Dear Mr Combet,


Tesla Motors Australia, Pty Ltd (Tesla) welcomes the opportunity to provide a response to the Independent Expert Panel on the “Interim Emissions Reduction Target for Victoria (2021 – 2030) – Final Report” (referred to as the Report).

Tesla is a world-leading manufacturer of advanced electric vehicles and battery energy storage systems, with sales and service operations across more than 30 countries. Our global mission is to accelerate the world’s transition to sustainable energy.

In respect of energy Tesla has deployed more than 1.5GWh of energy storage projects globally. In Victoria this includes the 25MW/50MWh Ganawarra Energy Storage System (GESS) – which is amongst the largest battery connected to a solar system in the world; as well as commissioning the 20MW/ 34MWh battery energy storage system as part of the Bulgana Green Power Hub. In respect of distributed energy, Tesla sells the 5kW/13.5kWh Powerwall across the country. We are also working with the South Australian Government to deliver the South Australia virtual power plant (VPP) which will see 5kW of solar PV and a Powerwall installed on up to 50,000 South Australia Housing Trust and private homes\(^1\).

Tesla is the leading supplier of electric vehicles (EVs) in Australia. Tesla’s strategy has been to start with low-volume performance vehicles to prove that electric vehicles can be world-leading in every respect; and then using that momentum, to build increasingly affordable mass-market vehicles. The Model 3 is our first such mass-market vehicle, retailing from AUD$66,000. Australian deliveries commence next month.

Summary response

Tesla views the work of the Independent Panel to be critically important. Victoria’s 100% zero emissions target by 2050 is critical to support the outcomes of Australia’s commitment to the Paris Agreement.

The development of interim targets are also critically important as they provide industry with gating points between now and 2050. We are pleased to see that the interim targets are front-ended with aspirational targets set for 2025 (32-39% below 2005 levels) and 2030 (45-60%). Tesla fully supports these targets.

Given these timeframes, it is important to start focusing on supporting these targets with policy solutions that can be introduced imminently. The Report notes that the following areas were considered as key opportunities for Victoria’s emissions reduction:

- Transition of the electricity generation sector
- Strong policies and investment for Victoria’s transport sector.

Tesla agrees that these areas present major opportunities for emissions reduction. With the right policy settings in place we believe that Victoria can achieve significant emissions reduction without impacting on the facility or way of life of any Victorian.

Our policy recommendations to support these two areas are detailed below.

\(^1\) Refer - [https://virtualpowerplant.sa.gov.au/](https://virtualpowerplant.sa.gov.au/)
1. Transition of the electricity generation sector

As noted in the report, accelerating the transition from coal fired power generation to renewable energy presents a significant opportunity for Victoria in respect of long term emissions reduction. The Report also notes that the electricity generation sector is capable of making a more than proportional contribution to emissions reduction in the short term.

Victoria already has a strong renewable energy target (VRET) in place—targeting 50% renewable energy by 2030. As noted in the Report, though this target is ambitious, it is also reflective of the fact that renewable energy sources represent lowest cost new generation capacity, and that the electricity sector is in the process of rapid transition.

This rapid transition will also require careful planning to ensure that there is minimal impact on energy system security and reliability, and for energy customers. As noted in Box 6.4 of the Final Report a 50% reduction in electricity sector emissions is dependent on the installation of significant additional battery and pumped hydro storage capacity and increased demand side participation. However, as the Report also shows in Figure 6.6—the pipeline for committed and proposed Victorian storage projects is very low. As such, this is a gap that needs to be managed with the right policy intervention.

Victorian Energy Storage Target (VEST)

A policy reform that would address this gap, is the introduction of a Victorian Energy Storage Target (VEST) linked to the VRET.

In global jurisdictions, energy storage targets are well established—particularly in jurisdictions with strong renewable energy targets and/or zero emissions targets. However, we are yet to see any Australian jurisdictions take the lead in establishing a local storage target.

