

Mobility Tokens, M-Tokens.

System specification, Version 1.1

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Brief description

The New Zealand Emissions Trading Scheme needs support from a complementary solution to help reduce emissions from the light-vehicle fleet¹.

This document describes a consumer level Diminishing Tradable Fossil-Fuel Purchase Allowances System called the 'M-Token System' with a sinking cap that is recommended for consideration to reduce emissions from the New Zealand light-vehicle fleet and complement the NZ ETS.

In the proposed system all adults aged 16+ (but not organisations) would receive free quarterly equitable (not equal) allocations of M-Tokens that in total would represent the nation-wide budget for emissions from the light-vehicle fleet for that quarter. The total tokens issued each quarter would be fewer than for the previous quarter, adjusted for seasonality. Each token would represent permission to purchase fuel that when used would emit 1 kg of CO₂-e emissions. Purchasing fuel for light-vehicle use would require the surrender of tokens.

The system would be fully digital, and it would be easy for people and organisations to buy (from people who have a surplus, directly or through a market-maker) any additional tokens they need; or save, sell, or gift any that they have that are surplus to their needs.

Fuel retailers will not be allowed to sell fuel to light-fleet vehicles without receiving tokens and will be required to account for all the tokens they receive from sales of fuel.

It is thought that the nationwide public transport ticketing system, Motu Move, could be adapted to provide account structures for management of the system at minimal cost, or alternative software could be developed at a manageable cost. Transactions could be

¹ Also sometimes referred to as light-duty vehicles. Includes all vehicles with mass less than 3,500 kg. Includes cars, vans, SUVs, utilities, etc., owned by households and organisations.

completed using ubiquitous smart phones, though facilities for card-based or manual transactions could also be established.

This document sets out the benefits of implementing such a system; a detailed specification for the system; notes to guide further development and implementation of the system; persona descriptions of people using the system and the impact it has on them; and questions and answers related to the decisions made developing the system specification.

Benefits

There would be substantial benefits. Such a system can be expected to:

1. Achieve emissions reduction in a way that provides a financial benefit to most (somewhere between 2/3 and 8/10) households. This is unusual because most climate policy increases household costs.
2. Provide an economic driver for individuals to make emissions-reducing changes to their trip-making choices at a low cost to society and without new taxes.
3. Give certainty to the reduction of emissions from the light-vehicle fleet over time, and through certainty:
 - Give organisations and individuals the confidence to innovate by investing in emissions-reducing solutions.
 - Encourage demand for land-use changes and new public transport services as ways to reduce the need to use up tokens.
4. Encourage the use of new public transport services as they come on stream.
5. By allocating tokens to all people, provide a valuable incentive for EV uptake that has been missing since the cancellation of the Clean Car Discount. EV owners would receive tokens that they do not need to use, so could sell.
6. Encourage greater uptake of EVs by organisations as they will be able to avoid the need to purchase tokens and so lower their operational costs.
7. Reduce traffic congestion in major urban areas as people make greater use of available public and shared transport opportunities.
8. Provide some stability to the marginal cost of fossil-fuelled motoring in the face of volatile fuel prices caused by international events, as changes to the price of fuel and the value of tokens can be expected to offset each other to some extent.
9. If introduced in conjunction with the switch from FED to RUC, reduce the savings achieved by owners of extremely high-emitting petrol vehicles, and offset the added costs incurred by owners of low-emitting petrol vehicles that will result from the switch.
10. Compared with observed current settings, create a stream of emissions reductions, that when valued at the central shadow price for CO₂-e emissions over the coming 25 years, discounted at 3%, has a present value in the order of \$16.4 +/- \$5 billion. This only includes the emissions reduction value and does not include valuation of the other benefits outlined above, nor health benefits valued at \$1.1 billion per year from 2030.
11. Benefit both sides in every trade of tokens. Those who sell their tokens view the cash as more valuable than the tokens given up. Those who buy the tokens value their use more than the cash they give up.

Specification

For a person who does not engage with the details of the system, the following box contains a description of the simple operation of M-Token System that applies to every person 16+ yrs of age:

1. One off:
 - Load the M-Token app on phone, and register for an M-Token account, OR: Go online and register for an M-Token account; OR: Go to an NZTA agency and register in person for an M-Token account. If not owning a smart phone, receive an M-Token card in the post.
 - Complete profile information to qualify for any equity adjustment entitlements.
2. Ongoing:
 - Observe the free quarterly deposits of M-Tokens into the M-Token account.
 - If owning/operating a fossil-fuelled vehicle, when buying fuel, use the quantity of tokens automatically advised by the retailer: either by swipe on phone, or swipe with the M-Token card. Observe the tokens being deducted from the M-Token account.
 - If needing additional tokens, buy them at the market price by the most convenient method (on phone, online, in person at fuel station, or in person at NZTA agency).
 - If having surplus tokens (due to no fossil-fuelled vehicle or making no or few fossil fuel purchases) save, gift, or sell surplus tokens, privately or through the market, by the most convenient method (on phone, online, in person at fuel station, or in person at NZTA agency).

