RE: Inquiry into the transition to electric vehicles

Dear Committee,

Tesla Motors Australia, Pty Ltd (Tesla) welcomes the opportunity to provide a submission to the House of Representatives Standing Committee on Climate Change, Energy, Environment and Water's inquiry into the transition to electric vehicles (EVs).

Australia has a unique and critically important role in the global transition to electric vehicles. Every EV across the globe comes from Australia in large part. 80% of the lithium and 50% of the Nickel in Tesla's batteries globally comes from Australia.

9 of the 10 key ingredients in lithium-ion batteries come from Australia. Lithium; Nickel; Copper; Cobalt; Graphite; Bauxite; Manganese; Neodymium; Vanadium; Iron; Bauxite for aluminium; ores for steel, and rare earth minerals.

This is one of the great opportunities of our century. Tesla encourages Australian legislators to seize it by embracing domestic uptake of EVs, and by supporting Australian industry to take minerals as far down the value chain as possible with local refining and manufacturing.

No country has as much to gain from the transition to electric vehicles. And few countries have as much to lose from climate change, as the constantly escalating extreme weather across our country makes plain.

Key recommendations:

1. Strong vehicle efficiency standards.
2. Reliable public data on vehicle sales.
3. Accurately measuring health impacts of vehicle and other air pollution.
4. A national framework for autonomous vehicle regulation.
5. A sensible and equitable national road user charging framework.
6. Unlocking Australia's EV Fast Charging Infrastructure.
7. Minimum operating standards for publicly-funded fast chargers.
8. Seizing Australia's EV resource advantage.

Tesla thanks the Committee for its ongoing focus on the important questions ahead of us in this transition, and we look forward to being a constructive partner in that effort.

Sincerely,

Tesla Motors Australia

About Tesla

Tesla's mission is to accelerate the world's transition to sustainable energy. Tesla believes the world will not be able to solve the climate change crisis without directly reducing air pollutant emissions including carbon dioxide (CO2) and other greenhouse gases (GHGs) from the transportation and power sectors.

To accomplish its mission, Tesla designs, develops, manufactures, and sells high-performance fully electric zero emission vehicles (ZEVs) and battery storage systems, installs, and maintains such systems, and sells solar electricity. This ensures our EVs can charge off an increasingly renewable power grid at our public superchargers, as well as from customer's own excess rooftop solar, where the majority of vehicle charging takes place, maximising fuel savings whilst eliminating emissions[1].

- Tesla currently produces and sells five ZEVs: The Model S sedan, the Model X sport utility vehicle (SUV), the Model 3 sedan, the Model Y mid-sized SUV, and the Cybertruck (all purpose utility truck or 'ute'). Tesla is by far the highest-selling manufacturer of ZEVs in Australia, accounting for 2 in every 3 ZEVs sold. Globally, by 2030, Tesla aims to sell 20 million electric vehicles per year.
- Tesla has deployed over 10GWh of energy storage projects globally, including what was at the time the world's largest battery, Hornsdale Power Reserve, in South Australia in 2017 and the Victoria Big Battery, a 300MW/450MWh stand-alone battery that enables increased supply of renewable energy, improves grid stability, and lowers prices for consumers. At the residential scale, Tesla has installed more than 500,000 Powerwall batteries globally, and in Australia has over 26MW of Virtual Power Plant (VPP) capacity registered with AEMO.

Tesla employs over 900 people in Australia and purchases over $4.3 Billion annually of Australian minerals[2]. Over 80% of the lithium and 50% of the nickel in Tesla's lithium-ion batteries used around the world come from Australia.

Tesla is also investing in its growing network of retail stores, vehicle service centres, and electric vehicle charging stations to accelerate and support the widespread adoption of its EV products. Tesla operates the largest network of EV chargers in Australia.

[1] https://www.tesla.com/en_au/support/tesla-app/charge-on-solar
[2] https://www.afr.com/companies/mining/tesla-boss-calls-on-chalmers-to-give-tax-breaks-for-lithium-processing-20230905-p5e22f#:~:text=Tesla%20is%20set%20to%20spend,supply%20chain%20with%20manufacturing%20capability.

