

# Ending the ICE age

## Norway's plan to end internal combustion engine vehicle sales by 2025

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*All new car sales in Norway will be zero emissions vehicles by 2025. To achieve this goal, Norway has a comprehensive electric vehicle policy. Australia has no federal electric vehicle strategy or policies and no plan for the transition from ICE vehicles.*

Discussion paper

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# Executive Summary

The transport sector is the third largest source of greenhouse gas emissions in Australia, as well as one of the fastest growing. Globally, electric vehicle (EV) adoption is becoming a key component of national strategies to reduce greenhouse gas emissions. As well as decarbonising transport, EVs save consumers money, and provide societal benefits including cleaner air in cities and enhanced energy and fuel security.

An increasing number of national and sub-national governments have announced plans to phase out the sale of new internal combustion engine (ICE) vehicles, sending a strong signal to industry and consumers that the EV transition is underway. This will have a major impact on countries that do not manufacture their own cars, like Australia. Norway's 2025 goal is the most ambitious of the national targets to end ICE vehicle sales.

Norway boasts the highest share of electric vehicles sales per-capita in the world. Of all new cars sold in Norway during 2019, 42% were electric, and 56% were electric including plug in hybrids (PHEV). In Australia, EVs make up just 0.6% of new car sales.

The Australian Federal Government announced a forthcoming national electric vehicle strategy in February 2019. This promise has since been delayed multiple times. To effectively decarbonise Australia's transport sector, Australia's long-awaited EV strategy will need to be backed by strong policies and EV incentives.

The Norwegian Government provides a range of policy incentives, including reduced one-off registration tax, GST exemption, circulation tax waivers, reduced fees for tolls roads and ferries, and access to bus lanes.

The Norwegian approach offers an example of successful policies to incentivise EV uptake. Australian barriers to EV uptake include the lack of federal leadership, model availability and affordability, and charging time and access. To help overcome these barriers, a national electric vehicle strategy underpinned by policies to encourage EV uptake is necessary.

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# Introduction

In September 2020, Minister for Energy and Emissions Reductions Angus Taylor took to the National Press Club podium to announce the release of the Coalition government's First Low Emissions Technology Statement 2020 (Technology Roadmap). According to Minister Taylor, the Technology Roadmap would broaden Australia's decarbonisation endeavours beyond the electricity sector:

Over the last decade there's been enormous focus on electricity, [which] makes up only 32 per cent of our total emissions.

These technologies we've outlined today will broaden the focus to include the other 68 per cent of emissions outside of the grid - in industry, manufacturing, agriculture and transport.

Taylor's speech might lead one to presume that transport, being the third highest emitting sector in Australia, would be a central focus of the Tech Roadmap. Far from it. Electric vehicles (EVs), along with many technologies in the transport sector, are categorised as 'watching brief technologies' – the lowest priority category established in the Technology Roadmap.<sup>1</sup>

According to the Technology Roadmap, 'watching brief technologies' are generally at a 'very early stage of development'. Other watching brief technologies include small modular reactors – nuclear technology that is economically speculative and far from deployment.<sup>2</sup> To put this technology grouping into perspective, the International Energy Agency's 2018 benchmark World Energy Outlook does not mention small modular reactors once, but contains 85 mentions of EVs. Unlike nuclear energy, there is no moratorium on EVs in Australia, and media articles on EVs generally include photos rather than an 'artist's impression' of nuclear technology that does not yet exist.

The same month the Australian Government relegated EVs to 'watching brief' technologies, Norway recorded 82% EV market share of new car sales.<sup>3</sup> There is clearly a stark disparity between Australian and Norwegian approaches to EVs.

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<sup>1</sup> Commonwealth of Australia (2020) *First Low Emissions Technology Statement – 2020*, <https://www.industry.gov.au/sites/default/files/September%202020/document/first-low-emissions-technology-statement-2020.pdf>

<sup>2</sup> Swann & Quicke (2019) *Over Reactor: The economic problems with nuclear power*, <https://www.tai.org.au/sites/default/files/P782%20Over%20Reactor%20%5BWEB%5D.pdf>

<sup>3</sup> InsideEVs (2020) *See How Plug-In Electric Cars Captured Over 80% Market Share In Norway*, <https://insideevs.com/news/447168/plugins-captured-over-80-market-share-norway/>

This disparity is brought into sharp focus by Norway's ambitious goal of reaching 100% electric new car sales by 2025. In just five years, Norway aims to become the world's first country to end the sale of new fossil-fuelled vehicles. In that time, Australia will be lucky to have a finalised, robust EV strategy.

The Federal Government announced a forthcoming national electric vehicle strategy in February 2019, a promise that has since been delayed multiple times. First, in March 2019 Minister Price confirmed the delay of the strategy's release to mid-2020.<sup>4</sup> Then, in June 2020 Minister Taylor published a press release on EV charging stations with a final paragraph referring to the National Electric Vehicle Strategy, to be 'finalised by the end of the year'.<sup>5</sup> Most recently, during Senate Estimates Minister Birmingham confirmed that the document released this year will be a 'consultation paper', not a strategy.<sup>6</sup>

A national Australian EV strategy is necessary to signal Australia's commitment to decarbonising transport. However, a strategy is only as good as the policies that underpin it. Australia currently offers little in the way of EV incentives at the state level,<sup>7</sup> and nothing at the national level. Australia's forthcoming EV strategy must be backed by effective policies and incentives such as those implemented in Norway.