Whilst simple in operation, there would be many details to be worked out. Important details are listed below.

1. The proposed solution is tradable tokens to purchase fuel for use by a light-fleet vehicle.

The light-vehicle fleet is a discrete generator of GHG emissions that can be measured and therefore managed because the vast majority of light-fleet vehicles purchase fuel from service stations. (Mechanisms will be needed to ensure that fossil-fuelled light vehicles that are filled up from bulk, not service stations are included in the system, see Implementation Notes, item 7).

2. The system is not a carbon tax because the NZ ETS already taxes carbon emissions upstream.

While denominated in terms of emissions, the tokens will determine 'who' can legally purchase the fuel that makes the emissions (that have been taxed via the NZ ETS and are included in the price of the fuel). The M-Token System would find low-cost-to-remove emissions opportunities that are hidden from the NZ ETS because the marginal cost of even low-cost-to-remove trips in fossil-fuelled vehicles is considered to be trivial.

3. Surrender of tokens will be required based on the emissions content of the fuel.

One allowance (that could be called a token, a credit, a permit, or one of several other relevant terms, or could be given a brand-style name for better marketing, to be finalised) will legally allow buying fossil fuel that when used in a light vehicle will release 1kg of CO₂-e.

4. The requirement to surrender tokens will apply to all owners/operators of light-vehicles, including individuals and organisations, with no exceptions or exemptions.

Similarly, petrol and diesel retailers will be required to account for all sales of fuel to the light-vehicle fleet and turn in the correct quantity of surrendered tokens.

5. There will be free (no payment required) quarterly allocations of tokens to all adult people (16 yrs+) with some small exceptions. There would be no allocations to organisations.

Exceptions envisaged include incarcerated individuals, and immobile elderly living in care homes. There could be other examples. A person will be a Qualified Individual if they are 16+ years of age and not excluded in the final definition of the system.

6. The quantity of tokens allocated for the first quarter will be equivalent to the seasonally adjusted nation-wide emissions from the light-vehicle fleet for the previous quarter. These will be allocated to all adults on an equitable (not equal) basis.

Subsequent quarter's total allocations will be fewer than each preceding quarter, adjusted for seasonality.

7. An Equity Adjustment Factor (EAF) methodology and an Equity Backstop provision will be established to ensure allocations are sufficiently equitable and there is a backstop for people who end up without tokens and no way to obtain them.

It is proposed that the EAF be developed with the community in a deliberative democracy process. The literature suggests equity adjustments based on income, number of dependent children, and the distance rural residents live from urban centers. Community consultation could help add to and refine this list.

Undoubtedly there will be winners and losers from the equity adjustment process. The objective is to implement the system that treats all people as fairly as possible, given their circumstances.

The equity backstop is envisaged as a number of tokens that would be reserved, deducted from the initial nation-wide allocation, that could be allocated (for free) to people in some form of distress due to low income or adverse events. There would be clear criteria under which people could apply for tokens from the backstop. Any backstop tokens received would not be able to be sold, could only be used. Each quarter, the number of backstop tokens issued during the previous quarter would be deducted from the gross allocation for the new quarter.

8. The gross quantity of tokens to be issued in the first quarter of system operation will include the previous quarter's emissions from organisation-owned light-fleet vehicles. Because all tokens are allocated only to individuals, on average individuals will receive more tokens than the amount of fuel they purchased in the previous quarter. Many (though not all) people will receive more tokens than they will want to use in the first quarter.

To continue to operate their fossil-fuelled vehicles, organisations will need to buy tokens from the market-maker (see below). The market-maker will buy from individuals. (Organisations will not be permitted to buy from individuals: to keep GST implications simple).

Organisational buying of tokens will transfer money from organisations through the market to individuals. There are three outcomes. First it will ensure there is market activity. Second, it is expected that organisations will quickly see the benefits of electrifying their fleets to avoid needing to buy tokens. Third, to the extent that the system causes organisations' costs to rise, and to raise their prices as a result, the funds to pay higher prices for goods will already be distributed throughout the economy because ordinary people in society will have sold the tokens to the market and received payment.

9. One or more approved market-makers will stand in the market to buy surplus tokens from individuals and sell tokens to organisations and individuals who need more than their allocation. Individuals can trade privately, gift tokens to other people or organisations, or buy or sell with the market-maker.

Many people (such as EV owners or people who do not drive) will not need their full allocations and will provide the supply for the market.

Market-makers will be required to advertise buy and sell prices for tokens and to hold stocks of tokens so that orders can be filled. They will also be required to provide instant updates of quantities of tokens bought and sold and the prices they change hands for (much like the share market).

Market-makers' buy and sell prices may give them a margin that will cover the costs of operating the system and reward them for the risks they take as market-makers. Having multiple competing market-makers is expected to ensure margins are competitive.

Market-makers would be licensed to take the role and would be subject to a code of conduct to ensure they treated customers fairly.