The following provides a summary of some of the energy storage targets that have been operating over the last decade:

- **California** - first introduced their Energy Storage Procurement Mandate in 2013, with a mandate for 1325 MW of energy storage by 2020\(^2\). An extra 500 MW was added to that mandate in 2016. Supports a 60% 2030 clean energy target and a 100% 2045 clean energy target.
- **Massachusetts** – introduced an energy storage target of 1000 MWh of energy storage in July 2018, to be delivered by 2025. Supports an 80% reduction in emissions by 2050.
- **New York**- has an energy storage target of 1500 MW by 2025 and 3GW by 2030. This is supported by the New York Green Bank, $200m fund. Supports the recently passed 70% 2030 clean energy target, which will see 15 GW of renewables deployed\(^4\).
- **Arizona** – has an energy storage target of 3000 MW by 2030. Supports the (possible) 100% clean energy target by 2050\(^5\).
- **New Jersey** – has an energy storage target of 2000 MW by 2030\(^5\)
- **Nevada** – the SB204 Storage Targets Implementation bill is considering the introduction of a storage target of up to 1000MW by 2030\(^6\).

There is an opportunity for Victoria to lead the way and be the first state in Australia to establish an energy storage target.

**How could a VEST be established?**


\(^6\) Refer - [https://www.energy-storage.news/news/energy-storage-procurement-targets-could-work-for-nevada-pucn-commissioned](https://www.energy-storage.news/news/energy-storage-procurement-targets-could-work-for-nevada-pucn-commissioned)
While work would need to be done to establish the appropriate timelines and capacity required for a VEST, any policy design can leverage the underlying analysis undertaken by the Australian Energy Market Operator (AEMO), for the 2018 Integrated System Plan (ISP).

As demonstrated in Figure 1 below, the ISP Fast Scenario (based on meeting the VRET) assumes that storage will make up a significant portion of the lowest cost installed capacity from 2031/32 onwards. However the modelling also assumes a significant increase in installed capacity – 401 MW to 2324 MW – over a 24 month period. This sharp increase arrives after a decade of little movement. Under this scenario, development of energy storage projects will be a dormant industry in Victoria, which is then expected to mobilise in a contracted time period.

![Victoria - renewables and storage](image)

**Figure 1: Possible VEST - based on AEMO ISP modelling (2018)**

As an alternative, the ISP data (including future ISP releases) could be used to form the basis of a linear energy storage target. As shown in Figure 1, if the VEST was introduced with targets set for the same time periods as the VRET and the interim emissions reduction targets, it could be introduced as follows:

- 966 MW Energy Storage Target in 2025
- 1720 MW Energy Storage Target in 2030

This approach sees a gradual increase in storage as a percentage of installed renewables with a linear increase to reflect the growing need as renewables increase. The proposed 2025 storage target of 966 MW is approximately 14% of the installed renewable energy capacity in Victoria at that time. In 2030 this is closer to 22%. These ratios are similar to the 1:4 or 1:5 storage to renewable ratios that are seen in other jurisdictions with energy storage targets, including the recent New York targets of 3 GW of storage and 15 GW of renewable energy mentioned above.
Delivery of a VEST

The simplest approach for introducing an energy storage would be to integrate it into the VRET. An example mechanism would be for any future reverse auctions.

- Under the previous contract for difference auction mechanism, with the contract for difference strike price valuing both the renewables and storage elements. Alternatively the contract could be underwritten with a firm $/MW annual payment.
- Under a power purchase agreement (PPA) approach that has a different price component for renewables ($/MWh) and storage ($/MWh)

A VEST should be seen as a complimentary mechanism to the retailer reliability obligation (RRO). The RRO relies on retailers entering into firm contracts to support their customer retail load. The generation backing these contracts can be a mix of existing firm capacity, and new build capacity. A VEST would ensure that at least a portion of these contract are backed by new build dispatchable capacity (such as storage) in order to support rapid transition needed.

Distributed Energy Resources (DER)

In addition to actions at the utility scale, distributed energy will play an equally important role in helping to deliver 50% renewable energy in Victoria by 2030. Solar Victoria is currently offering subsidies for 650,000 subsidised solar systems and 10,000 subsidised solar batteries over a 10 year period.

As with utility scale assets, distributed solar PV assets will also benefit from the ability to be orchestrated to provide firm energy output and mitigate energy system risks. In particular orchestration can mitigate system risks that may arise with uncontrolled output of solar during periods of low energy demand. This impact is already being seen in South Australia and Western Australia.

In order to improve orchestration of Victorian DER, over time we would expect to see the differential between the number of solar subsidies available, and the number of battery subsidies available begin to decrease.
2. Policies and Investment for Victoria’s transport sector

The report notes that transport is the fastest growing source of emissions in Victoria; it is also the greatest opportunity. As the report states, Victoria “holds many of the levers required to address transport emissions.” Given that the federal government has effectively ruled out federal fuel and vehicle standards during its current term, it is now crucial that Victoria step into a leadership role.