1 Strong vehicle efficiency standards.

Tesla applauds the Albanese Government's New Vehicle Efficiency Standard (NVES) and commends the bill to the Parliament. NVES is an elegant, robust, and well-designed standard that will save the average Australian family thousands of dollars in petrol and finally put Australia on a trajectory to achieve its climate targets for transport.

Australia has been slow to adopt vehicle CO2 standards. As Ministers King and Bowen have noted many times, similar standards have been in place in the United States for decades, and now cover 85% of the world's car market. Australia is among the last major economies to adopt this critical measure to tackle transport pollution. If there is an advantage in being last, it is the opportunity to learn from dozens of preceding policy examples overseas. The Albanese Government has made the most of this advantage, applying the best features of international schemes, while avoiding unnecessary complexity and opacity.

In many other countries, petrol lobbyists have succeeded in pushing legislators to include loopholes like multiplier credits, of-cycle credits, and non-penalty years. We commend the Government's commitment to avoid such loopholes.

2 Reliable public data on vehicle sales.

Australia still does not have a trustworthy and transparent public source of data on vehicle sales and vehicle CO2.

Two years ago, the Government embarked on a public policy process to reduce the average CO2/km of new vehicles. It is absurd that when this process began nobody could produce an accurate figure of the current CO2/km of Australian new vehicles. Nor is there any reliable public dataset regarding trends in vehicle size, price, and features. All of these should be collated and published in the interests of good policy making and economic analysis.

Australia stands almost alone in not having a free, public, granular account of vehicle sales and registrations. The National Exchange of Vehicle and Driver Information System (**NEVDIS**) dataset is notoriously patchy and incomplete.

The VFACTs database administered by the Federal Chamber of Automotive Industries has been deliberately manipulated by that lobby group to obscure actual CO2 data. FCAI has refused to release accurate data about vehicle CO2, instead putting out data that bakes in its preferred multiplier and credit loopholes and vehicle categories. This has drawn sharp criticism from the National Transport Commission, which has been unable to provide accurate and continuous data to inform policy development[3]. VFACTs simply is not a reliable source of data.

For comparison, consider New Zealand's Ministry of Transport fleet statistics reporting. This includes weekly low emissions vehicle reports and comprehensive statistics about new vehicle sales and the existing vehicle fleet. Like Australia, Canada has state and territory registration authorities with various data collection practices but has aggregated these into a national reporting framework.

[3] 'Blowing smoke: Toyota's emissions advantage splits sector' Sydney Morning Herald, Peter Hannam, August 20, 2021

This could be a simple task. The Federal Government should simply mandate that all OEMs make a monthly report of their delivery data publicly available online. Alternatively, OEMs could report monthly data to the Department of Transport or the Clean Energy Regulator for compilation and publication as a simple dataset in CSV or JSON format.

The public could quickly build and iterate useful public interfaces on that data as OpenNEM have done for the electricity sector. The Australian Government's initial Data and Digital Government Strategy articulates the Government's aim of "making non-sensitive data open by default" and prioritising "integrity and transparency in service delivery which increases trust in the Australian Government." Both principles are important to apply to New Vehicle Efficiency Standards. The eight principles for open data by the Open Government Working Group also provide a checklist that could inform the Australian Government's approach.

1. Complete: in this case that means including raw CO2 data before any additional credits are applied and publishing granular information on the impact of any multiplier or technology credits.
2. Primary: data as it is collected with the highest possible level of granularity. In this case that would include marque, model, variant, vehicle category, homologation segment, drivetrain type, fuel economy, and CO2/km.
3. Timely: made available as quickly as possible. In this case that would ideally mean data is collected monthly from OEMs and published within 1 week after being provided back to OEMs for checks.
4. Accessible: available to the widest range of users for the widest range of purposes.
5. Machine processable: reasonably structured to allow automated processing.
6. Non-discriminatory: data is available to anyone, with no requirement of registration.
7. Non-proprietary: available in a format over which no entity has exclusive control.
8. License-free: not subject to copyright, patent, or trademark regulation.

