Report on possible government measures to encourage the uptake of electric vehicles

Contents

Purpose of report

1. This report outlines the potential role of electric vehicles in helping New Zealand reduce its greenhouse gas (GHG) emissions from transport.

2. It provides you with advice on a range of measures that could form a package to encourage the uptake of electric vehicles in New Zealand.

3. Our advice is divided into four categories of potential measures that:

    3.1. we recommend be investigated further for possible inclusion in a package

    3.2. could be investigated further for possible inclusion in a package

    3.3. should be progressed outside of the package

    3.4. were not considered worth progressing.

Useful terms

4. **Pure electric vehicle –** a vehicle powered solely by electric batteries charged from an external source.

5. **Plug-in hybrid vehicle (PHEV) –** a vehicle that operates on a combination of batteries that are charged externally, along with petrol or diesel motors.

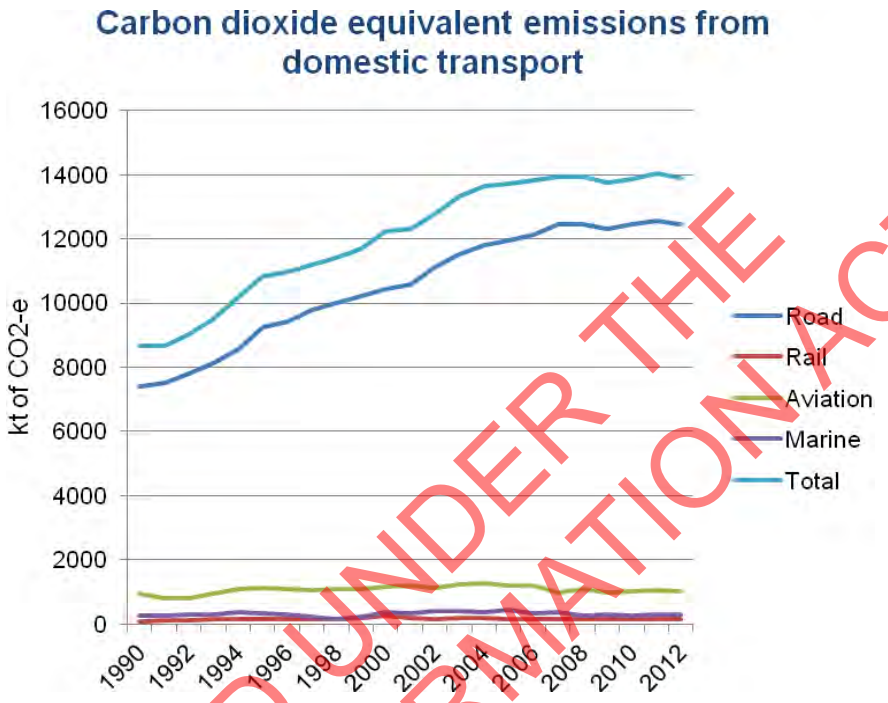
6. **Electric vehicle –** either a pure electric vehicle or a PHEV.

7. **Hybrid vehicle –** a vehicle that has an internal battery but cannot be directly plugged in, and must have petrol or diesel to run.

8. **Light vehicle –** a vehicle with a maximum gross mass of 3.5 tonnes or less.

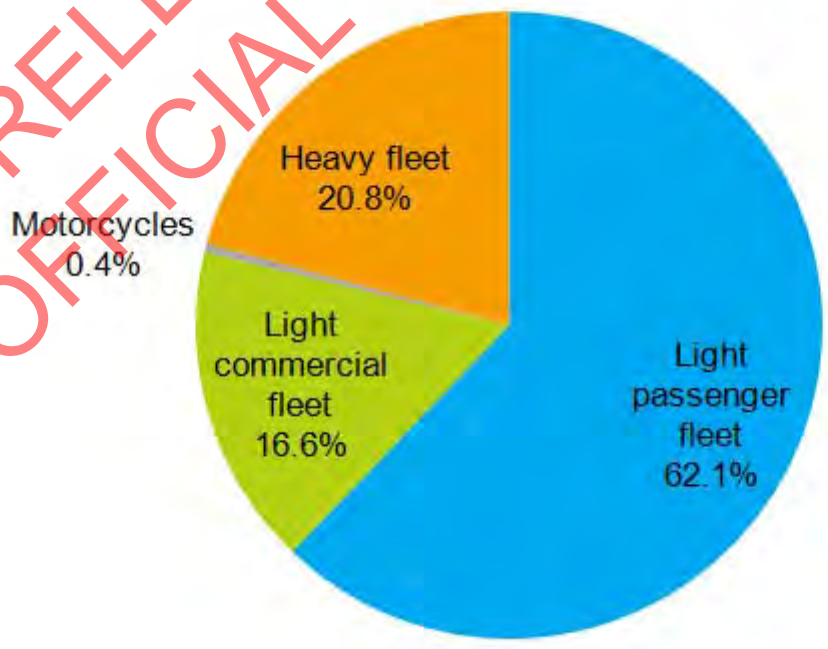
Transport greenhouse gas emissions in New Zealand

9. In 2012, the transport sector accounted for 18 percent of New Zealand's emissions. Of this, 89 percent was from road transport and the remainder from domestic aviation, marine and rail.



10. Light passenger vehicles emit the majority of road transport GHG emissions. While making up only 4 percent of the vehicle fleet, heavy vehicles use almost 21 percent of the total fuel used in New Zealand.

Percentage fuel used on the roads in New Zealand (2013)



11. Reducing emissions from the sector will likely require a range of policies. These could include changes to the New Zealand Emissions Trading Scheme, encouraging uptake of electric vehicles, greater use of biofuels, research into alternative fuels, investment in public transport/active modes of travel, and intelligent transport systems.

12. On 28 November 2014, we provided you with a briefing on a climate change work programme where a range of feasible options was considered. We will continue to progress the work set out in that programme.

The New Zealand vehicle fleet: challenges to growing the market for electric vehicles

13. There are a number of challenges unique to New Zealand's vehicle fleet that mean adopting new technology like electric vehicles is likely to be a slow process.

14. New Zealand has high levels of car ownership, with approximately 700 light vehicles for every 1,000 people. In 2013, the light fleet consisted of approximately 3.1 million vehicles.

New vehicles

15. A little less than half of the vehicles that enter the New Zealand fleet each year are new vehicles. According to the motor industry, between 60 and 80 percent of new vehicles are purchased by fleet owners, but the exact figure is difficult to calculate.

Table 1: Non-private vehicle purchases in New Zealand between January 2011 and September 2014, split by purchaser type

Business	Government	Rental
79.8%	6.4%	13.9%

16. The most important determinant of uptake for fleet purchases is the cost of electric vehicles relative to conventional vehicles.

17. Sourcing vehicles that are fit for purpose is also important. For example, electric vehicles are unlikely to be suitable for fleets that require utes and vans, or travel long distances (that is, more than 150 kilometres per day).

Used vehicles

18. Just over half of the vehicles that enter New Zealand each year are used imports. Virtually all used imports are sourced from Japan and bought by private owners.

19. The types of vehicles available partly depend on Japanese preferences 8 or so years ago, current Japanese demand for used cars, competing demand from other international buyers and the currency exchange rate. Historically New Zealand importers have preferred to bring in the oldest vehicles that regulations and the market will allow, in order to maximise their profit margins.

20. Electric vehicles are currently selling at relatively modest volumes in Japan (29,000 sales in 2013/14). Vehicles registered in Japan in 2015 could become used imports to New Zealand in 2023. It is important to note this lag effect.

21. Japanese purchasing patterns are therefore important to understand the potential uptake of electric vehicles in New Zealand, including the impact of any new Government policies on electric vehicles.

Turnover of the fleet

22. The speed at which the make-up of the light vehicle fleet can be changed is driven by the fleet turnover. This is difficult to predict accurately, but on average over the last decade 7.1 percent of light vehicles enter the fleet each year. New Zealand has an aging fleet by Organisation for Economic Co-operation and Development (OECD) standards. In New Zealand, the average lifespan of a car is 20 years, and about 5.5 percent of the light fleet is scrapped annually.

Electric vehicles in New Zealand – policies and uptake

23. In New Zealand, measures have already been implemented to promote the uptake of low emission vehicles generally, which have an impact on the uptake of electric vehicles. These include:

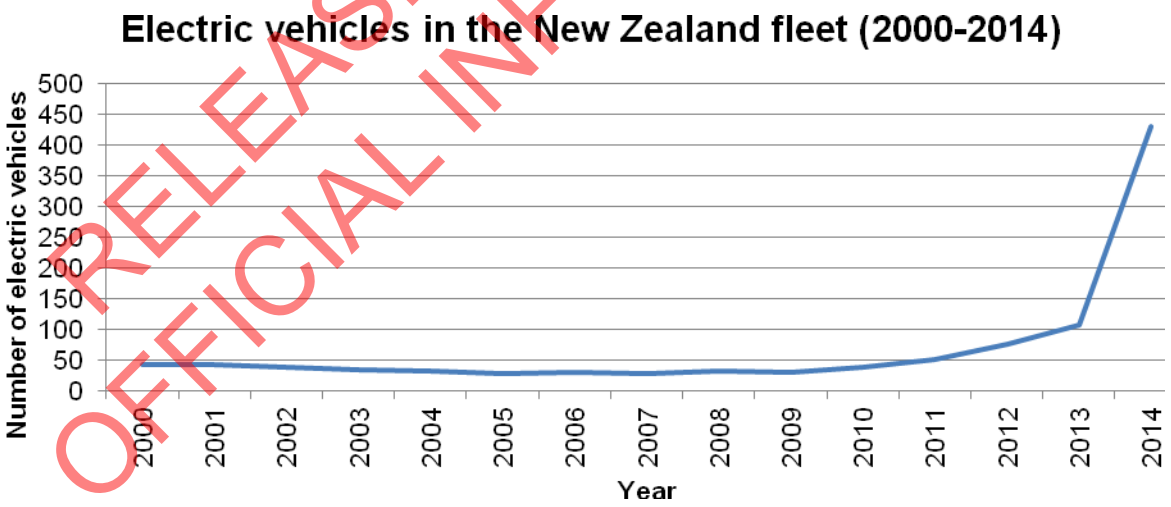
    23.1. the New Zealand Emissions Trading Scheme, which establishes a price on emissions that flows through to the cost of petrol (the current price signal is weak)

    23.2. the fuel economy labelling scheme

    23.3. electric vehicles being exempt from road user charges (RUC) until 2020.