Norway boasts the highest share of electric vehicles sales per-capita in the world. Of all new cars sold in Norway during 2019, 42% were electric, and 56% were electric including PHEVs.<sup>8</sup> That number is rising. In September 2020, monthly EV market share reached a record 82%.<sup>9</sup>

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<sup>4</sup> Schmidt (2020) *Coalition says no plans for electric vehicle strategy until mid-2020*, <https://thedriven.io/2019/03/26/coalition-says-no-plans-for-electric-vehicle-strategy-until-mid-2020/>

<sup>5</sup> Angus Taylor MP (2020) *Supporting new technology to drive uptake of electric vehicles*, <https://www.minister.industry.gov.au/ministers/taylor/media-releases/supporting-new-technology-drive-uptake-electric-vehicles>

<sup>6</sup> Commonwealth of Australia (2020) *Senate Environment and Communications Legislation Committee- Tuesday 20 October 2020*.

<sup>7</sup> With the exception of the ACT, which waives stamp duty and provides a 20% discounted registration fee. Victoria also discounts registration and exempts EVs from the luxury vehicle stamp duty rate. Queensland offers a small discount on stamp duty, and NSW provides a small discount on registration fees. See: Drive (2020) *Electric car subsidies: how Australia compares to the rest of the world*, <https://www.drive.com.au/news/electric-car-subsidies-how-australia-compares-to-the-rest-of-the-world-124032>

<sup>8</sup> Statistics Norway (2019) *Registered vehicles*, <https://www.ssb.no/en/statbank/table/12906/>

<sup>9</sup> InsideEVs (2020) *See How Plug-In Electric Cars Captured Over 80% Market Share In Norway*, <https://insideevs.com/news/447168/plugins-captured-over-80-market-share-norway/>

In Australia, it's a very different story, with EVs making up just 0.6% of new car sales,<sup>10</sup> compared to 3% of new car sales globally.<sup>11</sup>

It is ironic that Norway, a major oil exporter, has made such an impressive transition to EVs, while Australia, a significant oil importer, has not. Oil is one of Norway's biggest exports and sources of income, with a \$1 trillion sovereign wealth fund built on decades of well-taxed petroleum production.<sup>12</sup> By contrast, Australia is highly dependent on imported oil, and poorly placed to deal with a liquid fuel security crisis due to low emergency fuel reserves.<sup>13</sup>

The benefits of EVs are well established and numerous. EVs are cheaper to run than ICE vehicles (due to lower maintenance and fuel costs) and forecast to reach upfront price parity with Internal Combustion Engine (ICE) vehicles by the mid-2020s.<sup>14</sup>

The International Energy Agency's 2020 World Energy Outlook suggests that to reach carbon neutrality by 2050, over half of all passenger cars sold globally should be electric by 2030.<sup>15</sup> EV adoption is becoming a key component of national strategies to reduce greenhouse gas emissions. Already, Norway's large EV uptake has had a notable impact on national greenhouse gas emissions and fuel sales.<sup>16</sup> In 2019, diesel and gas sales declined for the third year in a row and national greenhouse gas emissions fell by 3.4% from the previous year to the lowest level in 27 years.<sup>17</sup> The biggest reduction in emissions was from the transport sector.<sup>18</sup>

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<sup>10</sup> Parkinson (2020) *Tesla takes 70 per cent of market, as Australia electric car sales reach 5,000 in 2019*, <https://thedriven.io/2020/01/20/tesla-takes-70-per-cent-of-market-as-australia-electric-car-sales-reach-5000-in-2019/>

<sup>11</sup> Doyle (2020) *Norway sets electric car record as battery autos least dented by Covid-19 crisis*, <https://www.climatechangenews.com/2020/07/02/norway-sets-electric-car-record-battery-autos-least-dented-covid-19-crisis/>

<sup>12</sup> International Energy Agency (2018) *Norway*, <https://www.iea.org/countries/norway>  
Bloomberg (2020) *Norway to Spend Record \$41 Billion of Oil Wealth Amid Crisis*, <https://www.bloomberg.com/news/articles/2020-05-12/norway-plans-to-spend-record-41-billion-of-oil-wealth-in-crisis#:~:text=Norway%20has%20amassed%20a%20%241,the%20country's%203%25%20fiscal%20rule.>

<sup>13</sup> The Australia Institute (2019) *Submission: Interim Report on the Liquid Fuel Security Review*, [https://www.tai.org.au/sites/default/files/P739%20Liquid%20Fuel%20Security%20Submission%20WEB\\_1.pdf](https://www.tai.org.au/sites/default/files/P739%20Liquid%20Fuel%20Security%20Submission%20WEB_1.pdf)

<sup>14</sup> Electric Vehicle Council (n.d.) *Key facts - Electric Vehicle Council*, <https://electricvehiclecouncil.com.au/about-ev/key-facts/>

<sup>15</sup> International Energy Agency (2020) *World Energy Outlook 2020 abstract*, <https://www.iea.org/reports/world-energy-outlook-2020/achieving-net-zero-emissions-by-2050#abstract>

<sup>16</sup> Hill (2020) *Thanks to electric cars, Norway will reach climate target in 2020*, <https://thedriven.io/2020/06/25/thanks-to-electric-cars-norway-will-reach-climate-target-in-2020/>

<sup>17</sup> Ibid.

<sup>18</sup> CleanTechnica (2020) *Norway May Achieve Emissions Reduction Goals This Year, Thanks To More EVs & Higher Public Transportation Usage*, <https://cleantechnica.com/2020/06/23/norway-may-achieve-emissions-reduction-goals-this-year-thanks-to-more-evs-higher-public-transportation-usage/>

In Australia, the transport sector is the third largest source of greenhouse gas emissions after electricity and stationary energy, and is one of the fastest growing sources of emissions, increasing 62.4% to March 2020 from 1990 levels.<sup>19</sup> Fossil fuelled passenger and freight vehicles accounted for 43% and 38% of transport emissions, respectively.<sup>20</sup>

To effectively decarbonise Australia's sector, Australia's long-awaited EV strategy will need to be backed by strong policies and EV incentives.