3 Accurately measuring health impacts of vehicle and other air pollution.

Vehicle pollution kills more Australians each year than vehicle accidents. An expert statement on the health impacts of vehicle pollution estimated that 11,105 Australians die early as a result of vehicle pollution each year[4]. This paper was endorsed by leading respiratory physicians as well as the Asthma Australia, Lung Foundation Australia, Cancer Council and many others.

Australia's most common cause of general practitioner presentation in children under five is asthma and allergy. In 2012, Gasana et al. observed that children attending schools near high traffic density roads were exposed to higher levels of vehicle pollutants and had an associated increase in the incidence and prevalence of childhood asthma and wheeze.

Australian governments at all levels spend a great deal on infrastructure and public education to reduce the vehicle accident road toll; government advertising campaigns affirm that "zero is the only acceptable number" of road deaths. These efforts are laudable, and Tesla is proud that its vehicles have the highest Australasian New Car Assessment Program (ANCAP) scores yet recorded.

Deaths caused by vehicle pollution in respiratory wards are no less tragic and preventable than deaths caused by accidents on roads. It is time that governments treated them with the same gravity and urgency.

The long-term impact of air pollution on health should be closely studied and aggressively mitigated. As a starting point, it is important that vehicle pollution deaths and illnesses are adequately measured.

[4] https://www.unimelb.edu.au/__data/assets/pdf_file/0006/4498161/Expert-Position-Statement_Vehicle-emissions_FINAL.pdf

It has been 17 years since BITRE released a detailed report on health impacts of transport emissions in Australia.

There is a serious dearth of quality data collected to measure the overall impact of transport pollution, let alone provide granular insights that would allow policy makers to effectively target and iterate interventions. If road accident data was not collected in sufficient detail to accurately estimate how many Australians died or were injured in accidents, policy makers and public health officials would be justly outraged; the same response is justified for pollution data.

Tesla recommends the federal government fund an expansion of particulate and noxious pollution monitors to better quantify vehicle and other pollution around Australia. Health and Air Pollution New Zealand (HAPINZ 3.0) is a thorough and internationally peer reviewed framework for evaluating the effects of air pollution on human health across New Zealand and the resulting social costs.

Tesla recommends that Australia investigate adapting the HAPINZ 3.0 framework for use in Australia. Furthermore, Tesla recommends that the federal government publish an annual estimated vehicle pollution road toll alongside regular reports on health impacts of anthropogenic air pollution.

4 A national framework for autonomous vehicle regulation.

Autonomous vehicles are the next key step in the electric vehicle transition.

While Tesla and other companies are scaling EV production at unprecedented rates, a further step change in decarbonising transport is possible if we can significantly increase the utilisation of electric vehicles by moving toward autonomous vehicles.

Most passenger vehicles are idle ~95% of the time. Autonomous vehicles could be utilised around the clock, significantly decreasing the cost per kilometre of travel in electric vehicles. This would rapidly accelerate decarbonisation.

Tesla's 2022 Impact Report outlines that on non-highways with Full Self Driving (FSD) engaged had just 0.31 accidents per million miles representing an 80% reduction compared with the US vehicle average of 1.53 accidents per million miles.

Tesla has recently deployed its Full Self Driving Supervised V12 system across the United States and Canada. This represents a significant step toward autonomous vehicle systems, and an enormous improvement in vehicle safety. Australia has an important opportunity to be among the early adopters of advanced driver assistance software that will save lives by aligning with the North American approach to homologation and regulation of driver assistance and autonomous software.

5 A sensible and equitable national road user charging framework.

While Fuel Excise has not been hypothecated to road infrastructure since 1959, the gradual decline of fuel excise revenue due to electrification does represent a gradual reduction in tax from vehicles toward federal consolidated revenue.