24. Recent data indicates that the average emissions performance of light vehicles entering the fleet is improving. In 2013 it was 183 grams of carbon dioxide (CO_2) per kilometre, down from 220 grams per kilometre in 2005.

25. However, these initiatives have had limited impact on uptake of low emission vehicles to date. While the numbers of electric and hybrid vehicles are increasing, they currently make up 0.32 percent of the total vehicle fleet (electric vehicles only make up 0.02 percent of our total fleet).



Current projections for electric vehicle uptake

26. There are serious challenges in providing accurate projections for electric vehicle uptake in New Zealand given the high level of uncertainty around a number of factors that will influence uptake. Uncertainties include:

    26.1. the rate that the prices of electric vehicles will fall

    26.2. the extent to which battery prices will fall

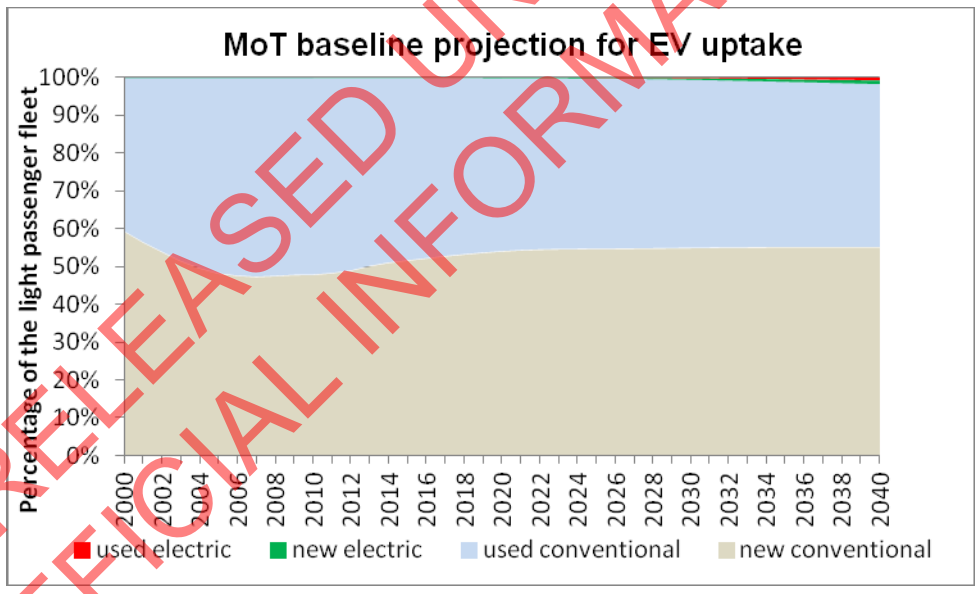
    26.3. trends in the cost of other energy sources

    26.4. trends in the price imposed on carbon emissions

    26.5. the future of the RUC exemption

    26.6. the availability of used electric vehicles into the New Zealand market (half of light vehicle registrations in New Zealand are used vehicles).

27. The Ministry of Transport ran one baseline projection of electric vehicle uptake (below). This forecasts that electric vehicles will account for 1 percent of the vehicle fleet by 2035 and 2 percent by 2040. This baseline scenario is based on electric vehicle uptake trends to date. It assumes no significant changes in policy, the price of electric vehicles, or any relevant external shocks.



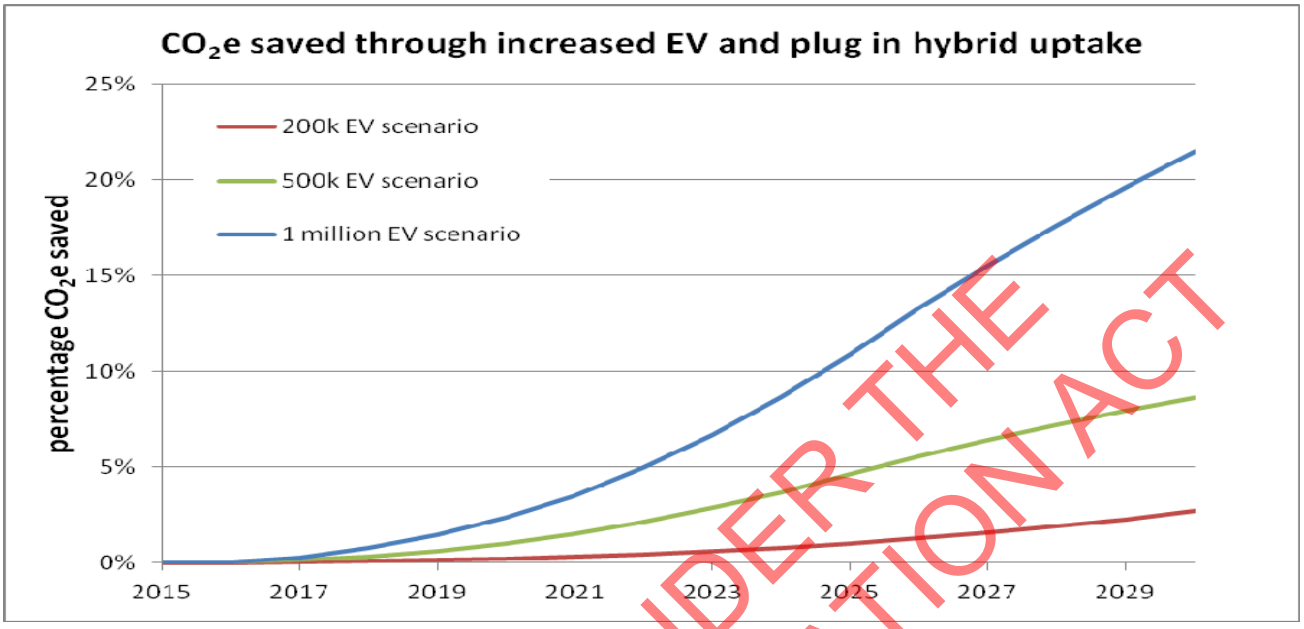
28. We have not been able to analyse how the measures identified in this report could affect the Ministry of Transport's baseline projection. We have instead provided a qualitative analysis of the impact we expect each measure could have on addressing market failures and regulatory barriers to uptake (Appendix B to the cover briefing).

Other modelling work

29. We have also undertaken some modelling work for the Ministry for the Environment, in response to a query by the Minister for Climate Change Issues, asking what impact 1 million electric vehicles in fleets have on reducing CO_2 emissions.

30. We assumed a range of scenarios where electric vehicles made up approximately 200,000, 500,000, and 1 million vehicles in the fleet and modelled the corresponding effect on carbon emissions (see the graph below).

31. The scenarios depicted below were not based on any specific assumptions about changes in policy or the cost of electric vehicles. No analysis was undertaken to identify the conditions or policy pathways that would be needed for these scenarios to be realised.



32. Ministers may also be aware of some electric vehicle scenario work undertaken by the Ministry of Business, Innovation and Employment (MBIE) as part of the Smart Grid Forum. MBIE assumed a scenario where electric vehicles saturate the market by 2028. This was done exclusively to test what impact this level of uptake would have on the distribution network. This scenario was not based on a likely scenario for electric vehicle uptake, or a particular policy pathway. The scenario would be extremely unlikely to occur given the constraints on used imports discussed above.

What are the opportunities and barriers for electric vehicles?

The opportunity

33. As well as reducing emissions, increased uptake of electric vehicles can bring other benefits such as reducing our reliance on imported fossil fuels, and enhancing the efficiency of renewable electricity networks.

34. New Zealand is well positioned to benefit from electric vehicles because:

    34.1. we have high levels of renewable electricity generation (currently 78 percent), with capacity to increase the energy demand on renewables via electric vehicle uptake

    34.2. 95 percent of daily travel demand is for distances less than 120 kilometres, which is within the range of electric vehicle batteries (currently approximately 150 kilometres per charge)

    34.3. we do not need major investment in infrastructure – domestic power supply is suitable for charging at home, and 80 percent of homes have off-street parking.

35. We previously advised that any policies dependent on the turnover of the vehicle fleet may be effective at reducing emissions over a very long-term, but are unlikely to make a significant contribution to New Zealand's 2020–2030 emissions reduction target.[1] Therefore adopting a package of measures to achieve higher electric vehicle uptake represents an investment for the long-term, and may assist in the achievement of longer-term emissions targets.