10. Revenue that individuals receive from selling tokens that were issued to them for free will not be subject to income tax (on the basis that it is the sale of a capital item).

However, profit made by buying and selling tokens, whether by individuals or market-makers, will be taxable income as defined by the taxation legislation.

Market-makers selling tokens must add GST to their selling prices. Organisations buying tokens can treat the purchase as a normal business cost and claim back GST.

11. In order to receive a quarterly allowance, every Qualified Individual (see above) will need to establish an M-Tokens account that their quarterly allocation will be placed into. Organisations will establish M-Tokens accounts that their purchases of tokens will be placed into.

Technology will ensure it is easy to carry out allowance transactions including surrendering the tokens when buying fossil fuel. The accounts could be operated through the National Ticketing System, Motu Move, currently being implemented for public transport, or alternatively bespoke applications could be developed.

12. Token allocations will reduce every quarter in line with a sinking cap that will achieve an agreed national reduction target for light-vehicle fleet emissions by an agreed date.

Part of the further development process must include deciding what the reduction target is and by what date the target will be achieved. An example of a target: zero emissions from the light vehicle fleet by the end of 2050.

13. Tokens will not expire and can be saved up. There is also the potential for people to borrow or lend tokens, subject to some system design to ensure the process cannot result in exceeding emissions targets.

To protect any substantial early emissions-reduction success, if total banked tokens (across all holders, summed together) at the end of a quarter exceed a threshold (to be determined, but perhaps 1.5 times the current year's total planned allocations) the following quarter's total allocations must be reduced accordingly, by the 'excess stock holding', being the amount that total banked tokens exceed the threshold.

14. The price that the tokens will trade at is unknown. The price will be set by supply and demand.

With a sinking cap, the total tokens allocated each quarter will be fewer than the previous quarter, restricting supply. With restricted supply prices could be expected to rise. Also, it is possible that people will choose to hold on to their surplus tokens which would also restrict supply and cause prices to rise. The price impact would be offset by the extent to which demand was reduced by people avoiding using up their tokens by changing their mode or quantity of travel or switching to more energy-efficient vehicles or EVs.

Implementation notes

The following is a compilation of thoughts related to bringing the M-Token System into being. Further matters will inevitably arise and need to be added to this list.

Developing community support

Ideally the M-Tokens concept will be socialised with a number of community organisations as a starting point, and a deliberative democracy process undertaken around the country so that ordinary citizens have a real opportunity to engage and contribute to the final design.

Initial outreach should occur to organisations such as the Sustainable Business Network, iwi, ITS New Zealand, the Sustainable Business Council, the Helen Clarke Foundation, the Citizens Advice Bureau, the Climate Change Commission, philanthropies, EECA, and others in a snowballing process that ensures inclusive socialisation and the potential for a leadership team to emerge. Some funding would then be needed to support substantial citizen engagement.

A strategy would be developed for citizen engagement to help define and agree such matters as the 2050 goal, the equity adjustment factor, the equity backstop quantity and rules and others. At some point it would become clear whether an operational pilot or experimentation is needed, and what such a pilot would need to demonstrate or resolve, and for whom.

Issues and uncertainties

The solution is not without potential issues and uncertainties.

The biggest issue is the need to go 'all in' on the solution. It is not a solution that can be half implemented. This could be offset by having a time-limited pilot period of (say) five years,

following which the whole solution would be re-evaluated. Dales (1968) proposed precisely this arrangement as a way to trial his proposed solution for managing waterway pollution. New Zealand does have some history of going 'all in' on large important decisions: MMP, ACC, and the Auckland Super City come to mind as examples.

The biggest uncertainty may be how supportive the general public of New Zealand will be to the solution. In two survey series of New Zealanders' attitudes towards emissions reduction and climate change, it is clear that climate change is a personal issue for a majority of New Zealanders, and people are looking for genuine government and business leadership on reducing emissions and the impacts of climate change. Kantar (2025), IAG (2021) and IAG (2025). Based on Kantar (2025), it would appear that getting business brands onside could be a valuable strategy.

Other issues and uncertainties include:

1. Who should govern, and who should manage, the M-Token System. Certainty is very important and the M-Token System should be immune from unnecessary change, so as to ensure it is effective. It is suggested that the Reserve Bank be given the role of governing the M-Token System, and that NZTA be responsible for implementation and management. Governance would involve making decisions about changes to the system, such as the formula for the number of tokens issued, and if at some point there should be a review and how that review is carried out. The logic of the Reserve Bank as the governor of the system is that the solution could cause some inflation, and the Reserve Bank would take this impact into account in its management of the money supply. The Reserve Bank is independent of the Government and has a track record of making decisions that are seen to be independent.
2. Privacy issues associated with the purchase and use of tokens, and who would have access to purchase and usage information and under what circumstances. (There should be maximum privacy). The solution could enable anonymous purchase of tokens at point of purchase of fuel, enabling for example, purchase without using an M-Token card or app. This could also streamline organisation purchase of M-Tokens, as the required quantity could be purchased from the market via the fuel retailer, and paid on an invoice that shows both costs: the fuel and the M-Tokens.
3. Establishing the quantity of tokens for the first quarter under the system. It takes over two months to gather and publish the energy sales at the end of a quarter, so the previous quarter's information would not be available. (Alternatives include basing the very first quarter on the same quarter for the previous year, or the second-to-last quarter for the previous year). A related issue is the possibility that there will be substantial hoarding of tokens in the first quarters of operation, which would cause the price of tokens that are available to be very high. (An option if this is considered a substantial risk is to uplift the initial allocation by an agreed percentage to offset the impact of initial hoarding: A pilot experiment could help to anticipate potential for hoarding; and if there is an uplift it should only be a one-off).
4. Potential for fraud: Need to consider if there are obvious places in the system that could be exploited by fraudsters, and how to ensure sufficient system security. On the same topic, consider the possibility of people defrauding other people, and how to identify and prevent that happening.
5. Tracking light-fleet diesel sales: Diesel is sold to both heavy fleet vehicles and light fleet vehicles, through the same pumps. What mechanisms will need to be

developed to give certainty that a) tokens are surrendered for purchase of diesel for the light fleet, and b) fuel companies account for all the tokens.

6. Petrol sales that are not for the light fleet: One option is to make ALL petrol sales subject to the M-Token System even if not for light-fleet vehicles. This could include fuel for lawn mowers, boats, and other off-road vehicles.
7. Sales of petrol and diesel in bulk will also be an issue to be dealt with. It is suggested that when purchasing bulk fuel, organisations will be required to account for any usage of that fuel by light fleet vehicles. The proposed mechanism is the issue of a separate class of tokens for non-mobility/heavy fleet bulk fuel, such that the purchaser of bulk fuel may obtain such NM/H tokens for free, and use them along with ordinary m-tokens when purchasing bulk fuel. The fuel merchant does not need to verify the split between the token types that are surrendered. The bulk fuel purchaser must maintain records and ensure sufficient regular tokens are turned in to cover the light fleet proportion, subject to regular reporting and audit as needed. The separate tokens for NM/H ensure bulk usage does not distort the market for ordinary tokens.
8. What happens if carbon capture and sequestration gets going in a big way and emissions-reduction ceases to be an issue: The logical response is that the M-Tokens solution would be stopped. There might need to be some clear rules around the extent of capture and sequestration, or a target lowering of the amount of CO₂ in the atmosphere, that would trigger such a change.
9. Whether there is a place or need for experimentation or pilot projects. The M-Token System is a solution that cannot be 'half' implemented. (Possible responses: a series of simulations to test out all the possible variables and make sure all issues have been considered; a time-limited implementation across the whole country (say for 5 years) with a review and confirmation that the solution should continue after that time has passed; implementation of a full pilot project in one town of New Zealand, with appropriate additional considerations for participation and 'cross border' issues from out of town vehicles).
10. What to do if the price of tokens becomes extremely high at the start as people hold on to their tokens, regardless of the prices on offer (in other words, a serious shortage of supply of tokens available for organisations): how would government intervention be avoided, for example avoiding government just issuing a lot of additional tokens to ease the pain (and therefore causing the system to fail)? (Possible answers: enable borrowing of tokens from the future (only by people who would qualify for future allocations); or enable people who wish to save their tokens to deposit them with a 'tokens bank' that can 'lend' tokens out at an interest rate and so pay an interest rate to the owners. Such arrangements would require substantial development to ensure effectiveness and enable security of repayment so that the loan does not become a de facto increase of tokens).
11. Is the M-Token System an opportunity for crypto currency development? Are the tokens themselves a form of crypto currency? Would a crypto implementation be less costly and more effective than using Motu Move for all the record keeping and transactions needed for the M-Token System?
12. What about alternatives to the M-Token System. If it is agreed that the NZ ETS needs help reducing emissions from operation of the light vehicle fleet, are there other viable strategies that should be under consideration? (Possible answer: there

probably are. Perhaps they could be developed, and a referendum held that provides a choice between two or more different strategies, in the same way the MMP system was developed and approved for electing the NZ government).

13. Won't the M-Token System create pain for people that could be avoided? (Possible answers: There is no doubt that emissions-reduction from operation of the light fleet will inflict some economic pain on people and organisations – regardless of the solution implemented. The M-Token System has an advantage in that it establishes definite reductions that people can anticipate and respond to. The current course settings are not driving early reductions and can be expected to lead to greater costs of adjustment (pain) later on. Further, the gradual adjustment under the M-Token System has the possibility of increasing New Zealand's resilience and productivity – as the country would start becoming less reliant on imported fossil fuels without a drop in economic output.
14. The need for a mechanism to prevent buying M-Tokens in order to hoard them.
Possible solution: Allow indefinite 'saving' by individuals of tokens that are issued to them, but make all traded M-Tokens expire after a set period, perhaps 1 year.

Personas

Scenarios by persona

Following is a description of the experience of people in different situations and the impact the M-Token System has on their lives after one year of operation.