Tesla supports the introduction of equitable and practical road user charging (RUC) policies. When considering RUCs, Tesla urges policy makers to pay particular attention to three key issues:

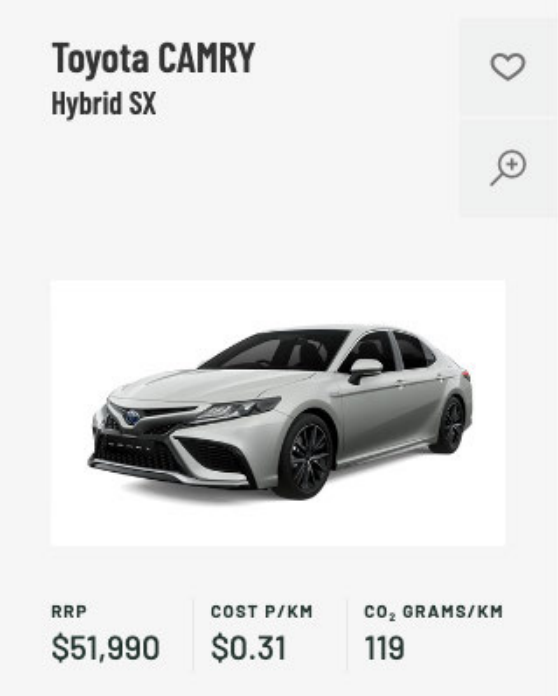
A – The opportunity to make EVs more equitable.
B – The implications for taxi, rideshare, and other high mileage fleets.
C – The practical implications for Australian motorists.

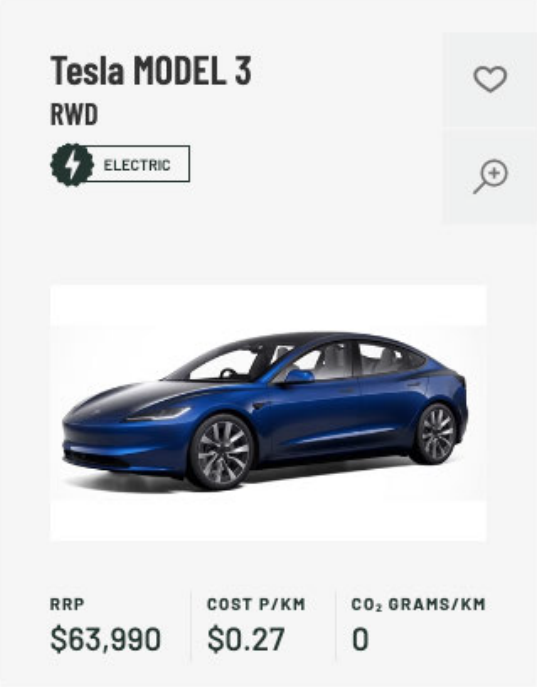
A – The opportunity to make EVs more equitable.

Any policy that shifts upfront costs to ongoing cost for EVs is a welcome measure that can make EVS more equitably available. While EVs are already at price parity with ICEVs in many segments on a total cost of ownership basis, they often represent a higher upfront cost and lower ongoing cost.

For example, the below total cost of ownership comparison by the New Zealand's Government's GenLess tool shows that the Tesla Model 3 is cheaper to own on a per kilometre basis than a Toyota Camry Hybrid. The NZD12,000 upfront price difference may make it relatively more difficult for those on fixed or lower incomes to buy or finance the EV, leading to a 'boots theory' problem whereby those who are restricted to purchasing cheaper products upfront spend more overall.

A road user charge that imposed a relatively high per kilometre cost on EVs but offset this with an upfront rebate could be a fiscally sustainable way to boost electric vehicle uptake and more equitable distribute the benefits of EV ownership.





B – The implications for taxi, rideshare, and other high mileage fleets.

Road user charging has outsized impact on high mileage vehicles. These are the same vehicles it is most important to electrify in order to accelerate CO2 abatement. Therefore RUCs have an opportunity to particularly incentivise taxi, rideshare and other high mileage fleets to decarbonise, by offering concessional RUC rates for low emission vehicles in these sectors. On the other hand EVs pay a higher road user charge than many ICEVs (as is the case under RUC amendments recently introduced in New Zealand) the effect may be to slow decarbonisation in this most critical sector of vehicles.