Barriers to uptake

36. High upfront costs – although some models are becoming cost-competitive, the average upfront costs of electric vehicles are generally higher than conventional vehicles, and consumers are not recognising their additional associated value.

37. Limited range – pure electric vehicles are not suited to long journeys (over 150 kilometres) without stops to recharge the vehicle. There is a strong body of research that private citizens highly value the ability to travel long distances, even if very occasionally.

38. Few electric models are available in New Zealand – only a small range of models are offered in the New Zealand market currently.

39. Supply of used electric vehicles is likely to be constrained in the foreseeable future – uptake of electric vehicles in Japan is expected to be low in the foreseeable future. Further, Japanese policies mean electric vehicles do not depreciate as quickly as conventional vehicles so they are not on-sold into the second-hand market as quickly. These factors may consequently limit the supply of used electric vehicles in New Zealand in the future.

Government's role in overcoming these barriers

40. Government is limited in what it can directly do to address the barriers above. In some cases intervention may not be required as existing barriers may reduce themselves through cost reductions and improved battery technology over time.

41. There is a clearer role for government intervention to address market failures affecting uptake, such as in helping to resolve:

    41.1. coordination problems, for example, addressing any issues to ensure that the necessary infrastructure is in place ahead of demand in order to encourage uptake

    41.2. information problems, for example, lack of awareness and misconceptions about electric vehicles, and uncertainty about the total cost of ownership (including maintenance costs, battery life and residual values)

    41.3. trade barriers, for example, the removal of import duties on a broad range of environmental goods (which could include electric vehicles and batteries) in the context of the negotiations towards a global Environmental Goods Agreement in the World Trade Organization (WTO).

42. As well, we have identified several instances of possible regulatory failure (for example, ACC levies and road user changes for PHEVs). Left unaddressed, these regulatory failures may 'nudge' motorists away from choosing electric vehicles.

[1] Our modelling indicates that doubling the uptake rate of electric and hybrid vehicles over the next 25 years (compared to business-as-usual baseline) could result in emissions reductions of 7 percent in the transport sector by 2040.

Criteria used to assess potential measures

43. A set of standard criteria was used to assess the merits of potential measures in accelerating the uptake of electric vehicles as a means to reduce transport GHG emissions.

    43.1. Effective – the measure will achieve a reduction in transport GHG emissions. This includes securing a reduction that is sustained long-term.

    43.2. Efficient – the measure will take account of:

        43.2.1. purchase, implementation, and maintenance costs for individuals, businesses and government

        43.2.2. compliance costs and government administration costs.

    43.3. Equitable – the measure addresses distributional impacts between high income households and low income households, and maintains the principle that system use and costs imposed determine who pays and at what level.

    43.4. The measure maximises co-benefits (for example, increasing air quality) and minimises co-costs (for example, increasing the pressure on freshwater ecosystems).

    43.5. The measure encourages private sector activity and investment with government intervention only occurring where there is an identified market or regulatory failure.

    43.6. The measure helps New Zealand transition to a long-term low-emissions transport sector.

Measures that we recommend be investigated further for inclusion in a package

44. Listed below are the measures that we recommend are prioritised for further investigation. Our initial analysis suggests these measures are the most viable for inclusion in a package to encourage the uptake of electric vehicles.

Measure 1: Energy Efficiency and Conservation Authority (EECA) information and promotion campaign

We recommend any package includes an information and promotion campaign as a central component. A campaign would help address information barriers and enhance the visibility of other measures to address barriers to uptake of electric vehicles. Given that vehicle fleet turnover is a long-term option for reducing GHG emissions, we recommend pursuing a campaign that seeks long-term change (this would require funding of approximately $1.7 million per year, for 5 years).

45. Many motorists are either unaware of, or hold misconceptions about electric vehicles and their operation. Electric vehicles are a relatively new technology that is not well understood or accepted by potential buyers.

46. The Sustainable Business Council has also cited a "lack of awareness of electric vehicles by corporate fleet managers and staff that have vehicles as part of their salary package" as a barrier to uptake. We are undertaking research with EECA to better understand the information barriers that exist among fleet buyers.[2]

47. We consider an ideal information and promotion campaign is one that supports the long-term change in perceptions and understanding of electric vehicles, which is necessary to maximise GHG reductions from uptake.

48. Such a campaign would need to target the market segments most likely to respond to information and promotion in the first instance (for example, fleet owners, lease companies, large businesses, and government agencies). Public information would focus on dispelling misconceptions.[3] Building long-term relationships with business and local government would provide opportunities to develop joint measures and share learnings between stakeholders. This level of commitment would send a strong signal to business and local government about the Government's long-term support for electric vehicles.

49. EECA has the mandate and capability to deliver this kind of information and promotion campaign. EECA has identified the elements of a comprehensive campaign that seeks long-term consumer change and addresses barriers to uptake. The campaign would run for 5 years and cost $1.7 million per year. This could require a new budget initiative. The funding would enable EECA to:

    49.1. run a high profile media and advertising campaign

[2] EECA has engaged with a number of major light vehicle fleet owners (including Downer, Opus and Fonterra) to better understand barriers to the uptake of electric vehicles from a fleet buyer's perspective. A key barrier is a lack of information on the total cost of ownership. In response to this, EECA is working on a "total cost of ownership" tool to help fleet managers compare the total costs of owning and operating an electric vehicle with an equivalent petrol or diesel vehicle, so that fuel and maintenance savings can be readily taken into account.

[3] For example, EECA's engagement with fleet managers (and the public) has identified misconceptions about the environmental performance of electric vehicles as a barrier to uptake. To this end, EECA is engaging a consultant to undertake a lifecycle analysis of electric vehicles in the New Zealand context, to provide authoritative information that can be easily communicated.

49.2. directly market to, and build long-term partnerships with, corporate fleet managers

49.3. undertake joint measures with private sector companies and local government.

50. This campaign is scalable and could be delivered with a more limited reach over a shorter time frame (for example, 2 years) for a cost of $1.2 million per year.

51. Any campaign would also be used to inform consumers of other measures within the package that address barriers to uptake (for example, the RUC exemption for light electric vehicles).

52. We recommend any package to support the uptake of electric vehicles should involve an information and promotion campaign. We consider a longer-term and more comprehensive campaign is best suited to the dynamics of the New Zealand vehicle market, particularly as the majority of new vehicles are purchased for fleets before entering the second-hand market 3 to 5 years later.

53. We consider the smaller, lower cost campaigns would still have merit, but would also have fewer benefits over the long-term. The signal sent to industry would also be weaker.

Measure 2: Government support for charging infrastructure

We recommend that the Government supports the private sector to establish a cohesive network of fast-charging stations by:

- offering branding and promotional support to facilitate a cohesive network
- providing independent advice to local government and other independent investors about appropriate recharging infrastructure
- potentially funding, or co-funding the installation of fast-charging stations in locations where it is not commercially viable for the market to do so.

A new budget bid would be required to request Crown funding for this option. Alternatively, should you progress measures 1 and 4, funding for charging infrastructure (promotion and installation) could be drawn from the proposed EECA promotional campaign and electric vehicle programme.

54. As in other countries, the majority of electric vehicles are likely to be charged during overnight parking, predominantly in homes. In addition, 95 percent of all journeys in New Zealand are less than 120 kilometres, well within the range of electric vehicles. We anticipate that range will improve with battery technology over the coming years.

55. Nevertheless, charging infrastructure will still be required to offset range anxiety and enhance the versatility of electric vehicles.

56. Evidence from jurisdictions such as Oregon (USA) suggests that public charging infrastructure increases the utility, and therefore value, of electric vehicles. Without a charging infrastructure network, electric vehicles are only useful within a radius of 50 percent of their range. A network of fast-charging facilities means that electric vehicles can travel further if required. This makes them appealing to a larger segment of the car-buying population.

57. The Electricity Networks Association has announced plans to study if a ‘renewable highway’ providing a nationwide infrastructure for charging is possible.

58. On 12 February 2015, officials met with Mighty River Power (MRP) and the Sustainable Business Council. [Commercial in-confidence] MRP advised us that it plans to partner with other electricity industry players to invest in a ‘renewable highway’. The ‘renewable highway’ is a network of fast-charging stations that will form a network from which other charging infrastructure could expand. We understand that MRP considers that this measure can be entirely funded by industry. MRP intends to establish these charging stations at locations where motorists would logically stop on a long journey (for example, shopping areas, tourist attractions).

59. Other parties (such as JuicePoint and the private equity group behind Charge.net.nz) are also looking to provide more charging infrastructure. This does not require Crown funds.

60. There may be a role for government in ensuring the network is cohesive. For example, there may be locations where charging infrastructure is not commercially viable to install, but necessary to complete a cohesive network. Easy identification of charging stations and the standardisation of various systems may also be an issue if multiple businesses are installing fast-charging stations.

61. We understand that a number of local councils and other players that are looking to install charging infrastructure are seeking independent advice about what charging facilities they should install. There would be value in government filling this gap.

62. We considered the following options for government support for charging infrastructure.

Option 2.1 – government branding and information support for charging infrastructure.

Option 2.2 – inclusion of charging infrastructure in large State highway projects.

Option 2.3 – government providing funding for charging infrastructure to fill gaps in the network.

