target for the Clean Car Standard (the Standard), of either 105 grams of CO₂ per kilometre in 2025, or 105 grams of CO₂ per kilometre in 2028. This decision is needed to finalise the Cabinet paper for the Standard.

Key points

- Technically it is possible for New Zealand to achieve a fleet target of 105 grams CO₂ per kilometre in 2025 for new to the fleet vehicles. The vehicles needed to achieve this target are available globally, in fact, other countries have already surpassed a fleet average of 105 grams.
- The 2025 timeframe would require a 65 gram CO₂ per kilometre drop in the emissions of the average new to the fleet vehicle over 2022–2025. To achieve this, vehicle suppliers will have to either almost exclusively sell hybrid vehicles, or sell a large proportion of EVs. This will be extremely difficult for them to do over 4-years, because New Zealand is not a priority market for overseas vehicle manufacturers. Our new vehicle distributors are very unlikely to be supplied with sufficient volumes and variety of hybrids and EVs.
- As a result, a 2025 timeframe would disrupt vehicle supply in the short term, push up vehicle prices, and slow the turn-over of the existing fleet. The price increases over 2022–2025 would depend on the vehicle. For small vehicles, which are the cheapest on the market, consumers may need to pay around \$4,000–\$9,200 extra for a new hybrid. For a small EV the increase could be in the order of \$20,000–\$40,000.
- These price increases would flow through to the wider vehicle market making it harder for low and even middle income New Zealanders to afford newer, safer, low CO₂ vehicles.
- A target of 105 grams of CO₂ per kilometre in 2028 would mitigate the supply effects and dampen the rises in vehicle prices. This is because the longer timeframe makes it more likely that distributors will be able to access sufficient volumes of low CO₂ vehicles and the price differences between conventional, hybrid and EVs would have narrowed.
- Even with a 2028 target, many low income New Zealanders will find it difficult to afford a cleaner vehicle. This is why complementary policies like the Clean Car Discount are essential. They promote equity by addressing the price barrier.

- The time lost in moving to 105 grams could be made up by setting stricter future targets



Recommendations

We recommend you:

- | | | |
|---|--|----------|
| 1 | | Yes / No |
| 2 | <p>agree that along with the above adjustments the first headline target for the Clean Car Standard be set at 105 grams of CO₂ per kilometre in 2028</p> | Yes / No |
| 3 | <p>note that in the absence of a demand-side measure, like the Clean Car Discount, the Clean Car Standard even with a target of 2028 could raise vehicle prices making it more difficult for low income New Zealanders to access newer, safer, low emissions vehicles</p> | Yes / No |



Ewan Delany
Manager, Environment, Emissions and Adaptation

27 / 11 / 2020

Hon Michael Wood
Minister of Transport

7 / 12 / 2020

Minister's office to complete:

- | | |
|--|---|
| <input type="checkbox"/> Approved | <input type="checkbox"/> Declined |
| <input type="checkbox"/> Seen by Minister | <input type="checkbox"/> Not seen by Minister |
| <input type="checkbox"/> Overtaken by events | |

Comments

Contacts

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- 1 At your meeting with Transport officials on 23 November 2020 you asked for further analysis about whether New Zealand's vehicle industry could achieve a fleet average target of 105 grams of CO₂ per kilometre in 2025.

The target will change the number and type of vehicles coming in but it will also affect the turn-over of the existing fleet