C – The practical implications for Australian motorists.

The Victorian Government's EV RUC was an example of policy that resulted in impractical imposts on motorists. This scheme required EV owners to manually photograph and lodge documents with registration bodies that were not technically capable of implementing a practical system of road charging. The result was a highly impractical system that was unworkable both for motorists and VicRoads. Federal policy makers should carefully consider the practical implications of any proposed RUC lest these mistakes be replicated.

6 Unlocking Australia's EV Fast Charging Infrastructure

Ensuring convenient and cost-effective charging is fundamental to support the uptake of EVs and directly address concerns of range-anxiety. Fast charging public infrastructure is critical for supporting longer-distance electromobility, and the charging needs of those (e.g. apartment dwellers) who lack adequate access to home-based chargers. In 2021, Tesla opened 912 new Supercharger locations around the world, an average of two and half new locations every day. Tesla's global network has grown to include over 50,000 Supercharger stations[5]. Tesla's charging network also includes over 14,000 Destination Charging 'level 2' AC chargers. Tesla is committed to continue expanding these networks to provide a convenient and seamless charging experience for our customers.

However, a lack of national coordination and delayed federal policy has stymied Australia from enjoying an overarching roadmap that can accelerate the rollout of public charging infrastructure. It is not simply a lack of funding – there are a combination of barriers (technical, regulatory, and commercial) that need to be overcome.

Tesla operates the largest network of EV chargers in Australia. In our experience, the most critical barrier to increasing fast-charging infrastructure in Australia is the amount of time it takes to obtain grid connection and transformer upgrades. For Tesla, Australia is the most difficult country in the region to install direct current (DC) fast chargers, with transformer upgrades and grid connections often taking over 1 year for utilities to complete, compared to just 6-8 weeks in other countries. Tesla recommends that government track timeframes for fast-charger installations, aiming to reduce average timeframe from application to site readiness to below 3 months.

As an immediate next step and as part of the upcoming national EV strategy, we recommend the Australian Government, along with DNSPs and charging infrastructure operators, develop a comprehensive plan for the rollout of a public charging network at scale, with the following focus areas:

1. Work with DNSPs to simplify and streamline grid connections (target under 3 months): recognising the rising volume and frequency of EV charger applications over the coming years, and wide variability in deployment processes, ensure dedicated DNSP resources to support and learn from best performers.
2. Update connection frameworks to support multiple connection points at sites – ensuring clear separation from existing electrical boundaries and unbundling tariffs for multi-use sites (e.g. shopping centres).
3. Improve flexibility in capital upgrades: creating competitive procurement processes for key asset upgrades (e.g. transformers and other long-lead network infrastructure) to expedite fast charger connections.
4. Ensure access to appropriate tariffs for EV chargers: incorporating high variability between peak/off-peak time of use rates and including demand charge waivers to ensure equitable and affordable public charging for all EV drivers.

If done well, Australia can harness the multi-billion investment opportunity to 2030, creating tens of thousands of new infrastructure jobs across planning, assessment, technical studies, technicians and construction for deployment and installation, as well as service for ongoing operation and maintenance. Conversely, failing to act will not only frustrate the ability for customers to charge their

[5] https://www.tesla.com/en_au/supercharger

EVs conveniently and efficiently, it will slow the uptake of EVs and risk Australia's climate commitments by prolonging the use of high emission vehicles.

Behind the Meter Charging

It is also worth noting that the majority of EV charging is done at drivers' homes or workplaces with lower- to medium-powered (level 2) chargers. Access to off-street charging is one of the most important enablers of EV adoption, and one of the key equity challenges of EVs, because Australians who are less socio-economically advantaged are less likely to own their homes, have off-street parking, or be able to access workplace charging. Tesla recommends that the Federal Government make access to charging a key metric for its National EV Strategy. One approach would be to use census data to map areas where home-ownership and/or off-street parking are low and prioritise these areas for on-street parking trials or multi-unit-dwelling charging programs (see Tesla's response to the National EV Strategy consultation for additional detail on these points).