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<sup>19</sup> Commonwealth of Australia - Department of Industry, Science, Energy and Resources (2020) *Quarterly Update of Australia's National Greenhouse Gas Inventory: March 2020*, <https://www.industry.gov.au/sites/default/files/2020-08/nggi-quarterly-update-march-2020.pdf>

<sup>20</sup> Butler et al. (2020) *Decarbonisation Futures: Solutions, actions and benchmarks for a net zero emissions Australia*, <https://www.climateworksaustralia.org/resource/decarbonisation-futures-solutions-actions-and-benchmarks-for-a-net-zero-emissions-australia/>



# Fossil fuel vehicle bans

An increasing number of national and sub-national governments have announced plans to phase out the sale of new ICE vehicles, sending a strong signal to industry and consumers that the EV transition is underway.<sup>21</sup> The most recent is the announcement by the host of the next United Nations climate conference, the United Kingdom to ban ICE sales by 2030. The target was advanced ten years to push for a faster transition, but it is still not the most ambitious, with Norway topping the list.<sup>22</sup>

Currently, most of these targets are aspirational, set in official policy documents not binding legislation. However, enforceable legislation has already been introduced in some sub-national jurisdictions.<sup>23</sup> Other countries, including China and Japan, have sales targets for EVs but are yet to introduce targets for the complete phase out of ICE vehicle sales. The table below outlines national goals to phase out ICE vehicles.

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<sup>21</sup> International Energy Agency (n.d.) *Global EV Outlook 2020 – Analysis*, <https://www.iea.org/reports/global-ev-outlook-2020>

<sup>22</sup> Levin (2020) *The UK will ban the sale of combustion-vehicle engines in 2030, a decade sooner than it originally planned*

<https://www.businessinsider.com.au/uk-ban-sale-new-gas-diesel-cars-vehicles-2030-2020-11?r=US&IR=T>

<sup>23</sup> The International Council on Clean Transport (2020) *Update on the global transition to electric vehicles 2019*, <https://theicct.org/sites/default/files/publications/update-global-EV-stats-20200713-EN.pdf>

**Table 1: National targets to phase out ICE vehicles**

Country	Target	Year
Canada	All new cars sold 100% electric vehicles	2040
Costa Rica	All new cars sold 100% electric vehicles	2050
Denmark	No new gasoline, diesel and PHEV vehicles	2030/2035
France	No new fossil fuelled passenger vehicles	2040
Germany	All new cars sold 100% electric vehicles	2050
Iceland	No new gasoline and diesel passenger vehicles	2030
Ireland	No new fossil fuelled passenger vehicles	2030
Israel	No new gasoline or diesel vehicles	2030
Netherlands	All new cars sold 100% electric vehicles	2030
Norway	All new passenger cars and light-duty vans sold 100% electric vehicles	2025
Portugal	No new ICE vehicles	2040
Scotland	No new gasoline or diesel vehicles	2032
Singapore	No new internal combustion engine vehicles	2040
Sri Lanka	All new cars sold 100% electric or hybrid vehicles	2040
Spain	All new cars sold 100% electric vehicles	2040
Sweden	No new gasoline and diesel vehicles	2030
United Kingdom	No new petrol, diesel, hybrid or PHEV vehicles and vans	2030

Source: The International Council on Clean Transport (2020)<sup>24</sup>



<sup>24</sup> The International Council on Clean Transport (2020) *Update on the global transition to electric vehicles through 2019*, <https://theicct.org/sites/default/files/publications/update-global-EV-stats-sept2020-EN.pdf>

## NORWEGIAN 2025 GOAL

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Norway's 2025 goal is the most ambitious of the national targets to end ICE vehicle sales. The Norwegian Parliament has agreed on the goal of all light vehicles sold, including passenger cars, taxis and lorries, to be zero emissions by 2025. Additionally, all new urban buses sold by 2025 will be zero emissions or use 100% biogas. By 2030, all new heavy duty vehicles, 75% of new long distances coaches and 50% of new trucks will be zero emissions.<sup>25</sup>

The Norwegian 2025 goal is not a legislated target. The Norwegian National Transport Plan notes that achieving this target is contingent on continued technological improvements.<sup>26</sup> Reaching the 2025 goal will help Norway meet its 2030 emissions reduction target of 50-55% reduction on 1990 levels, including reducing transport emissions by 50%.<sup>27</sup> The transport sector accounts for 60% of Norway's emissions, which are outside the scope of the EU Emissions Trading System and must therefore be a priority for domestic emissions reduction efforts.<sup>28</sup>

## AUSTRALIA

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No similar targets to end ICE vehicle sales exist in Australia, despite calls from agencies such as the NRMA to ban petrol and diesel cars by 2030.<sup>29</sup>

Modelling from the Australian Electric Vehicle Market Study, commissioned by the Australian Renewable Energy Agency (ARENA), forecasts that with no policy intervention, EVs and PHEVs will represent 100% of sales before 2050, driven entirely by overseas manufacturers shifting away from ICEs.<sup>30</sup> This transition could be accelerated by up to ten years with moderate to ambitious policy interventions.<sup>31</sup>

It is clear that for Australia to reach the level of EV uptake in Norway and align with global phasing out of ICE vehicles, a government EV strategy and supporting policies are needed. Without such a strategy, the Australian EV transition will be driven by external markets rather than being nationally coordinated to provide maximum benefit to Australians.