There are seven different personas:

1. A person with no car
2. A person with an electric car
3. A couple with a plug-in hybrid petrol car
4. A couple with a diesel-fuelled car and a petrol sedan
5. A person with low income and a petrol-fuelled car, living in the exurbs (beyond the suburbs)
6. A couple with high income and a petrol-fuelled car, living in the close-in suburbs
7. An accountant working in a medium-sized business.

A person with no car

George lives alone and has no car. He uses public transport to get around or takes an occasional Uber or other similar taxi service. He lives a short distance from most places he needs to visit. George will be quite happy with the arrival of the M-Token System because he will be able to sell tokens and receive cash to supplement his income.

After a year of M-Token System operation, four periods in, George has found that the best way to sell his tokens is through one of the market-makers. There is not much fluctuation in the price of tokens. George sells his tokens automatically as soon as they are allocated into his account. He has noticed that the quantity of tokens he receives has been reducing slightly each period, and that the price per allowance has dropped slightly since the first allocation. From discussions with his friends at the tennis club, he thinks this is because people have gotten used to having them, and the level of saving up of tokens has dropped off.

A person with an electric car

Mike lives alone and has an EV. It makes no emissions, he does not buy petrol, so he does not need to use the tokens. When he receives his token allocation each quarter, he donates half of the tokens to an organisation that drives people to medical appointments. He sells the other half privately to work colleagues who need more than their allocation. The colleagues pay him in cash the price they would have to pay the market-maker, so Mike earns a little more than he would if he sold to the market. He easily transfers the tokens to both the organisation and his colleagues using the app on his phone. It is as easy as doing internet banking.

A couple with a plug-in hybrid petrol car

Maysie lives with her partner Ali and has a plug-in hybrid car. She must surrender some tokens when she buys fuel. Ali mostly cycles to work, though in bad weather Maysie drops him off. Maysie's allocation of tokens has been more than sufficient for her needs because of the low emissions rating of her vehicle. Maysie initially kept her surplus tokens, but after four quarters she can see that she does not need to keep such a large buffer. She now sells most of her surplus to the market-maker. She carries out this transaction on the app on her phone, and the money is paid into her bank account. Ali gives some of his allocation to Maysie and sells the balance to the market-maker.

A couple with a diesel-fuelled car and a petrol sedan

Tom drives a diesel and has done for years. His wife Dora drives an energy efficient petrol sedan. They have two teenage boys whom they drive to several different sports activities each week. They often drive one of the cars to their beach house on weekends. Tom surrenders tokens when he buys diesel, it happens automatically when he swipes his M-Token card. He is grateful that the allocation has been sufficient with a small surplus. There was no change in the price of diesel when the M-Token System began. Tom and Dora find that they usually have just enough tokens between them for all their travel. Dora surrenders her tokens when she buys petrol, it is calculated automatically, and the surrender occurs when she swipes the tokens across on the app on her phone. One quarter Dora did more driving than usual, and Tom easily transferred some of his surplus tokens to her. They have been noticing that the quantity of tokens they receive is reducing after a year of the system being in operation. They are starting to think about how to reduce their need for tokens and have been looking at EVs.

A person with low income and a petrol-fuelled car, living in the exurbs (beyond the suburbs)

Gerry is a single mother with three daughters. She drives a petrol-fuelled car and covers a lot of distance because the girls have sports and dance and lots of other extra-curricular activities, and she hates to disappoint them. She is on a relatively low income and feels lucky that she receives a 15% equity increment in her tokens due to her income, number of children, and the distance she lives from the city centre.

Gerry's token allocation is deposited into her account at the start of each quarter. Gerry surrenders tokens when she buys petrol. The quantity needed is automatically calculated and she uses the M-Token app on her phone to make the surrender. She can easily check the allowance balance she has remaining, via the app on her phone.

After the first quarter of the M-Token System Gerry found she had a decent surplus of tokens, and she easily sold them to the market-maker and received a little extra cash. The transaction was also carried out on the app, and the money was deposited in her bank

account. Gerry has noticed that the allowance surplus is reducing each quarter because the allocations are getting smaller. She knows that after another year she will have to change her trip-making or start buying instead of selling tokens. She has been talking to neighbours about carpooling three days a week and likes the idea but has not yet committed. She also thinks about getting a job closer to home.

[A couple with high income and a petrol-fuelled car, living in the close-in suburbs](#)

Anne and Chris are semi-retired and live in an apartment in a suburb close to the city. They own a new luxury petrol-fuelled car that they drive on an irregular basis. For many of their needs they can (and do) walk. They mainly use their car to drive to the beach. They receive two allocations of tokens, one each, and so far, have only used about a third of their total quarterly allocation. They automatically surrender their tokens when they buy petrol. The surrender is achieved using the M-Token app on their phones, that treats them as a household so both their allocations and usage is merged into one account that they can separately access. They have two married adult children who live in rural areas who have found that their allocations are insufficient, so Anne and Chris gift their surplus tokens to their children.