Here Government also has a critical role to accelerate EV charging infrastructure in private settings by ensuring National Construction Code provisions on EV readiness are integrated into state level instruments, creating programs for EV charging retrofits in apartment complexes, requiring standardised approaches by DNSPs on installation requirements for home charging, and providing training for electricians on EV charger installation. This coordinated approach will also be vital in combating misinformation related to EVs and fire risk that is unnecessary adding delays and costs to EV charging infrastructure.

The advantage of improving access to 'behind the meter' charging is the direct ability to utilise rooftop solar and become part of the optimisation of distributed energy resources (DER). All EV charging that occurs at lower AC levels can leverage 'free' excess solar energy and spare network capacity, providing grid reliability and system security benefits by avoiding low operational demand risks that are already being faced in states with high solar uptake (i.e. WA and SA) and further optimising the grid transition towards and above 82% renewable energy. Whilst some DNSPs are beginning to adapt existing tariffs or even create bespoke 'EV tariffs', more work is needed to ensure fair and transparent costs for actual usage and embed appropriate incentives to control/shift load via a national guide to time-of-use tariffs that incentivise this type of off-peak / high solar charging.

7 Minimum operating standards for publicly-funded fast chargers

Where public charging stations receive funding from government, Tesla supports the proposal to establish minimum standards of reliability and performance that are considered in grant processes.

Establishing clear operating standards for publicly funded EV charging infrastructure is critically important to ensure funding is efficiently used and station deployment accelerated without sacrificing reliability, convenience, safety or accessibility for electric vehicle drivers. However, as currently drafted, the Minimum Operating Standards will restrict the deployment and operation of chargers and increase costs for consumers. It is critical to set the initial standards correctly to avoid prohibitive and impractical requirements that will restrict most charging operators from eligibility. We look forward to working with DCCEEW to ensure fit for purpose standards can be more appropriately defined, ambiguities clarified, and requirements implemented in a way that will ensure optimised operations whilst maximising tax-payer and customer benefits.

Tesla cautions that such measures should be carefully designed to ensure they do not impose unnecessary red tape on operators. For example:

- As general best practice, we suggest site requirements for AC charging be considered and designed completely separately from DC charging. AC vs DC have different products, markets, customer expectations, technical standards, operating profiles, and therefore warrant a different set of minimum requirements for operating standards as well.
- We encourage maximising the value of publicly funded public charging stations and making program budgets go further. This could be achieved by:
    a) Increasing minimum number of charging units per eligible site (we recommend increasing to at least 4 stalls for remote sites; and at least 8 stalls for high usage sites); and
    b) Setting project finance parameters/caps – to avoid vendors inflating prices to access additional funding. For example, government incentives could be capped at up to $50k/stall; or as X% of total project costs (where X can vary depending on the commercial viability and expected throughput of the site – where highly frequented sites have a lower cap, e.g. ~50%; and remote stations have up to 100% eligible to ensure equitable coverage in both urban and regional areas.
- We support requirements for high reliability (at least 98% uptime), but strongly recommend this metric is measured at a total site level (rather than individual charging station posts) given larger sites have inherent redundancy built in, and to reflect the true user experience at a charging station. Based on Tesla's experience deploying our direct current fast charging (DCFC) network, known as the Supercharger Network, over the past decade, station reliability is extremely important to customer experience. Having a reliable, accessible charging network is one of the elements that helps customers consistently rate the Supercharger experience as best in class. In Tesla's 2021 Impact Report, we highlighted that reliability is a key factor for our network and the chances of not being able to charge at any location at any given time are close to zero.
- Site level requirements will incentivise CPOs to build more charging stations – aligned with the program objectives. In general, when considering where to deploy Superchargers, Tesla proactively builds larger stations. These larger stations inherently have redundancy in the case of unforeseen events that take down one or more of the stalls at a site. For example, customer experience impacts are minimal or non-existent if 2 stalls are temporarily offline at a 20-stall charging station. However, customer experience can be distressingly poor if 2 stalls go off-line at a 4- stall station.