Assessment of the options

63. Option 2.1 is preferred. Under this option, the market decides the most appropriate locations for fast-charging infrastructure. The cost of providing branding and information support could be covered by EECA as part of the information and promotion campaign (see page 10 of this report). If set up as a stand-alone programme, a budget bid may be required to request Crown funds.

64. EECA could potentially play an advisory and coordination role in supporting these independent players. The NZ Transport Agency advises that it could assist by providing access to Crown land and transport planning advice.

65. Option 2.2 is not preferred because motorists are unlikely to consider it desirable or safe to charge their vehicles on the roadside (for example, motorists would prefer to do something productive during charging times). The cost of creating a safe area for motorists to charge their vehicles along State highways would be much higher than installing charging infrastructure at existing parking facilities.

66. Option 2.3 would be more effective once we have an indication of where the gaps in the network are that cannot be filled by the market. The Government could fund (or co-fund) charging infrastructure under the proposed electric vehicle programme (see page 17).

Measure 3: Government fleet procurement of electric vehicles

We recommend investigating a trial of electric vehicles in the government fleet, and that additional measures be considered once the trial is complete. We also recommend MBIE investigates including a specific vehicle class for electric and hybrid vehicles in the all-of-government vehicle catalogue. This would lift the profile of electric vehicles among fleet managers and support MBIE to negotiate a lower price for electric vehicles as part of a larger contract.

67. There is an opportunity for government to lead by example by increasing the uptake of electric vehicles in the government fleet.

68. Increasing the uptake of electric vehicles in the government fleet could support wider uptake in corporate/commercial fleets and the private vehicle fleet by:

    68.1. increasing the demand for, and supply of, electric vehicles in New Zealand (including the supply into the used car market)

    68.2. absorbing the risk of being an early adopter and providing lessons learnt to corporate/commercial fleet managers and the public for example, resolving information gaps about whole-of-life costs and residual value, and practical issues around charging and managing the vehicles' range

    68.3. normalising the use of electric vehicles and dispelling myths about their utility and environmental credibility

    68.4. adding credibility to the EECA information campaign by demonstrating to the market that government has confidence in electric vehicles.

69. Over 20,000 vehicles currently make up the 273 government fleets in New Zealand. Around 3,500 new vehicles are purchased through the all-of-government (AoG) contract each year. The largest class of vehicles purchased are compact (42 percent) petrol powered passenger vehicles (99 percent).

70. Public and State services agencies are required to purchase through the AoG contract (including the purchase of Crown limousines). Other government entities, including State-owned enterprises, schools and local government, are also encouraged to purchase their vehicles through the contract.

71. The AoG contract is managed by MBIE and involves agreements with a panel of vehicle distributors (currently eight different distributors). MBIE uses this contract to develop a catalogue of vehicles for agencies to select from. [redacted] Hybrid vehicles are currently included in the catalogue, but there are no electric vehicles.

72. There are three main barriers to including electric vehicles in the AoG catalogue.

    72.1. There is a lack of data around the total-cost-of-ownership of electric vehicles, particularly around maintenance and servicing costs, as well as on-sale value. These unknowns mean total cost of ownership for electric vehicles is considered high relative to similar petrol vehicles.

    72.2. The apparent high total cost of ownership means electric vehicles are excluded from the catalogue [redacted], further discouraging their procurement.

72.3. Electric vehicles remain unattractive to many fleet managers for practical reasons, such as the need to ensure pool cars are charged for the next user, ensuring that electric vehicles have sufficient range for employees' day-to-day activities, and that employees have access to charging facilities.

73. The current AoG contract is due to expire on 30 June 2015 and the new contract has the potential to be in place for the next 10 years. The criteria for vehicle inclusion in the catalogue are expected to stay much the same, and as a result electric vehicles are highly unlikely to be included in the catalogue under the status quo.[4]

Options considered

74. Potential options to facilitate the uptake of electric and other low emission vehicles into the government fleet include the following.

Option 3.1 – the Government funding a trial of electric vehicles within government agency fleets. An indicative cost for such a trial would be around $500,000 (and potentially cost neutral over time). This level of funding would cover the additional purchase costs for around 24 electric vehicles or PHEVs in four government fleet locations around New Zealand. It would also cover the risk to fleet managers of any lower residual value at on-sale, the cost of installing charging facilities, and costs associated with project management, research and monitoring.

Option 3.2 - requiring MBIE to include a specific class in the AoG catalogue for electric and hybrid vehicles.

Option 3.3 – providing greater information in government fleet managers' guidelines regarding electric vehicles.

Option 3.4 – amending government procurement guidelines to require a set percentage of all vehicles purchased by government fleets to be electric.

Option 3.5 – the Government guaranteeing agencies a residual value on the resale of all electric vehicles purchased through the AoG vehicle catalogue. Government would guarantee an on-sale price that would make electric vehicles competitive with other vehicles vying for inclusion in the catalogue.

Option 3.6 – choosing electric vehicles for some or all Crown limousine replacements and ministerial self-drive cars.

Assessment of the options

75. Option 3.1 is the preferred option. A trial could fill information gaps around the whole-of-life cost associated with electric vehicles, and demonstrate their functionality in New Zealand fleets. This information would help to inform government and corporate fleet purchasers about key uncertainties, such as likely resale value, and maintenance and replacement costs, and therefore reduce risk. The visibility of a trial by government could complement a government information campaign by normalising electric vehicles and dispelling myths associated with electric vehicles.

76. MBIE and EECA have expressed their willingness to support the development of a trial scheme, in terms of developing parameters, providing comparative cost data, and identifying willing government agencies to participate.

[4] Inclusion in the catalogue is determined by an expert procurement panel.

77. Further discussions would be needed to determine who would administer and manage this trial. MBIE would also work with the AoG contracted suppliers on the supply of electric vehicles. While some contracted suppliers are manufacturing electric vehicles globally, these are not being imported into New Zealand due to the current low demand for these types of vehicles.

78. There is some risk associated with this option. The unknown costs around electric vehicles (that is, on-sale value, maintenance and replacement costs), which this trial is trying to identify, also risk increasing (or decreasing) the costs of this trial.

79. Option 3.2 (including a specific class for electric and hybrid vehicles in the catalogue) is also recommended. This would make electric and hybrid vehicles more visible to government fleet managers and nudge them to consider them as a viable option. It would ensure that manufacturers that sell electric vehicles are included in the AoG contract so that lower prices for electric vehicles can be negotiated. This measure would place some cost on MBIE, which may have to run an additional tender process for this specific class.

80. Option 3.3 would provide a low cost way of encouraging uptake of electric vehicles in the government fleet. However, without information relating to the whole-of-life costs (that option 3.1 will seek to generate), this would have limited effect.

81. Option 3.4 is potentially viable but it is a higher risk option. We do not know how government agencies use their vehicles so a prescribed level of uptake risks burdening agencies with vehicles that do not fit their needs (that is, typical driving distance or pooling arrangements). This approach could also present a financial risk to agencies and government given the unknowns around the supply of affordable electric vehicles, the on-sale value of these cars, and maintenance costs (all unknowns that a trial would seek to inform). This option would require adjustments to the AoG solution, but MBIE advises that the new contract scheduled from 1 July 2015 will be flexible enough to allow for any such change.

82. Option 3.5 could be effective for incentivising wider uptake of electric vehicles in the government fleet. It could also offer a simplified approach to financing option 3.4. It removes the risk for government fleet purchasers of on-sale value being unknown, and provides useful information about whole-of-life cost for private fleet purchasers. However, this option presents a financial risk to government and similar information about electric vehicle on-sale value could be gained from a lower risk trial (option 3.1).

83. Option 3.6 would not be viable at this time as MBIE has already begun the tender process for Crown limousine replacements. We understand that the tender document includes the following wording to encourage the inclusion of electric vehicles in the tender process: *"If it meets all the requirements electric vehicles would be welcomed."*

Measures that could be investigated further

84. The measures below could be initiated in the short-term (next 2 years). You may wish to consider which, if any, of these options should be progressed as part of a package to encourage the uptake of electric vehicles.

Measure 4: An electric vehicle programme to co-fund initiatives with other parties

We could investigate the establishment of an electric vehicle programme that would co-fund projects that encourage the uptake of electric vehicles. This option would encourage businesses and local communities to develop projects to address the market failures/barriers that are limiting the uptake of electric vehicles. This would require a new budget bid.

85. In addition to government, there are other parties that have an interest in encouraging uptake of electric vehicles, including the electricity sector, manufacturers of electric vehicles, businesses seeking to reduce their fuel costs and GHG emissions, and local government.

86. An electric vehicle programme could be used to bring together the efforts of these parties over a focused period of time. The programme could be used to ensure that the sum of efforts to encourage uptake of electric vehicles is maximised by having a greater degree of visibility and coherence. This programme would be distinct from the EECA promotional campaign.

87. Under this option, local government and private sector organisations would be incentivised to develop and implement their own projects aimed at increasing the uptake and use of electric vehicles. They would apply to have their project co-funded and an investment group would assess the projects against a set of agreed criteria. The investment group would be responsible for ensuring that the projects represent value for money and contribute to the objective of lowering GHG emissions through the uptake of electric vehicles.

88. The advantage of this approach is that it encourages innovation by giving local government and private sector organisations the flexibility to determine the types of projects that are most appropriate for particular market conditions and/or their local communities.