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25 Norwegian Ministry of Transport and Communications (2016) *National Transport Plan 2018-2029 (White Paper)*.

26 Ibid.

27 Norsk Elbilforening (2020) *Elbil for alle: en veiviser inn i neste stortingsperiode*

28 Norwegian Ministry of Transport and Communications (2016) *National Transport Plan 2018-2029 (White Paper)*.

29 March, Mcgregor & Selvaratnam (2019) *NRMA calls for ban on sale of gas guzzlers by 2030*,

<https://www.abc.net.au/news/2019-04-01/nrma-calls-for-diesel-and-petrol-car-ban-by-2030/10949414>

30 Energeia (2018) *Australian Electric Vehicle Market Study*, <https://arena.gov.au/assets/2018/06/australian-ev-market-study-report.pdf>

31 Ibid.

# Norwegian electric vehicle policy

Norway began introducing policies to drive an EV transition in the early 1990s, beginning with the temporary abolition of the import tax for EVs in 1990. A range of policy incentives, including waiving vehicle and on-road taxes, have reduced the up-front and lifetime cost of EVs.

The existing policy incentives have helped to normalise EVs in Norway, creating a successful EV market and, in turn, a viable second-hand EV market. Urban EV markets are well established, particularly in Norway's major cities like Oslo and Bergen, and rural EV markets are increasing.<sup>32</sup>

The main elements of Norway's electric vehicle policy are outlined below.

## CHARGING INFRASTRUCTURE

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The Norwegian Government supports the deployment of fast charging points across the country. In 2015, a Government-run incentive scheme was established to install fast chargers every 50km on main roads across the country. Under the scheme, up to 100% of the installation costs were covered by the Government.<sup>33</sup>

With the exceptions of main roads in Finnmark and Lofoten, fast charging stations have successfully been established every 50km on main roads across Norway.<sup>34</sup> These fast charging corridors make longer distance travel easier, reduce range anxiety and catalyse the uptake of electric vehicles.

## POLICIES THAT REDUCE UPFRONT COSTS

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Upfront cost is a strong influencing factor for consumers when deciding which vehicle to purchase. A survey of nearly 3,400 EV owners in Norway found that purchase tax exemptions, which lower the upfront cost of EVs, are the most critical factor in promoting EV purchase.<sup>35</sup>

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<sup>32</sup> Figenbaum (2018) *Electromobility status in Norway*, <https://www.toi.no/getfile.php?mmfileid=47474>

<sup>33</sup> International Energy Agency (2018) *Nordic EV Outlook 2018*, <https://www.nordicenergy.org/wp-content/uploads/2018/05/NordicEVOutlook2018.pdf>

<sup>34</sup> Norsk Elbilforening (n.d.) *Norwegian EV Policy*, <https://elbil.no/english/norwegian-ev-policy/>

<sup>35</sup> Bjerkan et al. (2016) *Incentives for promoting Battery Electric Vehicle (BEV) adoption in Norway*, <https://www.sciencedirect.com/science/article/pii/S1361920915002126>

## Exemption from one-off registration tax

Owners of fully electric vehicles are exempt from the one-off registration tax.<sup>36</sup>

The one-off registration tax is payable for most vehicles imported into Norway. The registration fee is calculated based on the vehicle's weight, CO<sub>2</sub> emissions and nitrogen oxide (NO<sub>x</sub>) emissions (shown below in Figure 1 as individual taxes). For an average ICE vehicle, the registration tax is roughly 30% of the import vehicle price.<sup>37</sup>

## GST exemption

Goods and services tax (GST or value-added tax, VAT) exemptions have a similar effect to registration tax rebates/exemptions – lowering the upfront cost of EVs compared to ICE vehicles. In Norway, zero emissions vehicles have been exempt from a 25% GST on purchase since 2001.<sup>38</sup>

An example is provided in Figure 1 comparing a standard European car in both ICE and EV models. Although the retail price is higher for the electric Golf, once registration and GST exemptions have been applied, the electric Golf retails at a comparatively lower price.