[An accountant working in a medium-sized business.](#)

Sunita is an accountant for a landscaping business. The firm has several petrol-fuelled light vans, a company car each for the CEO and Operations Manager, and a diesel truck that does topsoil deliveries. Sunita has always had to buy RUC for the truck because it is a heavy vehicle and has a hubometer. She is used to the process of RUC, but now she also needs M-Tokens for the vans. Having no allocation of tokens for the business, Sunita has tried a few different ways of getting enough of them. The CEO and Operations Manager agreed with her argument that they should transfer their personal allocations to the company. For the vans she has found the easiest way to get tokens is through the market-maker. In the first quarter it was quite expensive while people gained an understanding of how the system worked. Many people were reluctant to sell their surplus tokens, and this pushed the market price up. This made it more attractive for people to sell some of their allocations and that was how it all balanced out. Over time people have gotten used to the small amount of extra cash, so sell their surplus even though the price has fallen. Sunita has heard that the unused quantity from the most recent quarter is about 50% lower than the unused quantity from the first quarter.

Sunita is careful to ensure that each van has sufficient RUC always prepaid. The tokens she buys are deposited into a company M-Token account and surrendered from there. The tokens are automatically surrendered when the van drivers fill up the vans. Sunita makes sure that each van has an M-Token card on board so that the driver can swipe it when buying petrol.

Buying tokens is an extra cost for the business. Seeing the extra cost, the CEO has recently asked Sunita to investigate buying electric vans, which would not need tokens.

[Questions and answers](#)

[Why give tokens to all adults, and what might the exceptions be?](#)

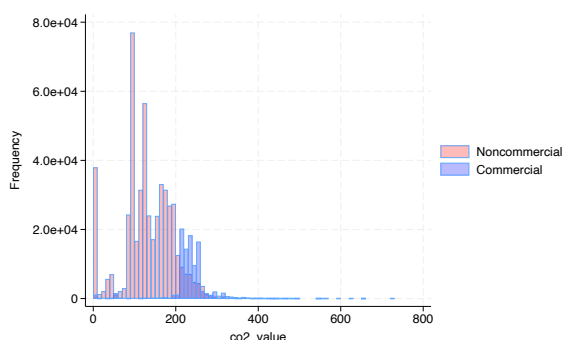
As a general observation, almost all adults 'could' obtain a drivers' license and buy a fossil-fuelled vehicle and so start to make emissions from the light-vehicle fleet. If drivers' license and vehicle ownership were required to entitle rights to tokens, there could then be an

uptick of people obtaining these for the purpose of getting an allocation of tokens. By not owning and driving a fossil-fuelled vehicle, such people can be seen as part of the solution. Issuing tokens to them rewards them for this. However, there are adults who could not obtain a drivers' license, or who could not use one if they had it – examples include immobile elderly in care homes, elderly who have lost their license but continue to live at home, and incarcerated prisoners. There could be other examples. If creating an exception group, the reasons would have to be clear and applied consistently. The exception group would not be included in total Qualified Individuals for calculation of quarterly allocations.

What is the logic of giving no allocation to organisations?

Mostly it is because organisations do not vote – and the objective was to create a system that could be chosen by the public in a referendum. But there are additional reasons and benefits. Firstly, making it necessary for organisations to buy all the tokens they need ensures that there is a 'demand side' for the market for the tradable tokens from day 1. Secondly, larger organisations are likely well placed to take actions to reduce emissions from their light vehicle fleets. Having to purchase tokens will encourage greater levels of electrification of organisational fleets because EVs will require no tokens surrender to allow their operation. Thirdly, if the M-Token System is introduced along with the FED to RUC switch, organisations with higher-emitting vehicles will experience a reduction in costs, so the pain for them purchasing tokens will not be as great. Note that the majority of high-emitting vehicles that were added to the light fleet in 2023-2025 were imported for commercial purposes. See Figure 1. Fourth, organisations already receive a benefit under the CCS with a different maximum mass allowance compared with non-commercial usage. Finally, if the M-Token System introduction were to cause an overall increase in organisational costs, commercial entities have margins that can absorb cost increases, and in time these can be recovered through adjustments to prices or by finding other offsetting efficiencies.

A follow-on question about organisations relates to the self-employed: people who use their vehicle for home and work. The intention is to NOT make an allocation based on vehicle ownership, but rather 'adult-ship'. The self-employed person would qualify to receive an equitable allocation. They could dispose of that allocation in any way they see fit. Assuming they have just one vehicle, used for work and home, they would likely sell all of the allocation to their business activity, and quite possibly need to buy additional tokens to meet their total needs. Their accountant would help them find the best way to handle the transaction, ensuring that the price the tokens are transferred at is fair, and the business-related share of the costs is properly reflected in their taxation accounts.



What is the likely price that the tokens will trade at?