- 2 The Standard's purpose is to assist New Zealand to decarbonise its light vehicle fleet. The rate at which decarbonisation occurs will depend on the speed that the:
 - 2.1 number of low CO₂ vehicles entering the fleet increases
 - 2.2 number of high CO₂ vehicles in the existing fleet decreases
 - 2.3 vehicle kilometres travelled by high CO₂ vehicles is reduced, or displaced by low carbon modes, such as public transport and electric bikes, or is fuelled with biofuels as a transitional measure as the fleet gradually electrifies.
- 3 The Standard's target directly impacts on (2.1) and indirectly on (2.2). Given the inter-play, the target has to create the right level of tension in the vehicle market. It has to cause suppliers to increase the supply and variety of low CO₂ vehicles, without being so aggressive that it causes people to hold onto their high CO₂ vehicles for longer.
- 4 A too aggressive a target will make it very likely that the supply and price risks from a regulated CO₂ standard will materialise. These risks are that the supply of certain vehicles will be reduced and vehicle prices will rise. The price rises reflect:
 - o the reduced vehicle supply
 - o the higher cost of vehicles with better CO₂ reducing technology, such as petrol hybrids and EVs
 - o vehicle suppliers passing on the cost of their charges for not meeting their CO₂ targets in vehicle prices.
- 5 These supply and price effects would slow-down the turnover of the existing fleet by causing many people and businesses to hold onto their existing high CO₂ vehicles for longer.

An example of the supply impacts and price rises that could occur

- 6 To give you a sense of the supply and price changes that could occur we have looked at how two comparable vehicle models, the Suzuki Swift and the Toyota Yaris, are likely to fare under the alternative targets. This comparison is useful because both distributors released hybrid variants of their vehicles this year. When a new variant is released, generally manufacturers do not supply our distributors with another major update of the vehicle within 5 years.
- 7 As well, in 2019 the Suzuki Swift was the top selling new small car, accounting for around 40 percent of sales. How this vehicle fares against the CO₂ targets could determine whether or not the supply of new small cars is constrained for a period of time.

- 8 Table 1 compares the CO₂ emission performance of the vehicles against the 2025 and 2028 targets. It also shows their advertised retail prices. The variants of the Swift and Yaris in the table are those currently available new in New Zealand.

Table 1
The CO₂ performance of the Swift and Yaris

Vehicle model	Variant	Grams CO ₂ per km	Performance against 2025 targets	Performance against 2028 targets	Retail price
Suzuki Swift	Hybrid GLX	94	Exceeds in 2025	Exceeds in 2027	\$26,500
	Hybrid LTD	94	Exceeds in 2025	Exceeds in 2027	\$28,500
	GL manual	106	Exceeds in 2024	Exceeds in 2026	\$20,750
	GL automatic	110	Exceeds in 2023	Exceeds in 2025	\$22,990
	RS automatic	119	Exceeds in 2023	Exceeds in 2024	\$27,990
Toyota Yaris	GX manual	114	Exceeds in 2023	Exceeds in 2025	\$25,990
	GX hybrid	76	Lower than target	Lower than target	\$27,990
	ZR	114	Exceeds in 2023	Exceeds in 2025	\$29,990
	ZR hybrid	76	Lower than target	Lower than target	\$32,990

- 9 With a 2025 target, 2023 would be the last year Suzuki could supply its current conventional Swifts, if that was all it was supplying. Its new hybrid could be offered up to 2024. With a 2028 target, Suzuki's conventional Swifts would stop being supplied over 2024–2025. Its hybrid could be supplied up to 2026.
- 10 Suzuki could keep its Swifts in the market by introducing EVs to its fleet. Even one model across its range could potentially allow it to keep its Swifts in the market. In sufficient volumes, EVs have a large impact on average fleet emissions.
- 11 Toyota will fare better than Suzuki. Its Yaris hybrid has lower CO₂ emissions than the required targets in both 2028 and 2025. Its conventional Yaris may need to be removed from the market after 2022, with a 2025 target, and after 2024, with a 2028 target.
- 12 For both vehicle models the 2025 headline target would have a larger impact on supply and prices than the 2028 target. With the 2025 target, using this Swift and Yaris analysis:
- 12.1 there could be a shortage of new small cars for a period of time with the potential exit of the conventional Swift given it is the top selling small car
- 12.2 in 2024 people who want a new Swift would have to pay up to \$5,750 more. This is the maximum price difference between the conventional Swift and the hybrid variant
- 12.3 after 2024 people who would have purchased a Swift hybrid would potentially have to pay \$3,500 more if they opt for the Yaris hybrid as their alternative purchase
- 12.4 in 2023 people who want to buy a new Yaris needing to pay up to \$4,000 extra for the hybrid variant.
- 13 The increases illustrated in the Swift and Yaris example above could lead some people to hold onto their existing vehicles with higher CO₂ emissions for longer,