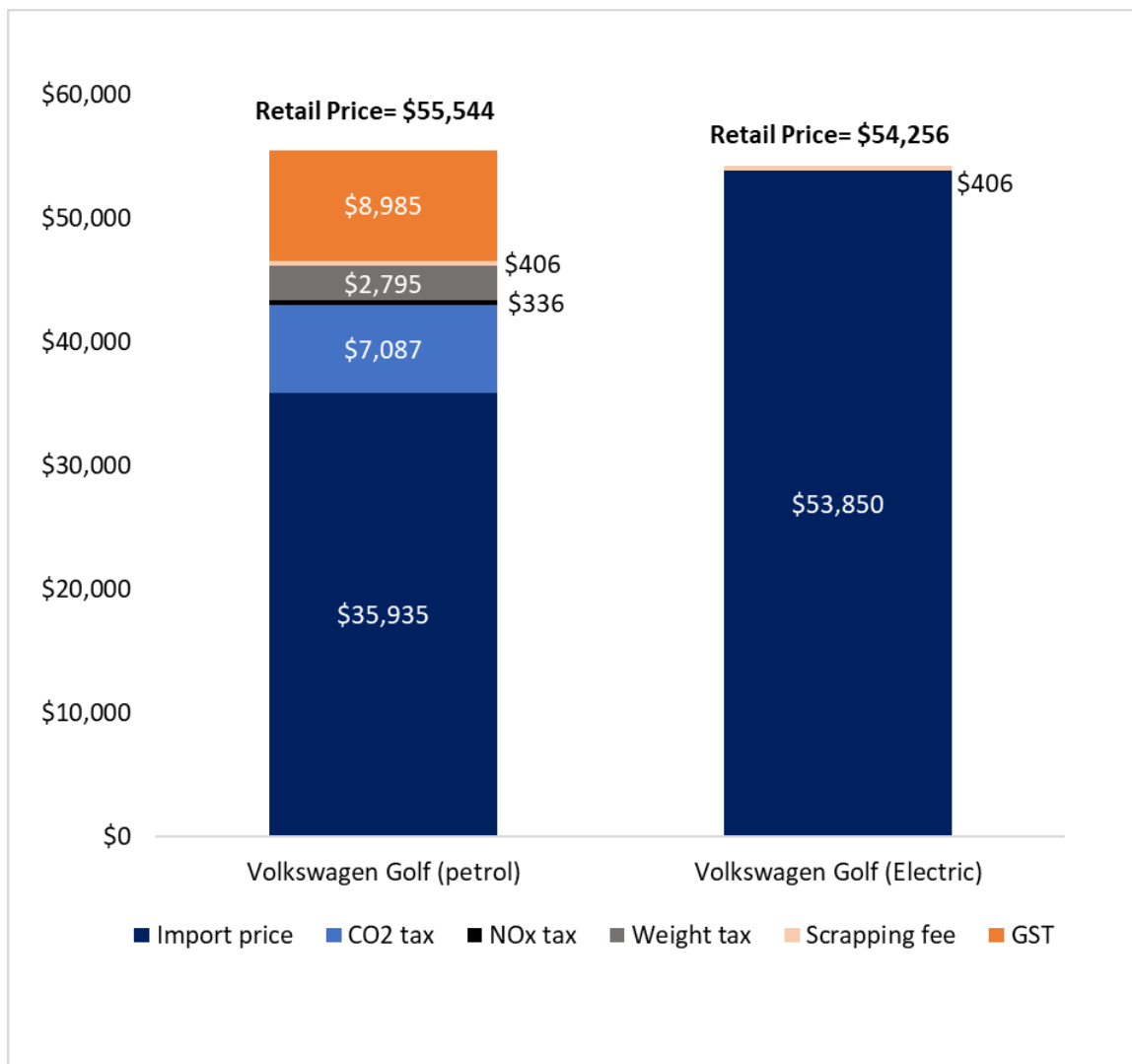
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<sup>36</sup> Norwegian Tax Administration (2020) *Exemption from and reduction of the one-off registration tax*, <https://www.skatteetaten.no/en/person/duties/cars-and-other-vehicles/importing/which-duties-do-you-have-to-pay/one-off-registration-tax/exemption-from-and-reduction-of-the-one-off-registration-tax/>

<sup>37</sup> International Energy Agency (2018) *Nordic EV Outlook 2018*, <https://www.nordicenergy.org/wp-content/uploads/2018/05/NordicEVOutlook2018.pdf>

<sup>38</sup> Norsk Elbilforening (n.d.) *Norwegian EV Policy*, <https://elbil.no/english/norwegian-ev-policy/>

**Figure 1: Cost in Norway of a new VW Golf - Petrol vs Electric**



Source: Norwegian EV Association

Note: Prices in AUD. Conversions at November 2020, 1 AUD = 1.63 Euro



## POLICIES THAT REDUCE OPERATING COSTS OR PROVIDE ACCESS

### Circulation tax waivers

EVs previously paid a reduced rate for circulation tax, an annual fee to allow vehicles to operate on public roads. In 2017 full electric vehicles paid the minimum amount, NOK 455 (AUD 68).<sup>39</sup>

<sup>39</sup> International Energy Agency (2018) *Nordic EV Outlook 2018*, <https://www.nordicenergy.org/wp-content/uploads/2018/05/NordicEVOutlook2018.pdf>

In 2018 the annual circulation tax was replaced by a motor insurance tax. The motor insurance tax was originally waived for EVs compared to the daily rate of NOK 8.12 for fossil-fuelled cars with particulate filters and NOK 9.47 for those without.<sup>40</sup>

In 2020, the Norwegian Government proposed an increase of the motor insurance tax for EVs to an annual fee of NOK 2135, the same rate applied to motorcycles and roughly 70% of the rate applied to fossil fuelled vehicles.<sup>41</sup>

## Reduced fees for toll roads, ferries and parking

Tolled road and ferry fees are lowered for EVs at the discretion of local municipalities. Additionally, most municipalities offer free or discounted parking for EVs and many grant EVs priority access to bus lanes.

In 2017, a '50% rule' was implemented, allowing local governments to independently set fees for ferries, tolls and public parking, provided the fee for EVs is less than 50% of the price charged to ICE vehicles. These incentives encourage the use of EVs on Norwegian roads by making driving and parking cheaper and more accessible to EV drivers.<sup>42</sup>

EVs pay half the parking price of ICE vehicles in Bergen's city centre, while in Oslo, municipal parking space were free for EVs until 2019 and 1 in 5 municipal parking spaces are dedicated to EVs.<sup>43</sup> In Oslo, toll road charges for EVs generally range from one quarter to half the price charged for ICE vehicles depending on peak or off-peak times of day.<sup>44</sup>

## Access to bus lanes

EVs were initially granted free access to bus lanes. Since EVs have become increasingly common new rules have been introduced to balance demand. In 2017 Oslo changed bus lane access to only allow EVs carrying two or more people on specific corridors during peak periods.<sup>45</sup>

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<sup>40</sup> Trafikksforsikrings-foreningen (n.d) *Q&A about the motor insurance tax*, <https://www.tff.no/en/kjoretoy/q--a-about-the-motor-insurance-tax/>

<sup>41</sup> Norwegian Electric Vehicle Association (2020) *Dette betyr statsbudsjettet for norske elbilister* <https://elbil.no/dette-betyr-statsbudsjettet-for-norske-elbilister/>

<sup>42</sup> International Energy Agency (2018) *Nordic EV Outlook 2018*, <https://www.nordicenergy.org/wp-content/uploads/2018/05/NordicEVOutlook2018.pdf>

<sup>43</sup> Ibid.