89. The co-funding approach encourages partnership by giving both parties the incentive to ensure that projects are value for money, and achieve the desired outcomes of encouraging uptake of electric vehicles and reducing GHG emissions.

90. Examples of the type of projects that could be funded by an electric vehicle programme include:

    90.1. trials of electric buses on urban public transport routes

    90.2. installation of public fast-charging infrastructure at locations where it is not commercially viable for the market to do so, but is necessary to form a cohesive network

    90.3. creation and promotion of branded tourism routes (for example, where tourists can hire electric vehicles, and preferentially park and charge the electric vehicle at tourist attractions, cafes and accommodation along the route)

    90.4. demonstrations of vehicle types not currently offered in New Zealand (for example, electric vans for use by trade employees in business fleets).

91. Auckland Transport's recent announcement of a Request for Proposal from car share operators to launch an electric vehicle scheme in Auckland is also an example of the type of project that could be co-funded through an electric vehicle programme.

Details that would need to be considered

92. Details of an electric vehicle programme that would need to be determined include the following:

    92.1. The level of funding made available, and over what period – the level of funding could vary significantly depending on the level of ambition assigned to the programme. As an example, a programme in the order of $2 million over 2 years could be used to co-fund 8 to 10 trials, demonstrations or small infrastructure projects (for example, charging stations).

    92.2. Co-funding rates for projects – we consider that a maximum co-funding rate of 50 percent would give both parties the appropriate incentive to ensure that the projects were effective and value for money.

    92.3. Which government department or agency is primarily responsible for administering the fund.

    92.4. Composition of the investment group – the group would ideally be comprised of representatives of central and local government, industry and users.

    92.5. Eligibility and criteria for funding – these would be decided by ministers.

    92.6. Appropriate level of oversight for allocation decisions – this would depend on the level of funding for the programme and the potential cost of individual projects.

93. Our recommendation is to consider this option. The Ministry of Transport, NZ Transport Agency, and EECA have experience in dealing with similar programmes, and can assist in the development and administration of an electric vehicle programme.

Measure 5: Electric vehicles in bus and transit lanes

Consideration could be given to investigating the removal of regulatory barriers preventing road controlling authorities from allowing electric vehicles in bus and transit lanes.

94. Allowing electric vehicles access to bus and transit lanes is a relatively low cost incentive to encourage uptake of electric vehicles and bring forward GHG emission reductions. This particular measure is perceived by drivers to be of high value relative to other common electric vehicle incentives. In Norway this incentive was a key part of changing consumer opinion about electric vehicles.[5]

95. In New Zealand, priority vehicle lanes exist in two main forms: as transit lanes (for example, T2 and T3 lanes), which prioritise private vehicles carrying multiple passengers; and as bus lanes, which primarily prioritise public buses.

96. Priority lanes run along congested arterial roads in urban areas and are intended to reward forms of travel that make a stronger contribution to network efficiency. Priority lanes offer time savings, which provide strong incentives for travel behaviour change.

97. Under the Land Transport (Road User) Rule 2004 (the Road User Rule), road controlling authorities (RCAs) are restricted from granting electric vehicles access to priority lanes. This incentive is therefore not currently possible without changes to the Road User Rule and related provisions in Land Transport Rule: Traffic Control Devices 2004.

Background

98. At present, transit lanes only exist in Auckland. They operate in two forms.

    98.1. As 'priority lanes' at on-ramps onto the motorways, where vehicles with two or more people can bypass the on-ramp signal lights during congested periods and enter the motorway ahead of other traffic.

    98.2. As 'T2 or T3 lanes'. These operate on arterial roads during peak hours and are reserved for cars with two to three or more people.

99. Bus lanes exist along main arterial roads in most of New Zealand's main urban centres.

100. The NZ Transport Agency is a RCA and manages priority lanes on the Auckland motorway. RCAs, like Auckland Transport and Greater Wellington Regional Council, have responsibility for determining bus lane location and identifying vehicles that can and cannot use the lanes.

101. Providing electric vehicles access to priority lanes would likely provide an incentive for ownership. However, there is limited data available to identify what time savings are necessary to influence electric vehicle uptake. In the USA, there is evidence that policies allowing access to transit lanes have positively influenced the uptake of electric and hybrid vehicles.[6] NZ Transport Agency research shows a fairly strong relationship between travel

[5] Sourced from a 2014 presentation by Norwegian Transportokinomisk Institutt, on 'Electrification of road transport in Norway', slide 9.

[6] See two USA studies: (2014) *Evaluation of State-level U.S. Electric Vehicle Incentives*, The International Council on Clean Transportation, p.26; and (2008) *Impact of High Occupancy Vehicle (HOV) Lane incentives for Hybrids in Virginia*, Journal of Public Transportation, vol. 11, no.4, p.52.

time savings offered by bus and car pool lanes and a shift from car to buses or high occupancy vehicles.[7]

102. Allowing electric vehicles to access priority lanes will inevitably have some impact on other transport objectives. Priority lanes are typically implemented for network efficiency purposes, and the inclusion of electric vehicles in such lanes is likely to impact on public transport reliability and general congestion as electric vehicle numbers grow. However, without RCAs modelling specific corridors, it is not possible to know the precise effects of this incentive, either for electric vehicle uptake or on other transport objectives.

103. In Auckland, the Onewa Road T3 lane offers a travel time saving of around 20 minutes (this resulted in a 120 percent increase in the share of high occupancy vehicles). The priority lanes on on-ramps offer time savings between 2 and 5 minutes and have resulted in only a small increase in high occupancy vehicles.[8]

104. Many bus lanes in New Zealand may not offer a real time saving to car drivers, given the stop-start nature of buses operating in them. The NZ Transport Agency has also advised that the four main corridors with bus lanes in Auckland are expected to be congested within 1 to 3 years. This suggests there are limited opportunities to provide electric vehicle drivers with real time savings via bus lanes. Nevertheless access to bus lanes is likely to remain an incentive for electric vehicle uptake as it provides the perception of priority access.

Options

105. The options considered were:

option 5.1 – amending existing legislation to allow electric vehicles automatic right of access to all bus and transit lanes

option 5.2 – amending existing legislation to enable RCAs to determine which bus and transit lanes electric vehicles can access.

Assessment of the options

106. If this measure is pursued, option 5.2 is preferred. Under this option the Ministry of Transport would consider options for amending legislation to give RCAs the power to allow electric vehicle access to specific bus and transit lanes. RCAs would retain the power to exclude electric vehicles from bus and transit lanes should they choose to do so.

107. This option provides RCAs with the flexibility to choose which bus and transit lanes electric vehicles can access. This flexibility would allow RCAs to manage conflicting transport priorities along a corridor, including electric vehicle promotion and network efficiency.

108. There is a risk that this option would not result in electric vehicles having access to bus and transit lanes. It is the NZ Transport Agency's expectation that RCAs are unlikely to be interested in granting electric vehicles access to bus and transit lanes. The NZ Transport Agency expects RCAs will share its reservations about the potentially negative impact of having electric vehicles in bus and transit lanes on network efficiency (that is, vehicle congestion and bus reliability). For this reason, it would be important to discuss this measure with RCAs prior to any announcement or decision.

[7] http://www.nzta.govt.nz/resources/research/reports/557/docs/557.pdf , p.23.
[8] Ibid, p.22, 23.

109. This risk could be mitigated through consultation with RCAs. Matters relating to implementation of the option will need to be tested with RCAs to consider how they could be managed.

110. This incentive would result in minor costs for RCAs. There would be costs involved in altering signage to identify electric vehicle accessible lanes, and also to make it clear the lanes that do not afford electric vehicles access.

111. The NZ Transport Agency advises that changes to systems to enable identification of electric vehicles for enforcement purposes could range between $60,000 and $200,000 to enable. However, this work may be able to 'piggyback' on other projects.

112. Option 5.1 would be the simplest way to ensure this policy is implemented. However, it would reduce the flexibility RCAs have to manage their networks. Should electric vehicle numbers grow, and impede the flow of other traffic in a priority lane, RCAs would have no recourse to mitigate this. A mandatory policy would also mean electric vehicle access could not be revoked until the regulation expired or was amended.

Measure 6: Road user charges (RUC) exemptions and discounts for electric vehicles

Consideration could be given to introducing a RUC exemption for light electric vehicles from the date each vehicle is registered in New Zealand, for a finite period of time (for example, 5 years). This option would require a change to the Road User Charges Act 2012.

113. The New Zealand land transport system is largely funded on a user pays basis. Anyone using New Zealand's roads contributes towards the operation and development of the land transport system. Vehicle operators pay for their road use through either fuel excise duty (FED) or road user charges (RUC), and through a portion of the annual vehicle licensing fee.

114. The Road User Charges Act 2012 (the RUC Act) requires that all vehicles that do not pay FED through tax on fuel purchases[9] (that is, including electric and diesel vehicles) be subject to RUC, unless exempted.

115. The scope for exemptions is defined in section 37 of the RUC Act. It allows the Governor-General to, by Order in Council, specify the period during which road user charges are not payable in respect of light electric vehicles. An Order in Council made under section 37 of the RUC Act must specify the date on which the exemption expires, and may, from time to time, be amended to provide for a later date.