slowing down the turnover of the existing fleet. With a 2028 target, the supply and price increases would tend to impact 2-years later. This allows the possibility that within these 2-years, the supply of hybrid vehicles and EVs increases and their retail prices fall. This would minimise the cost imposition on households and businesses of new vehicles, and maintain a faster rate of turn-over in the existing fleet.

Although low CO₂ vehicles are available globally we may not get the volumes we need

- 14 The other factor that has to be taken into account, in setting the target, is the limitation of New Zealand's status as a non-priority market for overseas vehicle manufacturers.
- 15 As New Zealand is not a priority market, our new vehicle distributors do not make the final decisions about what variants and volumes of vehicles will be supplied. We know several have struggled to access vehicles with better CO₂ reducing technologies.
- 16 As a result, new vehicle models with lower CO₂ emissions that are available overseas, are either not sold here, or, they are made available with a substantial delay often of several years. For example, the Suzuki Swift hybrid has been available globally since 2017¹ and it can be purchased here as a used-import². However, it was only supplied new to Suzuki New Zealand this year.
- 17 The Standard will give our distributors more leverage with manufacturers. However, our non-priority status makes it hard to know to what extent distributors will be able to access sufficient volumes of low CO₂ vehicles at low enough prices to meet their targets.

Are vehicle suppliers likely to access enough low emission vehicles by 2025?

- 18 As the Swift-Yaris example shows, to meet a target of 105 grams vehicle suppliers will have to either almost exclusively sell hybrid vehicles, or sell a large proportion of EVs. Suppliers will have to stock EVs if they want to continue to sell conventional vehicles. This is what has occurred globally in markets with CO₂ standards.
- 19 For example, this year vehicle distributors in the United Kingdom have to meet an average target of 100 grams for cars and SUVs. To achieve this, all of the models Suzuki sells are only available as hybrids. While Suzuki does not sell any EVs globally, other brands do and the share of EVs is now over 10 percent of monthly registrations.³
- 20 To overcome the price premium that consumers in the United Kingdom face, \$6,700 grants and other incentives are available on EVs.
- 21 The United Kingdom is an example of a market that has already attained the 105 grams target. From this we know that it is technically possible for New Zealand to achieve a CO₂ average for new to the fleet vehicles of 105 grams in 2025.
- 22 However, New Zealand is unlikely to gain supply of enough low CO₂ variants to deliver on the 105 grams target in 2025. The constraints that are likely to apply in the new and used-import vehicle sectors are outlined in Table 2.

¹ <https://www.stuff.co.nz/motoring/news/88002250/suzuki-swift-gets-makeover>

² See <https://www.glv.co.nz/blog/suzuki-swift-hybrid-gulliver-nz>

³ <https://www.smmi.co.uk/vehicle-data/evs-and-afvs-registrations/> states UK vehicle sales in September 2020 constituted 6.7% BEV plus 3.8% PHEV