<sup>44</sup> Fjellinjen (n.d.) *Rates*, <https://www.fjellinjen.no/private/prices/>

<sup>45</sup> European Alternative Fuels Observatory (n.d) *Norway*, <https://www.eafo.eu/countries/norway/1747/incentives>

# THE FUTURE OF NORWEGIAN EV POLICIES

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Some policy incentives including the GST and registration tax exemptions are due for revision after 2020/21.<sup>46</sup> However, the Norwegian EV Association recommends that EVs remain exempt from the GST until EV market share reaches 80%.<sup>47</sup>

The Norwegian EV Association has proposed policies to increase government revenue without re-introducing charges to EVs owners, due to concerns that scaling back government incentives for EVs will erode their competitive advantage and jeopardise the chances of meeting the 2025 goal.<sup>48</sup> These include increasing the retail price of PHEVs, which will need to be phased out to meet the 2025 goal.

Policies to incentivise EVs have received broad support in Norway. EV policy incentives were introduced under a social democratic government but expanded under subsequent conservative governments.<sup>49</sup> EV policy has public support, with the vast majority of EV owners saying they would purchase an EV again.<sup>50</sup> The EV transition has been so effective that large corporations such as fuel-retail chains are now looking directly to Norway as a model for how to transition oil-dependent businesses towards an EV-dominant future.<sup>51</sup>

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<sup>46</sup> Figenbaum (2018) *Electromobility status in Norway*, <https://www.toi.no/getfile.php?mmfileid=47474>

<sup>47</sup> Norsk Elbilforening (2020) *Elbil for alle: en veiviser inn i neste stortingsperiode*.

<sup>48</sup> Ibid.

<sup>49</sup> Centre for Public Impact (2016) *The rise of electric vehicles in Norway*, <https://www.centreforpublicimpact.org/case-study/electric-cars-norway/>

<sup>50</sup> International Energy Agency (2018) *Nordic EV Outlook 2018*, <https://www.nordicenergy.org/wp-content/uploads/2018/05/NordicEVOutlook2018.pdf>

<sup>51</sup> Electrek (2020) *Fuel-retail chains are visiting Norway to ponder a future where gas stations don't exist*, <https://electrek.co/2020/02/17/fuel-retail-chains-are-visiting-norway-to-ponder-a-future-when-gas-stations-dont-exist/>



# Barriers to electric vehicle uptake in Australia

There are a number of barriers to EV uptake in Australia. However, there is no shortage of possible policies that Australia could adopt to help overcome them. The 2019 Senate Select Committee on Electric Vehicles provided 17 recommendations, detailing how the Australian government could embrace EV opportunities. Additionally, the Australian Electric Vehicle Council publications, and ARENA's Australian EV market study provide possible policies and incentives. Countries like Norway show that an EV transition is possible, when backed by government support and effective policies.

The main obstacles to Australian EV adoption, and possible policy solutions, are outlined below.

## Federal leadership

The transition to electromobility in Australia is impeded by the lack of federal leadership, particularly the absence of a national electric vehicle strategy and CO<sub>2</sub> emissions standards.

Manufacturers are reluctant to bring vehicles to markets with no clear commitment to EVs. According to the Electric Vehicle Council:

“When surveyed about the requirements for bringing electric vehicles to a market, carmakers told the Electric Vehicle Council the absence of a national electric vehicle policy is restricting the supply of more electric vehicles to Australia.”

Australian fleet operators are also reluctant to fully transition to EVs without a commitment from the federal government to support EV uptake. Research from the Australasian Fleet Management Association (AFMA) shows that over 60% of fleet operators in Australia are looking to electrify significant portions of their fleets within the next five years, but want governments to provide subsidies and reduce the high upfront cost of EVs.<sup>52</sup> Fleet operators are an important piece of the electromobility transition puzzle, accounting for over half of new vehicle purchases in Australia.<sup>53</sup> This has impacts on the availability of second hand cars.

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<sup>52</sup> AFMA (2020) *Electric Vehicles in Business Fleets*, <https://afma.org.au/electric-vehicles-in-business-fleets-report/#download>

<sup>53</sup> Electric Vehicle Council (2019) *State of Electric vehicles 2019*, <https://electricvehiclecouncil.com.au/wp-content/uploads/2019/09/State-of-EVs-in-Australia-2019.pdf>

An absence of federal leadership is also apparent in Australia's lagging fuel standards. Australia is the only OECD country with no fuel efficiency standards.<sup>54</sup> Australian passenger vehicles emit around 45% more CO<sub>2</sub> than their European equivalents.<sup>55</sup> In 2019, Australia's average CO<sub>2</sub> emissions intensity for new passenger vehicles was 180.5g/km, over three times the average CO<sub>2</sub> emissions of new vehicles registered in Norway in 2018 (55g/km).<sup>56</sup>

Additionally, the Australian government is yet to publish the Final Report of the Liquid Fuel Security Review. The Interim Report shows that Australia is ill-equipped to deal with a liquid fuel security crisis, and that producing more oil in Australia is a dubious response to the issue of fuel security. Reducing oil use requires both increased fuel efficiency and substitution to non-oil based transport, including electric passenger vehicles.<sup>57</sup>