116. The Road User Charges (Exemption Period for Light Electric RUC Vehicles) Order 2012 makes light electric vehicles exempt from RUC until 30 June 2020.The definition of electric light vehicle in the RUC Act includes all vehicles with "motive power wholly or partly derived from an external source of electricity". In practice, the exemption includes pure electric vehicles and PHEVs.

Previous Cabinet decisions

117. In May 2009, the Cabinet Economic Growth and Infrastructure Committee:

    117.1. agreed that the Road User Charges Act 1977 and Road User Charges Regulations 1978 be amended to exempt light electric vehicles from paying road user charges

    117.2. agreed that a road user charges exemption (that is intended to apply until 1 percent of the light vehicle fleet is electric) will apply until 2013, with the ability to reassess the percentage of light electric vehicles in the fleet and extend the exemption [EGI Min (09) 10/7 refers].

118. In April 2012, Cabinet agreed to extend the existing exemption from RUC for light electric vehicles until 30 June 2020 [EGI Min (12) 6/6]. This decision reflected a slower than anticipated rate of uptake of light electric vehicles.

Benefits of the RUC exemption for light electric vehicles

119. The RUC exemption does not address information or coordination problems. It is a financial incentive that is designed to encourage electric vehicle uptake by reducing their operating costs.

120. We have not formally evaluated the RUC exemption, so we do not know exactly how effective the RUC exemption is at incentivising the uptake of electric vehicles in practice. This includes knowing the extent to which consumers are aware of the RUC exemptions,

[9] Note that FED is also charged on CNG and LPG.

and its potential value. For instance, motorists who have previously driven light petrol vehicles are unlikely to consider the saving on RUC as distinct from overall fuel costs.

121. Stakeholders, such as the Sustainable Business Council and Fleet Management Association, have said that their members consider the RUC exemption to be an important consideration when making fleet purchase decisions.

122. We undertook analysis of whether electric vehicles would be reliant on the RUC exemption for an economic advantage over conventional vehicles based on current costs. We found that, based on current vehicle and fuel prices, the RUC exemption is an important factor in determining whether the total cost of ownership for electric vehicles is competitive with comparable petrol and hybrid vehicles. The RUC exemption therefore plays an important role in determining whether it makes economic sense for fleet buyers to purchase electric vehicles in the short to medium-term.

123. The analysis compared the per kilometre operating cost of different vehicle types, based on:

123.1. fuel cost (2015 prices)

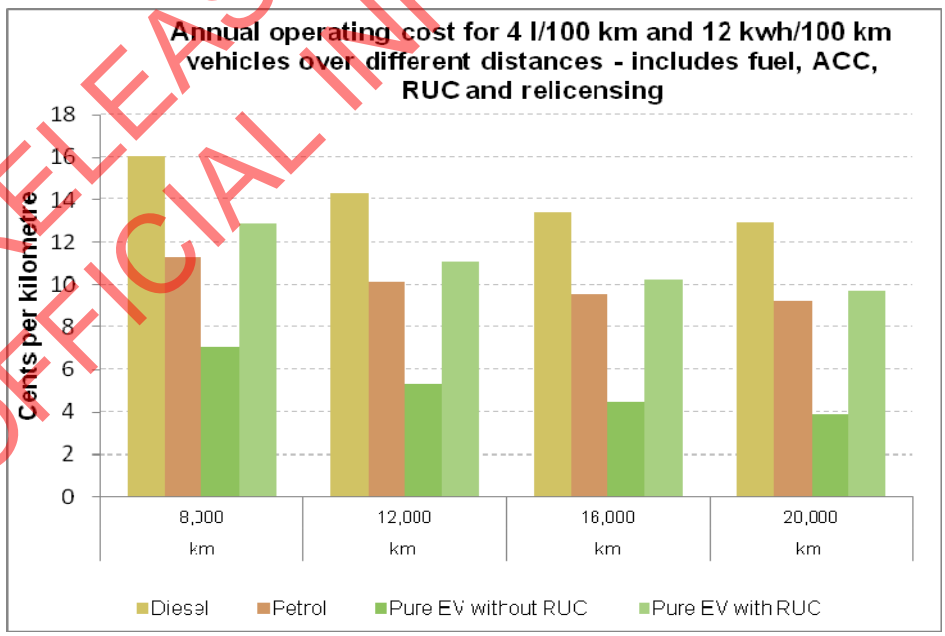
123.2. ACC costs

123.3. annual vehicle licensing

123.4. RUC (where applicable)

124. The analysis did not cover capital (that is, purchase price), maintenance costs or depreciation.

125. The following breakdown shows the costs for both petrol and diesel vehicles using 4 litres per 100 kilometre and electric vehicles using 12 kilowatt-hours per 100 kilometres.[10] It shows that efficient petrol vehicles have similar operating costs to electric vehicles paying RUC.



[10] Conventional Toyota Prius hybrids use 4 to 4.5 litres per 100 kilometres of petrol in the real word, and Nissan Leaf electric vehicles achieve around 13 kilowatt-hours per 100 kilometres.

126. The analysis shows that if there was no RUC exemption, a solely financial analysis would exclude electric vehicles from any rational business decisions (unless there was a significant rise in the price of petrol or major drop in electric vehicle purchase prices).

Cost of RUC exemption

127. Currently, electric vehicles make up just 0.02 percent of the fleet. Based on our modelling of projected uptake, we would expect to see 30,000 electric vehicles (or about 1 percent of the fleet) in the New Zealand fleet by 2033 under a 'status quo' scenario. The financial sustainability of the RUC exemption would need to be addressed at this point.

128. The cost of exempting 1 percent of light electric vehicles from RUC is approximately $22 million per year (2015) from the approximately $3 billion which goes into the national land transport fund annually. Forgoing this revenue means that:

    128.1. less funding is available for delivering roading improvements, which could require that delivery is spread over a slightly longer time frame

    128.2. more of the revenue burden is carried by a decreasing proportion of road users, which could require proportionate increases in FED and RUC to achieve the same level of funding.

Options considered

129. The following option is consistent with existing government policy, and can be implemented under the RUC Act.

    Option 6.1 – extend the blanket RUC exemption for light electric vehicles to a date beyond 30 June 2020.

130. The following amendments to RUC for electric vehicles would require amendment of the RUC Act.

    Option 6.2 – introduce RUC exemption for light electric vehicles from the date individual vehicles are first registered in New Zealand, for a finite period of time.

    Option 6.3 – introduce a lifetime exemption from RUC for all the light electric vehicles first registered in New Zealand before a specified date.

    Option 6.4 – extend the RUC exemption to include heavy electric vehicles.

    Option 6.5 – provide a discounted rate of RUC for heavy electric vehicles.

    Option 6.6 – provide a discounted rate of RUC for heavy passenger electric vehicles.

131. Note that no amendment to the RUC Act is proposed for this year's legislative programme.

Assessment of the options

132. If this measure is pursued, option 6.2 is preferred. A RUC exemption for light electric vehicles from the date they are first registered, for a finite period of time, would help manage the cost of foregone revenue (within the 1 percent limit already agreed by Cabinet). It is also more equitable than the current exemption because owners of electric vehicles would begin paying their fair share towards the land transport system after the finite period ended. We would need to do more work to determine an appropriate exemption period. A risk of this option is that it could be politically difficult for a future government to close off the exemption.

133. If you do not want to pursue an amendment to the RUC Act, you could consider option 6.1. Based on our preliminary assessment, the RUC exemption for light electric vehicles could be extended to 2025 without exceeding the 1 percent limit already agreed by Cabinet, even with a boost in uptake levels as a result of a government package.[11]

134. We do not recommend that option 6.3 be pursued. While this option would incentivise early uptake, it could create some unwanted market distortions (for example, a 'bubble' of electric vehicles registered prior to the exemption close off). Such distortions would substantially increase the amount of revenue foregone and would further exacerbate the inequity of the RUC exemption.

135. We do not recommend exempting or discounting heavy electric vehicles from RUC. Heavy vehicles do significantly more damage to the roads, and therefore have a greater impact on maintenance costs. It would also be a further deviation from the user pays model, and is likely to face political resistance.

136. Currently, there are very few electric heavy vehicles on the road. Nationally, there is 1 fully electric truck, 3 hybrid trucks, and 80 electric trolley buses in Wellington.

137. If pursued further, we would need to consult with industry to consider their views on the matter, and get a better indication of likely rates of uptake. This would inform the projected costs of the exemption. We would also suggest limiting the scope of the changes to reduce the risk of higher-than-expected revenue losses (for example, option 6.6 – a discount for heavy passenger electric vehicles).

138. A risk with all the options above is that the overall cost cannot be defined accurately (essentially it will be demand driven). Also, there could be perceptions of unfairness from manufacturers or users of other low emission technologies, such as hydrogen vehicles.

139. If a change to the RUC Act is required following ministerial decisions on the RUC exemption, the Ministry of Transport could explore whether the exemption should also apply to other low emission vehicles.

[11] If we assume that a package of measures to encourage the uptake of electric vehicles doubles the baseline rate of uptake, we could see 30,000 electric vehicles in the New Zealand fleet by 2029. However, it is very difficult to project future uptake of electric vehicles off the current low base (approximately 400 vehicles). Actual uptake in 10 years' time may vary significantly from current projections.

Measure 7: Fringe benefit tax on electric and hybrid vehicles

We recommend that a review be conducted within the next 2 years of the basis for calculating the taxable value of the fringe benefit for electric and hybrid vehicles. This review would ensure that the lower running costs of these vehicles are adequately recognised.