Pricing is not known but could be predicted. This should be part of the further work of developing the solution. Such further work should take the following into consideration:

To begin with, the first quarter's total allocation will equal the previous quarter's emissions, adjusted for seasonality, so there should be sufficient tokens to go around. Each qualified adult will receive a base allocation, and many will receive an equity adjustment. Everyone's allocation will exceed the average person's needs because the total allocation includes all the emissions from organisations in the previous quarter. So, while organisations will have demand for tokens there should be an equivalent amount of supply available from individuals, that individuals are not going to use. Organisations and individuals will each form their own opinion of the value, given their understanding: a) that the total allocation will be lower and continue to decline in all following quarters; b) that overall demand from organisations will likely drop as they move quite quickly to electrify their fleets to avoid the cost of buying tokens; c) that there will be an ongoing reduction in demand as people actively seek ways to reduce their use of the tokens to maximise their personal economic benefit; and d) other relevant factors.

The market maker will be required to hold stocks of tokens and publish buy and sell prices, plus detail of the prices that tokens have changed hands for in the market (much like happens for the share market). At any time, any person or organisation can consider the offered price and decide to buy or sell tokens, based on their opinion about the value. Organisations such as the Citizens Advice Bureau will be able to help people who feel unsure about what to do, whether to sell their surplus, for example, or hold on till a later time.

As time goes on, each quarter there will be growing tension between continued use of fossil-fuelled vehicles and seeking out options to change. If emissions reduction is slow, there will be greater demand for tokens than the new quarter's supply, and the price will rise. There will be a place for government to encourage innovation to help keep emissions falling. Innovation could be in the implementation of more extensive public transport systems or finding better ways to encourage individuals to be more embracing of the switch to electric.

Recognising that the cap will continue to sink every quarter, people will feel more confident making investments in such solutions as residential charging for EVs, knowing that if they electrify, their reducing allocation of tokens will provide a stream of revenue to offset the costs of doing so.

What is the reason for the 'excess stock holding' provision?

The objective of the whole system is to support reduction in emissions by finding and removing low-cost-to-remove emissions. Making a given change sooner is more valuable than making the same change later because emissions reduction benefits are summed through the years. It is conceivable that there would be some dramatic adjustment to emissions early in the existence of the system, perhaps as organisations rapidly electrify at a substantial level, which would impact on demand so much that the tokens would have only

² This chart was derived from a spreadsheet received from NZTA under the Official Information Act, Request #19619, being a listing of all vehicles imported under the Clean Car Standard, including their make, model, class, fuel type, year of manufacture, new or used, emissions rating, emissions target, etc. from inception of CCS to September 2025.

minimal tradable value. The nature of the system-design will be that there is a total agreed and known quantity of emissions allowed over the life of the system, equal to the sum of all the quarterly allowed emissions from start to end. If early demand fell away, it could have the effect of ‘banking’ higher levels of emissions to be made in the future, which would be detrimental to the objective of the system. The ‘excess stock holding’ provision is a mechanism for ensuring that early gains are held on to. Once deducted, the excess stock holding adjustment would be permanent.

Why make an allocation to people who do not have a car, or who have an EV so don’t need to buy fossil fuel? And would any people be excluded?

While carless or EV owning people might not need to buy fossil fuel at the moment, they could get a car that uses fossil fuel at any time. The fact that they do not means that they are part of the solution, and it is fair to recognise them for this. The stated objective in design of the system is to make it as acceptable as possible to as many voters as possible.

A logical exclusion would be people who are not likely under any circumstances to get a car, such as immobile residents of nursing homes, or incarcerated prisoners.

How would this fit with the proposed ‘time of use’ or ‘congestion’ charging scheme that the Government is developing?

If the M-Token System were implemented before time of use charging, it could be that the M-Token System would reduce the amount of traffic at peak times, reducing the need for time of use charging, though this is not a certain outcome. If time of use charging were introduced before the M-Token System, it is possible that the value of an M-Token would be slightly lower than otherwise would be the case, but overall the two policies could complement each other, making it more valuable to (for example) reduce trips by pooling: participants might share the cost of the toll, while passengers would also benefit from avoiding use of their tokens by reducing their own fossil-fuelled-vehicle trips.

What is the likely number of tokens that would be allocated each quarter, if the system was put in place during 2026?

A key development step will be the setting of the target and the quarterly reductions. This will involve deciding what quantity of light-fleet emissions should be allowed within the emissions total anticipated in 2050 in the ‘net-zero’ calculation. Given that 2024 emissions from the light fleet appear to have been about 8.9 megatonnes, and there are 100 quarters between the start of 2026 and the end of 2050, the simple calculation would be:

[Starting quarterly average less ending quarterly average] divided by 99 quarters

For example, if the end 2050 annual target for light-fleet emissions were to be 1.0 megatonne³, the final 2050 quarter’s emissions would need to be 0.25 megatonnes.