8 Resources & Supply Chain Growth Opportunities

The right policy leadership can place Australia at the forefront of technology innovation to support the global transition to net zero emissions. To complement this innovation and drive job creation, Tesla recommends prioritising the role Australia can play down-stream in the battery supply chain. Australia can leverage its competitive advantage in this space, to accelerate technology uptake as well as realise significant opportunities and benefits through advanced manufacturing to underpin sustainable jobs growth, particularly in regional communities. Australia has an enormous opportunity to capitalise on rising global demand for our natural resources in battery supply chains, alongside our skilled workforce, and proximity to key markets.

Tesla recommends the Federal Government explore all options and approaches to rapidly increase Australian supply of battery minerals. Critical metals and mineral supply is of such fundamental

importance to the world's energy transition that it merits particular focus beyond a general resource and mining export strategy.

One of the key constraints on decarbonising transport is the availability and cost of battery-grade lithium and other critical minerals. Australia currently supplies over 80% of the lithium in Tesla vehicles worldwide and has the strongest reserves of lithium in the world, and supplies over 50% of the Nickel. To meet global decarbonisation goals, production of refined lithium must scale by over 25-fold by 2035. This rate of growth cannot be achieved unless Australian federal and state governments work together with industry to expedite projects, mobilise capital, and prepare Australian workers to make the most of this opportunity.

Tesla already currently spends over $4.3 billion each year on Australian minerals. However, the vast majority of value in the EV supply chain is captured outside of Australia. Lithium spodumene is the ore from which battery-grade lithium hydroxide is refined. Most Australian spodumene is currently shipped overseas for refining. Refining onshore reduces transport costs and transport carbon intensity tenfold, reducing carbon intensity of resultant lithium hydroxide (LiOH) by approximately 1 tonne of CO2 per tonne of LiOH.

If Australia can rapidly decarbonise its grid and provide industrial-scale renewable electricity at low cost, there is an even greater case for local refining and further value-adding to Australian battery minerals.

If Australia is to progress further downstream into manufacturing cathodes, cells, and vehicles, it is imperative that battery mineral refining be scaled rapidly. There are already three lithium refineries underway in Australia, but a great number more will be required to absorb a larger portion of domestic spodumene production.

Despite the significant resource advantages Australia enjoys, there are several obstacles to Australia realising this 'once in a generation' opportunity:

1. The first is site availability and permitting. Because the refining industry will need to scale rapidly, jurisdictions that can offer short and certain permitting for sites will be at a significant advantage. This need not reduce environmental outcomes if sites are identified and approved in advance, anticipating the unprecedented expansion required in coming years.
2. The next challenge is cost of operations. Refining is an energy-intensive industry; large refineries will use more than 10 GWh annually. A high and unstable cost of electricity may make the industry unviable in Australia; whereas planning for significant renewable energy zones that can service likely refining locations and industrial hubs could increase Australia's competitiveness significantly.
3. A third major challenge is labour availability. While Australia has a highly skilled workforce in adjacent industries, it's likely that government assistance will be required to ensure workforce availability can be aligned with likely sites for refining.

If Australia can successfully ramp up lithium and other critical minerals refining in the coming years it can build a strong foundation for further progress in the EV value chain. However, other jurisdictions have recognised the opportunity and are moving fast to capture and compete for this supply chain investment. Their policies are bold, ambitious, and working. As battery supply chains re-route and scale up in real time, Australian IP, jobs and potential investments are at risk of migrating overseas. Indeed, this is already happening. For example, Ioneer secured US$700m for its Nevada project, Novonix received US$240m for its Tennessee graphite plant, and Lynas was awarded US$120m to build its Heavy Rare Earths Facility in Texas. Pilbara Minerals is partnering with POSCO to build a

lithium hydroxide refinery not in the Pilbara, but in South Korea. And Fortescue Future Industry has committed to building its Battery Hub in the US, citing incentives as a key factor.