140. Fringe benefit tax is a tax on non-cash benefits provided in connection with employment. The tax is intended to leave an employee neutral between receiving a fringe benefit and receiving the equivalent monetary remuneration. Consequently, fringe benefit tax should not distort choice, unless it results in overtaxing the benefit, such as through an overvaluation of the benefit provided.

141. Electric and hybrid vehicles attract a higher amount of fringe benefit tax as their purchase prices are higher than those of equivalent conventional vehicles. The Sustainable Business Council and Business are of the view that reducing the fringe benefit tax on electric vehicles would have a significant nudge effect on the purchase decisions of fleet managers.

142. For the purposes of fringe benefit tax, the annual taxable value of an employee's vehicle benefit is calculated as either 20 percent of a vehicle's cost price, or 36 percent of its book value. These proportions are proxy estimates of the fixed and running costs that the employee would bear if they owned the car themselves. Fringe benefit tax applies to these estimates.

143. Little is known about the extent to which fleet purchase decisions are being influenced by fringe benefit tax. In our view, however, it is more likely that other barriers, such as the limited (travel) range of pure electric vehicles, are playing a far greater role in company decisions not to purchase electric vehicles for their fleets. Also, many employees use motor vehicles solely for work purposes rather than as a non-cash employment benefit, and would be unaffected by changes to fringe benefit tax rules.

144. Nevertheless, a potential issue with the fringe benefit tax regime could be the method for calculating the taxable value of the fringe benefit. The regime assumes that the calculation used to value the fringe benefit of a conventional vehicle correctly values the benefit of an electric/hybrid vehicle. However, although the purchase price is higher, the running costs of electric/hybrid vehicles tend to be lower than for conventional vehicles. By using the same proportion of cost price (or book value), the calculation ignores these key differences.

145. Despite the expectation that the purchase price of electric vehicles will continue to fall over time, it is unlikely that it will fall below that of conventional vehicles. This means that in the future the potential for the tax calculation to overvalue the fringe benefit of electric/hybrid vehicles will remain.

146. Where the tax regime overtaxes the fringe benefit of electric vehicles, this would have the potential to distort vehicle choice in favour of conventional vehicles and away from electric/hybrid vehicles. This brings a risk that the tax calculation will continue to potentially overvalue and overtax the fringe benefit of electric/hybrid vehicles.

147. The options looked at to address this concern were:

option 7.1 – exempt electric vehicles from fringe benefit tax

option 7.2 – allow the fringe benefit tax on an electric vehicle to be calculated on the basis of the cost price/book value of an equivalent conventional vehicle

option 7.3 – review the basis for calculating the taxable value of the vehicle benefit for electric/hybrid vehicles within the next 2 years.

Assessment of the options

148. If this measure is pursued, option 7.3 is preferred. This would remove any perception that the fringe benefit tax regime is influencing companies to favour conventional vehicles over electric/hybrid vehicles. It would also preserve and strengthen the existing policy settings of the fringe benefit tax regime.

149. Tax officials note that this review work would have to be prioritised against other items on the Government's tax policy work programme. The timing of any review should also take into account the likelihood of continued large variations in the cost structure of electric vehicles, to ensure any amendment would appropriately reflect the benefit provided, over a longer term.

150. Option 7.1 is not preferred as it would be inconsistent with New Zealand's broad based tax settings. It would also compromise equity goals by affording a tax advantage to those companies and employees where an electric/hybrid company car is made available for private use.

151. Option 7.2 is not preferred because it would also, although to a lesser extent, be inconsistent with the current broad based tax settings and would compromise equity goals within the current framework. Such a change would create a discrepancy between the effective taxation of a fringe benefit vehicle and the equivalent cash remuneration.

Measure 8: Tax depreciation rates for electric vehicles

We recommend that you consider inviting relevant industry groups (for example, Drive Electric, electric vehicle manufacturers) to discuss with tax policy officials the case for having higher depreciation rates for electric vehicles. It would be expected that the industry would prepare an economic case and support its arguments for a higher rate of depreciation for income tax purposes.

152. MRP and Zero Emission Vehicles Limited have suggested that government could consider accelerated depreciation rates for electric vehicles. Currently electric vehicles are depreciated at the same rate as passenger vehicles (30 percent (diminishing value) or 21 percent (straight line) over 5 years). Residual value for passenger vehicles is estimated at 25 percent of cost price.

153. We understand companies that calculate residual vehicle values are making low estimates for electric vehicles (from $5,000 to $15,000) even though their original purchase price is higher than similar conventional vehicles. This is likely to be because electric vehicles are new to the market so there is a lack of information about their resale value and there is uncertainty about durability, potential technological developments and battery life.

154. Lower than average residual values act as a further disincentive to fleet buyers by increasing their overall fleet's vehicle costs. The standard tax depreciation rate for passenger vehicles is thus perceived as unfair, in part because they receive a poor return on investment. They perceive that the total cost of ownership over a 5-year period will be higher for electric vehicles, but they are unable to deduct the tax on the additional cost from their taxable earnings annually. An accelerated tax depreciation rate for electric vehicles would therefore help make them more cost-effective and competitive with conventional vehicles.

155. The impact identified by relevant industry groups is a question about the timing and value of tax depreciation deductions rather than a permanent tax effect. When the asset is disposed of, the Income Tax Act 2007 requires a wash-up to calculate if the relevant tax depreciation rate has correctly spread the cost of the asset over its economic life.

156. Tax policy officials advise that proposals for accelerated depreciation would be inconsistent with the Government's revenue strategy, which supports a broad-base low-rate tax system and generally avoids tax concessions. Keeping the tax bases as broad as practical minimises the distortionary impact taxes can have on decision-making in terms of consumer choice and decisions to produce goods and services. The primary function of the tax system is to raise revenue to finance government expenditure in a fair and efficient way; its function is not to encourage particular types of economic activity. If the Government wishes to encourage a particular economic activity it is preferable for this to be done in a transparent way by direct funding rather than through the tax system.

157. That said, the policy principle behind tax depreciation is that the deduction should match the economic life of the asset. Within these parameters, and keeping in mind the principles of New Zealand's broad-base low-rate tax system, there may be a case to consider whether the current tax depreciation rate that applies to the entire New Zealand passenger vehicle fleet is appropriate for electric passenger vehicles.

158. Relevant industry groups (for example, Drive Electric, electric vehicle manufacturers) can discuss their concerns with Inland Revenue directly. Industry would be required to make an economic case for change, including a clear indication of the fiscal costs.

159. Depreciation rates for electric passenger vehicles are not administratively determined by Inland Revenue and any work on this issue would need to be prioritised against other items on the Government's tax policy work programme.

Measures to be progressed outside of the package

160. We have assessed the following measures as having merit, but being more suitable for progression over the medium-term as part of wider reviews within the relevant departments or agencies.

Measure 9: Amending ACC levies for plug-in hybrid electric vehicles (PHEVs)

We recommend that this issue be deferred until there is a wider review of the NZ Transport Agency's annual vehicle licensing classification system.

161. The owners of PHEVs pay more in ACC levies than equivalent diesel or electric vehicle owners. This is considered to be inequitable and a disincentive to ownership.

162. This anomaly results from the way in which ACC levies are collected as well as the way in which PHEVs are classified by the NZ Transport Agency and ACC.

163. ACC levies are collected from vehicle owners either exclusively through annual vehicle licensing (as is the case for electric and diesel vehicles), or through a combination of annual vehicle licensing and the ACC motor vehicle levy placed on petrol. Under this system a petrol driven vehicle pays a lower ACC levy as part of their annual vehicle licence compared to a non-petrol driven vehicle (for example, pure electric and diesel vehicles), as they are also charged an ACC levy at the petrol pump.

164. PHEVs are overcharged because they are classified as 'non-petrol driven' vehicles. Non-petrol driven vehicles are charged a higher ACC levy as part of their annual vehicle licence as it is assumed they do not pay a levy on petrol. However, as PHEVs may use petrol for approximately 40 percent of their travel, they end up making additional ACC levy payments.

165. We estimate that (under the new ACC levy rates on petrol from July 2015) PHEV owners will pay, on average, an additional $15 to $40 per annum in ACC levies beyond what other non-petrol vehicle owners are paying.

166. This additional levy equates to a net cost to consumers of approximately $4,000 per annum (assuming the 2014 level of PHEV ownership: 220 vehicles in the fleet).

167. Our preliminary modelling suggests PHEV numbers may increase to 2,600 or 0.07 percent of the vehicle fleet in 2020. In this scenario, the cumulative cost of the additional ACC levy would reach approximately $159,200 by 2020 (assuming 2015 prices and no increase in the ACC levy rate on petrol or change in PHEV fuel economy).

Options

168. The options considered to address this anomaly were:

option 10.1 – defer this issue until there is a wider review of the NZ Transport Agency's annual vehicle licensing classification system

option 10.2 – undertake a review of the levy rate charged on PHEVs by ACC and amend if necessary.

Assessment of the options

169. Option 10.1 is preferred. While there is an equity issue related to the overpayment by PHEV owners, the cost involved in removing this anomaly is considerably greater than the expected net benefit to consumers. ACC estimates that the one-off cost of changing the levy rate charged as part of the annual licensing of PHEVs would be between $0.5 million and $1.2 million. The NZ Transport Agency estimates that reclassifying PHEVs in the Motor Vehicle Register would cost between $60,000 and $200,000.