Table 2
Constraints on New Zealand's access to low CO₂ vehicles over 2021–2025

	New	Used
Electric (BEV/PHEV)	<p>Manufacturers will continue to focus on the valuable priority markets, markets with strong CO₂ standards and financial incentives, and markets with approaching fossil fuel vehicle bans (especially in Europe, China, California). This will starve New Zealand of EVs until global supply ramps up towards 2030.</p> <p>Example: New Zealand was supplied with less than 50 Mini Cooper EVs in 2020. These sold immediately. Globally 11,000 were manufactured in 2020.</p>	<p>Volumes are limited by the number bought in the domestic Japanese market. Japan is our source of cheap used vehicles.</p> <p>Example: In 2019 only 40,000 EVs were purchased in Japan and half were Nissan Leafs. This is considerably less than the annual number of around 150,000 used vehicles that New Zealand imports.</p>
Hybrid	<p>Same issues as above. However, global supply of hybrids is greater than EVs by a factor of 2-4.</p> <p>The top selling two new vehicles in New Zealand are utes. There is no hybrid nor electric ute for sale globally. They are expected to be made available over 2021/22. If New Zealand gains access to them at the same time as the priority markets we would only get small volumes.</p>	<p>Will be plentiful supply but the variety is limited (e.g. hatchbacks, not SUVs).</p> <p>Example: Japanese consumers have bought over one million hybrids per year for many years, but this is dominated by the Toyota Prius/Aqua. Variety will improve this decade.</p>

- 23 These barriers will ease significantly over 2025–2028 as manufacturers step up their production of low CO₂ vehicles and technology costs fall. This is why we recommend an end-date of 2028 for the 105 grams target.

Will the price of low CO₂ vehicles have fallen sufficiently enough to support 105 grams in 2025?

- 24 We could expect new hybrids and EVs to steadily progress towards price parity in our market over 2025–2030. This is not soon enough to confidently support the 105 grams target in 2025.
- 25 Price parity refers to the point where the cost of manufacturing an EV has reduced to the level where it is the same as manufacturing a comparable conventional vehicle. Because EVs originally had reduced capability, in the form of driving less distance on battery charge compared to a fuel car, price parity must assume some sort of baseline performance, such as 300–400 kilometre per charge.
- 26 Consumers place greater importance on upfront purchase price than ongoing vehicle costs. For this reason, price parity does not consider lower operational costs, even if they are significant. In New Zealand the cost of driving an EV is approximately 7 times cheaper than a petrol vehicle, yet EVs are only 2 percent of vehicle registrations. New Zealanders cite upfront purchase price as the primary barrier to purchase.

- 27 Price parity will not be evenly distributed across makes and models at the same time. It will begin with premium vehicles and gradually expand to lower cost makes and models. Additionally, shorter-range vehicles with smaller batteries will reach price parity sooner than long-range vehicles with large, expensive batteries.
- 28 In the United States, manufacturing cost parity is expected between 2024 and 2028 depending on vehicle type and battery capacity.
- 29 New Zealand may have access to manufacturing price parity in a similar timeframe, but this is highly reliant on international legislative and manufacturing decisions outside our control. We could expect our new vehicles to steadily progress towards parity over 2025–2030. This is not soon enough to confidently support the 105 grams target in 2025.
- 30 For used-import EVs, price parity for newer variants will lag behind new EVs. However, used-imports benefit from the Japanese domestic subsidies on EVs. The problem with current imports is that their battery range is depleted and limited.
- 31 A 2011 Nissan Leaf costing \$10,000 today can barely drive 100 kilometres per charge. However, if such a vehicle is used as a city 'run about' the cheaper cost of electricity makes the vehicle financially attractive, even taking account of the likely lower resale value with the depleted battery. Long term, imported-used EVs will no longer be a compromise when the latest Japanese EVs (with over 300 kilometre range) are sourced. However, supply of these vehicles is severely limited compared to the volume of used-imports New Zealanders buy.
- 32 Hybrids will also reduce in price, but as they have a battery and a combustion engine it will be difficult for them to reach price parity with a conventional vehicle. This means that as conventional vehicles are removed from the market, consumers will have to pay higher prices for hybrids.
- 33 The higher prices of EVs and hybrids is why developed countries complement their CO₂ standards with financial incentives/disincentives. The standards increase the supply of low CO₂ vehicles and the latter remove the price barrier to their purchase. For example, in Norway, various vehicle models are already cheaper in electric variants than in fossil, due to the very strong financial incentives and disincentives (see paragraph 36).