To be truly globally competitive Australia needs an ambitious national policy to complement:

- The USA's Inflation Reduction Act (government loans, plus 30% investment credit or 10% production credit, plus cell credits);
- Canada's Strategic Innovation Fund (credit up to 30% of capex);
- The EU's Critical Raw Material and transition fund (up to 50% grants); and
- Large and generous packages across Korea, Japan, India, Indonesia etc

Australia's policy response must be designed urgently and targeted to accelerate and attract upstream investments including refining, processing, precursor production, cathode and ultimately cell and battery manufacturing at scale.

Australia continues to have a policy gap in this space. Government backed loans and equity offers (e.g. National Reconstruction Fund; Export Finance Australia; Northern Australian Infrastructure Facility) are helpful in some circumstances - particularly for emerging companies but are not required by most major players and often make financing more complex – for smaller domestic players because of existing equity partners, or for global players with large balance sheets / easy access to capital markets. What really drives financial close for projects is relative opex assessments (mineral cost, labour, energy cost) and fast development timeframes. It's not the initial financing hurdle that is stymieing investment at scale, and most countries already have some form of grant or investment incentive (including Australia's recent Critical Mineral Development Program).

Building on the framework laid out in the Government's Critical Minerals Strategy, the preferred and most effective policy is likely to be a form of Production Credit that captures the cost of value adding to mineral feedstock (e.g. further refining spodumene from lithium ore into lithium hydroxide). This will provide clear incentive to value add on-shore, complement the design of the USA's IRA, and capture some of the multi-billion dollar opportunity. A clear, targeted production linked credit will regain our competitive edge vs North America, East Asia, and Europe. It would also create tens of thousands of jobs - e.g. Mandala estimate a refinery sector would create over 7,000 additional high-skilled, high value jobs for future generations in just lithium refining alone.

We don't need to match the IRA in spend to compete. An incentive around 10% discount on the value-adding portion of operating cost (utilities, labour, consumables, reagents) for mineral processing would attract investment. This is equivalent to the 10% Production Credits offered under the IRA, reflecting Australia's underlying comparative advantages and helping to maintain fiscal objectives. A targeted battery supply chain fund could offer production credits for refining, precursor & cathode, and cell manufacturing. This would attract more than 10x times that amount in private capital, leading to the creation of tens of thousands of jobs and having net positive budget impacts from additional tax revenues.

Production Credits for upstream and midstream makes sense for trade partner countries (North America, Europe etc); and makes sense for both domestic players and large multi-national corporates as it dovetails with global polices applying downstream (e.g. US cell credits). Production Credits also makes sense for government and industry - on a regulatory, commercial, and economic basis - providing a low-risk, high return opportunity for Australia.

Australia has a proud history of heavy vehicle manufacturing, producing vehicles that cater to Australia's unique road conditions. As heavy vehicles turn to battery power, the presence of local mineral refining and cathode/cell manufacturing could enable continuation an expansion of this sector.

To do this, it is critical that Australia seize the immediate opportunity to accelerate battery mineral refining on shore, and work with industry to plan for cathode precursor production at scale. Tied to this, Government can also help promote the development of a circular economy for EV batteries by supporting investment in infrastructure for battery reuse and recycling (where valuable minerals and materials are available at much lower cost and lower emissions than digging and processing), and collaborating with industry to move towards practical regulations around battery lifecycle management that recognises Australia's uniqueness in distance, nascency in access to end of life batteries, and relative lack of manufacturing compared to other hubs in Europe or North America.

As outlined in Tesla's Impact Report[6], we are committed to recycling all our batteries - Tesla constantly seeks to reduce its reliance on primary mined materials and contribute to a more positive environmental footprint through battery and cell recycling in all regions in which we operate.

[6] www.tesla.com/ns_videos/2022-tesla-impact-report.pdf