170. The additional cost of the ACC payment to the individual PHEV owners is also unlikely to be a disincentive to purchasing these vehicles as it is hidden within annual vehicle licensing costs.

171. Should you wish to pursue option 10.2, the following steps would need to be taken.

    171.1. You would need to write to the ACC Minister to request that ACC undertakes a review of the PHEV levy rate.

    171.2. Should ACC consider it appropriate to amend the rate charged on PHEVs, both ACC and the NZ Transport Agency would need to collaborate to design an operational policy to identify, classify, and charge PHEVs with a new levy.

    171.3. You would need to write to the NZ Transport Agency Board requesting that they direct the Agency to collaborate with ACC in this process.

172. Note that ACC and the NZ Transport Agency would need to develop this operational policy prior to June 2015. ACC need to consult on levy changes before seeking Cabinet approval and the next cycle of consultation is set for August 2015. Missing this deadline would delay consultation until the 2017 consultation cycle, or necessitate an out-of-cycle consultation, which would in turn increase the cost of this process.

Measure 10: A road user charges (RUC) rate for plug-in hybrid electric vehicles (PHEVs)

We recommend that officials investigate setting a RUC rate for PHEVs shortly before any RUC exemption is due to end.

173. When the RUC exemption ends, PHEVs will have to pay RUC as well as FED on any petrol used. They could apply for a refund of FED, but the burden of doing so may be a disincentive for uptake of PHEVs, and increase the NZ Transport Agency's administrative costs. We can investigate setting a RUC rate for PHEVs shortly before any RUC exemption is due to end.

Measure 11: Removing battery import duties

We recommend that this issue be considered in the context of New Zealand's participation in the Environmental Goods Agreement negotiations at the World Trade Organization. We will continue to work with the Ministry of Foreign Affairs and Trade (MFAT), MBIE and the New Zealand Customs Service to establish the impact of any future changes to the tariffs on electric vehicle batteries

174. New Zealand has joined 17 other World Trade Organization members (including China, the European Union, Japan and the USA) in negotiations towards an Environmental Goods Agreement in the World Trade Organization context.

175. The possible inclusion of electric vehicles in any final Environmental Goods Agreement outcome may have a noticeable impact on the global uptake of electric vehicles through faster and deeper cost reductions, for not only electric vehicles but also associated technology including batteries and charging infrastructure.

176. Replacement batteries for electric and hybrid vehicles are subject to a 5 percent import duty, which may add to battery replacement costs for owners. This duty represents a relatively small component of the cost of replacing a battery, but any reduction in battery replacement cost would 'nudge' consumers to consider electric vehicles as an affordable option.

177. The 5 percent import duty is in place to assist New Zealand manufacturers of batteries. Though such domestic manufacturers appear to no longer exist, Cabinet has agreed that the rate remains in place until 30 June 2017.

178. MFAT advises that import duties on replacement batteries for electric vehicles continue to play an important role as negotiating coin in the context of trade negotiations, particularly the negotiations towards an Environmental Goods Agreement.

179. MFAT is opposed to any unilateral action to reduce import duties on replacement batteries. Import duties on a range of environmentally friendly technologies, including electric vehicles and replacement batteries, may be reduced in accordance with an eventual Environmental Goods Agreement outcome, assuming that these technologies are part of the final package.

180. Further analysis is required on the impact of tariff duty on imports of replacement batteries for electric vehicles, noting that in 2014, 98 percent of the $12.8 million trade in lithium-ion batteries entered free of tariff duty.

181. We will continue to work with MFAT, MBIE, and the New Zealand Customs Service to establish the impact of any future changes to the tariffs on electric vehicle batteries.

182. We consider this the preferred way forward. Given the removal of duties requires Cabinet approval, it would be preferable to have the input and support of relevant departments and ministers.

183. MBIE advises that if the recommendation is to put in place a new tariff concession scheme, this process would take approximately 4 months (this includes the policy development process).

Measure 12: A feebate scheme to encourage purchase of low emission vehicles

We recommend that feebates not be pursued as a measure for encouraging the uptake of electric vehicles. We recommend that feebates should be further investigated as a mechanism for reducing GHG emissions across the vehicle fleet as a whole.

184. Feebate schemes reward purchasers of low emission vehicles with a rebate on the purchase cost while vehicles with higher emissions are charged a fee.[12] We previously advised that feebates could be a way to provide a subsidy to purchasers of electric vehicles without imposing a cost on government, as the fees charged to higher emissions vehicles can fund the rebates to lower emissions vehicles.

185. Feebates reward the consumer 'up front' for future cost savings and related long-term societal benefits of reduced GHG emissions. Feebates aim to improve vehicle emissions performance across the vehicle market rather than incentivising electric vehicles *per se.*

186. Feebates have been implemented in France, and feebate-like systems are in place in other areas such as the Netherlands and California. Evidence suggests the French and Dutch systems have been effective in achieving reductions in GHG emissions from new vehicles, but the impact on the uptake of electric vehicles is less clear. In France, uptake of electric (both pure electric and PHEVs) and hybrid vehicles is low (3.4 percent of the new vehicle market in 2013). In comparison, in other markets the uptake of the three classes is higher (for example, Japan with 21 percent of all new vehicles in 2013, Norway with 12.8 percent, the Netherlands with 11.3 percent, and California with 10.3 percent).

187. After further analysis we conclude that feebate systems are unsuitable solely as a mechanism to encourage the uptake of electric vehicles. International studies have found the major impact of feebates is to incentivise improved emissions performance of existing vehicle models, rather than achieving a shift in the models purchased. Increased uptake of electric vehicles may be an indirect effect of feebates. However, the costs of establishing a feebates scheme solely to encourage electric vehicle uptake would outweigh the benefits (if that was measured in terms of additional electric vehicles being purchased).

188. While we do not recommend that feebates pursued as a measure for encouraging the uptake of electric vehicles, we consider feebates should be further investigated as a mechanism for reducing GHG emissions across the vehicle fleet as a whole. We note that feebates are reported to be a relatively simple way to begin reductions in fuel consumption and GHG emissions in countries that have not yet developed programmes for this purpose. We intend to provide analysis in further advice to you scheduled for May 2015.

[12] The rebate/fee would be applied at the time the vehicle is first registered.

Measure 13: Recognition of alternative low emission vehicle designs

We recommend that changes to the regulatory framework for recognising alternative vehicle designs not be pursued as a measure for encouraging the uptake of electric vehicles. However, this issue should be further investigated as a mechanism for reducing GHG emissions across the vehicle fleet as a whole.

189. One approach car manufacturers have taken to reduce the price of electric vehicles, and to make them travel further on a standard battery charge, is to make the vehicles smaller and lighter than traditional cars. New Zealand road safety standards and classifications, however, prevent a number of smaller electric vehicles from operating on our roads.

190. A number of alternative low emission vehicles can legally be used in Europe and Japan, but not in New Zealand. For example, the French manufacturer Renault makes a vehicle called the Twizy. This vehicle gets acceptable ratings in the European New Car Assessment Programme crash testing, but cannot be used in New Zealand as it does not meet existing vehicle classifications. Google's proposed small driverless car would also not be able to be used in New Zealand as it falls outside our current standards.

191. Currently, there may be ways to resolve these issues within the regulatory framework[13], but it is not clear whether this is an efficient or robust method for assessing alternative low emission vehicles.

[13] For example, the NZ Transport Agency is able to "declare that a vehicle is a mobility device or is not a motor vehicle" in certain cases. The NZ Transport Agency exercised this power to declare Yike Bikes (a small folding electric motorbike made in New Zealand) not to be motor vehicles in September 2014.

Measures that were not considered worth progressing

Measure 14: Lower registration and annual vehicle licensing fees for electric vehicles

We recommend that no change to registration fees be considered, given first registration fees are currently differentiated on motor size. We also recommend that annual licensing fees not be differentiated to favour better performing vehicles as adjustments to existing fees would not provide sufficient economic value to act as an incentive.

192. The Sustainable Business Council suggested fees for first registration of vehicles favour better performing vehicles. As with annual licensing fees, the bulk of the fee payable at first registration is the ACC levy. The next highest component of the fee payable is the registration fee, which is currently differentiated on motor size.

193. Most passenger cars (between 1301 to 2600 ccs) are charged $112. We understand the first registration fee payable by an electric vehicle would be around $90.

194. The effectiveness of this option may be limited by the relatively small one-off cost of registration compared to the purchase price of the vehicle. However, given on-road costs are advertised at the point of purchase, this would likely have a nudge effect on consumers.

195. The Sustainable Business Council also suggested that the fee for annual licensing (commonly known as 'registration') of vehicles be structured so that better performing vehicles are charged less.

196. The bulk of the annual licence fee charged to motorists is the ACC levy. The licence fee itself only amounts to $43.50 (excluding GST). Given its low value, any adjustment of this fee to reflect vehicle performance would be a very weak incentive to purchasers.

Measure 15: GST exemption for second-hand electric vehicles

We do not recommend further consideration of a GST exemption for electric vehicles.

197. MRP suggested a GST exemption be provided for second-hand imported PHEVs to incentivise their importation to New Zealand over Australia. We note that New Zealand has a broad based tax system under which GST is applied at the same rate to all goods and services. Exempting individual items from GST does not align with government policy and has not been provided for other consumer items.