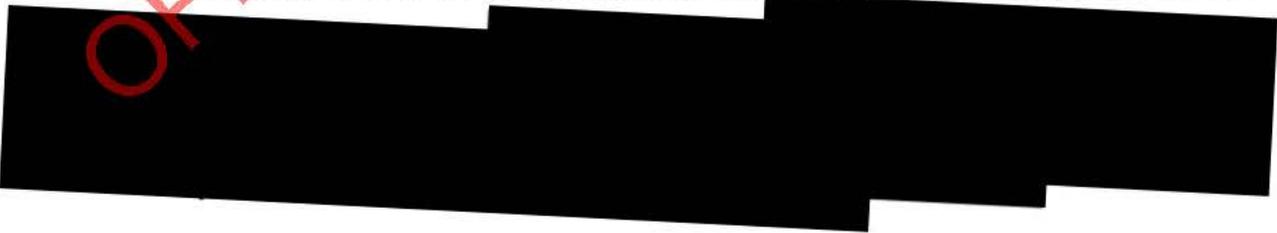
Officials sought independent advice on the date for the target and this confirmed 2028 as more appropriate

- 34 In advising the former Associate Minister of Transport on the target, we sought an independent view from the International Council on Clean Transportation⁴ (the Council). Their advice lead us to the view that a target of 105 grams CO₂ per kilometre in 2025 would be counterproductive.

⁴ The Council is an independent non-profit organisation based in the United States that provides technical and scientific analysis to environmental regulators

- 35 The Council advised us that a target requiring a 40 percent reduction over 6 years (note it will now be around 4 years) in the average emissions of vehicles entering our fleet is:
- too short a period of time to both impose a very ambitious level of CO₂ reduction and give industry sufficient time to adjust to operating in a regulated environment
 - plausible but unlikely to be achievable without extremely strong vehicle policies beyond the Clean Car Standard and the Clean Car Discount. Internationally, only Norway and Sri Lanka have achieved this pace of reduction. Sri Lanka used substantial fees on the registration of new to the fleet vehicles. These fees have since been repealed as they proved unpopular.
- 36 In 2018 the average vehicle entering Norway had CO₂ emissions of 74 grams. Norway has achieved this through a CO₂ standard and aggressive use of subsidies and fees. Norway:
- has a one-off registration fee for new vehicles based on CO₂ emissions and vehicle weight. If the average vehicle entering our fleet were to enter the Norwegian fleet, it would attract a registration fee of around €20,000⁵ (NZ\$35,000)
 - exempts EVs from import tax and its 25 percent sales tax.

In summary we recommend an end-date of 2028 for the first target followed by much stricter second and third targets

- 37 A short sharp shift to 105 grams in 2025 is not advisable given New Zealand is not a priority market for vehicle manufacturers, EVs are unlikely to reach price parity here before 2025, and global supply of EVs will be stretched in the medium term.
- 38 Instead, an ambitious drop to 105 grams in 2028 can be achieved. This target is more likely to support a transition to a lower CO₂ light fleet because it minimises supply constraints, significant price rises and the equity issues that would arise.
- 39 Following 2028 more aggressive targets could be set as long as the industry and the public are given time to prepare. From 2030 onwards, it is likely that ambition levels for the number of EVs can escalate rapidly. This will however need to be reviewed once the impact of the Clean Car Standard and complementary measures are known.
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⁵ https://theicct.org/sites/default/files/publications/EU_vehicle_taxation_Report_20181214_0.pdf

Next steps

41 Once you have informed us of your decision on the headline target targets you want to pursue, we will amend the draft Clean Car Standard Cabinet paper and finalise it for your approval. You could also use this paper to signal your intention to pursue complementary policies. As well, the final version will address the points you raised at the meeting with Transport officials on Monday 23 November 2020. These were to:

41.1 provide more information on the Standard's impact on New Zealand's commitments under the Paris Agreement on Climate Change, in terms of CO₂ avoided and fiscal cost reduced

41.2 review the text on the Standard's target

41.3 provide more information on the impact of fuel savings for low income households

41.4 include in the section on the Standard's alignment with our trade obligations, the point that CO₂ standards in other countries have not raised trade concerns.

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