One of the consequences of the lack of federal EV leadership, is that states are left to implement EV policy, resulting in an ad-hoc approach to EV policy development. EV incentives differ between Australian states, as outlined in the Electric Vehicle Council's State of Electric Vehicles 2020 report.<sup>58</sup> Most recently, multiple states in Australia have announced that they are considering the introduction of a 'Road User Charge' for electric vehicles (EVs). This would be a new tax, levied by the State Government, on owners of zero emissions electric cars. The proposals have been widely criticised.<sup>59</sup> Introducing a road user charge for EVs in a country with no national EV incentives and low EV uptake would further reduce consumer demand and restrict investment.<sup>60</sup>

Policy and actions to address the lack of federal leadership in EVs include:

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<sup>54</sup> Mortimore (2019) *Labor's plan for transport emissions is long on ambition but short on details*, <https://theconversation.com/labors-plan-for-transport-emissions-is-long-on-ambition-but-short-on-details-114592>

<sup>55</sup> Butler et al. (2020) *Decarbonisation Futures: Solutions, actions and benchmarks for a net zero emissions Australia*, <https://www.climateworksaustralia.org/resource/decarbonisation-futures-solutions-actions-and-benchmarks-for-a-net-zero-emissions-australia/>

<sup>56</sup> National Transport Commission (2019) *Carbon Dioxide Emissions Intensity for New Australian Light Vehicles 2019*, <https://www.ntc.gov.au/sites/default/files/assets/files/Carbon-dioxide-emissions-intensity-for-new-Australian-light-vehicles-2019.pdf>

Lambert (2018) *Electric vehicle sales achieve new record in Norway with 45% of new cars being all-electric and 60% plug-in*, <https://electrek.co/2018/10/01/electric-vehicle-sales-new-record-norway-tesla/>

<sup>57</sup> Swann (2019) *Submission: Interim Report on the Liquid Fuel Security Review*, [https://www.tai.org.au/sites/default/files/P739%20Liquid%20Fuel%20Security%20Submission%20WEB\\_0.pdf](https://www.tai.org.au/sites/default/files/P739%20Liquid%20Fuel%20Security%20Submission%20WEB_0.pdf)

<sup>58</sup> Electric Vehicle Council (2020) *State of Electric Vehicles*, <https://electricvehiclecouncil.com.au/wp-content/uploads/2020/08/EVC-State-of-EVs-2020.pdf>

<sup>59</sup> Kurmelovs (2020) *South Australia's new tax on electric vehicles ridiculed as 'a big tax on not polluting'* <https://www.theguardian.com/environment/2020/nov/11/south-australias-new-tax-on-electric-vehicles-ridiculed-as-a-big-tax-on-not-polluting>

<sup>60</sup> Electric Vehicle Council (2020) *EVC response to NSW FRR Draft Report*, <https://electricvehiclecouncil.com.au/wp-content/uploads/2020/08/2020-EVC-Response-to-NSW-FFRR-Draft-Report.pdf>

- Developing and implementing a national electric vehicle strategy to provide business and consumers the certainty to invest in EV technology.
- Establish public outreach and education programs on the consumer benefits of EVs.
- Implementing fuel efficiency standards in line with global best practice.
- Publishing the Liquid Fuel Security Review, recognising that reducing fuel demand through EV uptake is a national security issue.

## Model availability and affordability

The issue of model availability and affordability is closely tied to federal leadership. Fewer EV models (particularly cheaper models) are available in Australia compared to other OECD countries, due in part to the lack of federal EV policies and leadership.

Some of the most popular EV models, including the Volkswagen e-Golf and the Volkswagen e-Up! are not available to the Australian market, whilst in Norway, Volkswagen expect 90% of their vehicle sales to be electric by 2021.<sup>61</sup> Other popular EV models that are not available in Australia include the BMW 225xe PHEV, Audi e-Tron and Opel Ampera-e. Recently, carmaker Renault pulled electric Zoe from the Australian market citing the government's weak stance on vehicle emissions as a contributing factor to their decision. The Renault Zoe is one of Europe's most popular electric cars, selling more than 10,000 models in June 2020.<sup>62</sup>

There are currently no fully electric models available in Australia for less than \$50,000, including on-road costs.<sup>63</sup> According to the Senate Select Committee on Electric Vehicles, in 2019, twenty of the 24 available EV models in Australia were in the luxury vehicle category, priced at over \$60,000.<sup>64</sup>

Due to the relative infancy of the Australia EV market, few second hand EVs are available. A recent report by Evenergi, funded by the Australian Renewable Energy Agency (ARENA) notes that second hand EV imports to Australia are limited due to restrictions under the *Motor Vehicles Standards Act 1989*, and recommends removing legal barriers to the importation of used vehicles. This would support the creation of a new 'grey market' for EVs in Australia, and a larger pool of affordable EV options.<sup>65</sup>

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<sup>61</sup> Reuters (2020) *Volkswagon eyes 90% electric car sales in Norway next year*,

<https://www.reuters.com/article/uk-autos-electric-norway-volkswagen-idUKKBN26S1RS>

<sup>62</sup> Schmidt (2020) *Renault pulls electric Zoe from Australia, citing policy failure, poor sales*,

<https://thedriven.io/2020/07/30/renault-pulls-electric-zoe-from-australian-citing-policy-failure-poor-sales/>

<sup>63</sup> Schmidt (2020) *Australia may soon enjoy bigger "grey market" for second hand EVs*,

<https://thedriven.io/2020/07/14/australia-may-soon-enjoy-bigger-grey-market-for-second-hand-evs/>

<sup>64</sup> Commonwealth of Australia (2019) *Select Committee on Electric Vehicles*,

[https://www.aph.gov.au/Parliamentary\\_Business/Committees/Senate/Electric\\_Vehicles/ElectricVehicles/Report/b02](https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Electric_Vehicles/ElectricVehicles/Report/b02)

<sup>65</sup> Evenergi (2020) *Grey Market Report*, <https://arena.gov.au/assets/2020/06/evenergi-grey-market-report.pdf>

Although EVs are currently more expensive in terms of up-front costs compared to ICE vehicles, their lifetime costs are lower due to lower servicing, maintenance and fuel costs.<sup>66</sup> Policies to lower the up-front cost of EVs, as well as policies to increase consumer awareness of the lower lifetime costs of EVs would encourage increased EV uptake.