The starting average quarterly emissions are (8.9 megatonnes/4 quarters) = 2.225 megatonnes

The ending average quarterly emissions need to be (1 megatonne/4 quarters) = 0.250 megatonnes

³ Note that the Climate Change Commission has recommended updating the ‘net zero’ target to a ‘net -20Mt’ target, (Climate Change Commission, 2024). With the original ‘net zero’ target the Ministry of Transport estimated that transport would need to be almost fully decarbonized by 2050, (New Zealand Ministry of Transport, 2022b). It has been difficult to find a statement of the expected gross emissions and the expected removals in 2050 that would lead to a ‘net zero’ or a ‘net -20Mt’. It is perhaps more likely that this target would be zero, but 1.0 megatonne is used to make the example calculations more explicatory.

The total amount the quarterly emissions tokens need to reduce = 1.975 megatonnes

There are 99 quarters in which the quarterly reduction must occur so 1.975 is divided by 99, and the quarterly reduction is 0.01994949 megatonnes (19,949.5 tonnes).

Quarterly reductions would need to be 19,949.5 tonnes per quarter to reduce from 8.9 megatonnes per year to 1.0 megatonnes per year over 99 quarters. In this example, in the first quarter 2,225,000,000 tokens would be allocated (being the same quantity as the final pre-M-Token System quarter, 8.9 megatonnes divided by 4, expressed as kilogrammes). In the second quarter 2,205,050,500 tokens would be allocated, (being 2,225,000,000 less 19,949,500). In the third quarter 2,185,101,000 tokens would be allocated. And so on, with reductions of 19,949,500 tokens each quarter.

What about visitors to New Zealand? Do they become entitled to receive tokens?

Visitors would be able to purchase tokens but would not have an entitlement unless they stayed for a qualifying period: a detail to be worked out. More likely in the case of visitors using rental cars is that the rental car company would purchase tokens and include access to those tokens as part of the rental agreement.

What would be considered in the Equity Adjustment Factor (EAF) calculation? How would it work?

It is recommended that the answer to this be the result of broad consultation and community engagement. An initial list based on the literature would suggest including for consideration: a transparent formula that increments the basic allocation based on household composition (numbers of children per adult), income, disability, access to low-emission alternatives such as public transport, rural vs urban residence, distance to employment, etc. EAF would be denoted as a percentage increment to an individual's basic allocation. To determine the unadjusted allocation the following formulae would be used:

(Total tokens available to allocate for the quarter) – (tokens needed to establish or replenish the Equity Backstop to the agreed level) – (any number of tokens required to adjust for excess stock holdings) = Tokens to be Allocated

(Sum of the qualifying 16+ population) + (Sum of all the percentage EAFs) = Equity-Adjusted allocation population

(Tokens to be Allocated) / (Equity-Adjusted allocation population) = rate of allocation to individuals with no EAF.

The rate of allocation to people with EAFs would be:

(The rate of allocation to individuals with no EAF) X (100% plus the individual's EAF percentage) = Allocation to a person with an EAF

Continuing with the example numbers from above, the average personal allocation in the first quarter would be 2,225,000,000 divided by all people 16+ years of age. Assuming that there are 4.3 million people who qualify, the average personal allocation for the first quarter would be in the order of 517 tokens, (2,225,000,000 divided by 4,300,000), before the application of the Equity Adjustment Factor. Simplistically, if 20% of people received a 15% equity adjustment factor (EAF), and all others received the average, the first quarter allocation would be an average of 502 for people who received no EAF, and 577 for those who received the 15% uplift. The following workings are relevant:

$4,300,000 \times 20\% = 860,000$ people who receive EAF (and 3,440,000 people who do not)

$860,000 \times 15\% = 129,000$ EAF increment

$4,300,000$ people plus $129,000$ EAF increment = $4,429,000$ Equity adjusted allocation population.

$2,225,000,000$ divided by $4,429,000 = 502$ tokens allocation to people with no equity adjustment factor

$502 \times 1.15 = 577$ tokens allocation to people with a 15% EAF.

In this simple example, 3,440,000 people receive 502 tokens each, and 860,000 people receive 577 tokens each, for a total of 2,223,100,000 tokens allocated. There is a difference due to rounding. The rounding difference could be written off or carried forward to the next period's allocation.

The allocation would reduce each quarter by just over 1% of the original allocation (because the period covered is 100 quarters). Average individual allocations would also adjust due to population changes. 500 tokens would enable purchase of just over 200 litres of petrol. Across a year with reductions included that would allow about 800 litres of petrol. A substantial proportion of people use far less petrol than this each year.

How is it intended that the Equity Backstop works?

The Equity Backstop is a pool of tokens retained from the quarterly allocation that can be used in emergency situations as an additional free allocation to people with transportation poverty: such tokens could only be used; they could not be on sold. The rules around the Equity Backstop would require careful consideration because as time goes on and the sinking cap reduces the number of tokens available, people in transportation poverty might be required to make some adjustments to their trip-making, or society might need to provide alternative services that reduce the incidence of transportation poverty.

What happens after 2050?

When the 2050 target has been met, unless it is for zero emissions, there will still be quarterly emissions from the light vehicle fleet. The solution would be expected to continue operation, but without further reductions to the quarterly allocations.