Policies and actions to address model availability and affordability include:

- Providing tax incentives for electric vehicle owners. This may include exempting electric vehicles from the Luxury Car Tax or better targeting the scheme's two-tiered threshold structure towards environmental outcomes, and waiving or discounting Fringe Benefit Tax for EVs.
- Providing upfront purchase incentives for electric vehicles.
- Providing operating incentives such as registration rebates, free parking, and priority lane access supported by a rollout of EV-only license plates.
- Offering rebates for traded-in higher emitting vehicles.
- Setting a national electric vehicle sales target (for passenger and commercial vehicles, and metropolitan buses).
- Setting an electric vehicle Federal Government fleet target.
- Removing current restrictions on the import of vehicles not available in Australia through their manufacturer.

## Charging time and access

'Range anxiety', the fear of an EV having insufficient range or charging facilities to reach its destination, is an enduring concern for Australians considering purchasing an EV.<sup>67</sup>

However, range anxiety is often misplaced. The average Australian driver drives 38km per day, and EVs currently available in Australia have an average battery range of 400km – easily enough to meet the weekly driving needs of the average Australian driver without recharging.<sup>68</sup>

Nevertheless, investment in public fast-charging stations and support for home and workplace charging is necessary to support EV uptake. Australia falls behind other developed countries in providing public charging infrastructure.<sup>69</sup> It currently has 367 fast

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<sup>66</sup> Douris (2017) *The Bottom Line On Electric Cars: They're Cheaper To Own*, <https://www.forbes.com/sites/constancedouris/2017/10/24/the-bottom-line-on-electric-cars-theyre-cheaper-to-own/>

<sup>67</sup> Electric Vehicle Council (2020) *State of Electric Vehicles*, <https://electricvehiclecouncil.com.au/wp-content/uploads/2020/08/EVC-State-of-EVs-2020.pdf>

<sup>68</sup> Electric Vehicle Council (2020) *State of Electric Vehicles*, <https://electricvehiclecouncil.com.au/wp-content/uploads/2020/08/EVC-State-of-EVs-2020.pdf>

<sup>69</sup> Ludlow (2020) *Australia needs to fast-track EV charging stations*, <https://www.afr.com/companies/transport/australia-needs-to-fast-track-ev-charging-stations-20200519-p54ubr>

and ultrafast charging stations at 157 locations across the country.<sup>70</sup> Overall, Australia has approximately 2300 public charging stations<sup>71</sup> compared to Norway's 16,000.<sup>72</sup>

Support for home charging station installation is important, as the majority of EV charging is likely to take place at home. Requirements for making new buildings 'EV ready' help avoid complex and expensive retrofitting of buildings and electrical infrastructure in the future.<sup>73</sup>

Policies and actions to address charging time and access include:

- Providing subsidies or low-interest loans for home and workplace charging installation.
- Investing in public fast-charging networks.
- Mandating electric vehicle readiness for new buildings.
- Ensuring government fleet charging infrastructure is accessible by the public.

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<sup>70</sup> Electric Vehicle Council (2020) *State of Electric Vehicles*, <https://electricvehiclecouncil.com.au/wp-content/uploads/2020/08/EVC-State-of-EVs-2020.pdf>

<sup>71</sup> Ibid

<sup>72</sup> Statista (2020) *Norway: electric car charging stations by type 2011-2020*, <https://www.statista.com/statistics/696548/number-of-electric-car-charging-stations-in-norway-by-type/>

<sup>73</sup> Electric Vehicle Council (2020) *State of Electric Vehicles*, <https://electricvehiclecouncil.com.au/wp-content/uploads/2020/08/EVC-State-of-EVs-2020.pdf>

# Conclusion

Norway's goal to phase out fossil-fuelled vehicles within the next 5 years is ambitious yet achievable, thanks to its government-led EV incentive package.

Ambitious policy announcements play a critical role in stimulating the transition to EVs. According to the International Energy Agency, "Policy approaches to promote the deployment of EVs typically start with a vision statement and a set of targets."<sup>74</sup> Australia has no national targets and no vision statement. Without national EV leadership, a state-based, ad-hoc approach will open the door to more perverse policy outcomes such as the EV road user charge currently being considered by the South Australian Government.

The forthcoming National Electric Vehicle Strategy is an opportunity for Australia to get back in the race to electric mobility. A strategy backed by economic incentives and policies that increase the value proposition of EVs will signal Australia's readiness for the EV transition. There is no shortage of possible policies the Australian Government could adopt to achieve this. However, a strategy lacking substance and economic incentives will do little to alleviate Australia's EV losing streak.

When it comes to EV policy, Norway is in poll position. Australia's upcoming electric vehicle strategy will show whether Australia is set to remain an EV laggard or catch up to the rest of the world.

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<sup>74</sup> International Energy Agency (2020) *Electric vehicles*, <https://www.iea.org/fuels-and-technologies/electric-vehicles>