Every polluting car sold in Victoria will continue to emit for over a decade, so early action is imperative, however Victoria lags other states on planning for the transition to low emissions vehicles and Australia is seven years behind global pace on electric vehicle adoption7.

A recent survey by the Royal Automobile Club of Victoria (RACV) found that 50% of Australians will consider an electric vehicle for their next purchase the question is whether they will have sufficient opportunity to do so8.

**Electric-Ready Victoria**

An “Electric-Ready” bill would ensure that new property developments in Victoria are equipped for the electric vehicle transition. This helps avoid the high cost of retrofitting charging equipment as uptake increases, increases the utility and value of developments, and helps occupants reduce their fuel costs.

There are several models for such bills. In France, recent legislation mandates that 50–75% of parking bays in any new or renovated residential building be pre-installed with conduit to allow cheap and easy installation of electric vehicle supply equipment (EVSE) at 7kW to 22kW. In commercial buildings, 5–10% of parking bays must have conduits suitable for installing charging at over 22kW. In Hong Kong, developers receive financial incentives to include and maintain charging equipment.

**“Right to charge” legislation**

A “Right to Charge” bill would ensure Victorians who rent, or who live in multi-unit dwellings (MUDs) are able to install electric vehicle charging equipment.

Customers who are keen to purchase electric vehicles in Australia are often unable to do so if they live in apartments or are renting their home. Some are able to install charging quickly. However, others can be delayed because strata meetings for their building are very infrequent or have no clear process to follow for charging installations. Customers can also be faced with unreasonable demands or objections from landlords or strata committees.

This barrier to uptake has been effectively managed in other jurisdictions. For example, in Spain, Portugal, and California, property laws for existing apartment buildings require EV-owners simply to notify landlords or co-owners that they are installing their own charging point. The EV-owner bears all costs for installation and operation of the charger, including insurance, and installation by a certified electrician. The property manager or strata committee may not turn down the request for an installation, but may, within one month of application, agree on modifications to the application, or within two months, propose an alternative.

**Extend concessional stamp duty to all low-emissions vehicles.**

As of July 1 2019, low-emissions vehicles enjoy a flat stamp duty rate of $8.40 per $200 in Victoria. For passenger vehicles over $100,000 this provides a price advantage relative to more polluting alternatives at the same price. However, no such advantage exists for vehicles under $100,000.

The Australian Capital Territory provides a stamp duty exemption for new zero emissions vehicles. Analysis based on vehicle uptake forecasting done by Energeia for the CEFC and ARENA indicate that a full exemption from stamp duty for zero emissions vehicles would cost between $40m and $60m over

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7 Refer - Bloomberg New Energy Finance, Electric Vehicle Outlook 2018
8 Refer - ClimateWorks Australia, The state of electric vehicles in Australia, 2017
the forward estimates in Victoria. This policy could be phased after a number of years, or when ZEVs reach a certain point of market penetration (say 4% of new vehicle sales).

**Urban charging**

Most EV owners in Australia do over 85% of their charging at home. However, those without access to off-street parking, or those who rent, are often unable to install home charging. As lower-priced electric vehicles become available in the Australian market, this will increasingly be a barrier to EV uptake, particularly in urban areas.

This is also a challenge for equitable access to electric vehicles. Bloomberg New Energy Finance predicts that electric vehicles will achieve price parity with internal combustion engine vehicles (ICEVs) in 2025 and become steadily cheaper⁹. EVs already offer significant safety benefits, and savings in fuel and maintenance. Without access to on-street charging, these benefits will accrue more to those who own their own homes or have access to off-street parking.

The City of Amsterdam provides an example of addressing this challenge through demand-based urban low power charging. Charging points are installed for on-street parking spaces within 300m of an EV-owner’s residence. This approach has several advantages. No parking space is lost and parking revenues are maintained. Dedicated EV parking is created where EVs actually are. EVs pay regular parking permits. This approach also ensure high utilisation rate from day one; Amsterdam have experienced 30% utilisation from day one. Longer charging times mean this approach enables adaptive charging schedules and demand-response opportunities, creating flexibility for the grid.

Alternatively, Victoria could invest in urban fast-charging hubs in areas with low home-ownership and/or low availability of off-street parking. As Victoria’s experience funding fast-charging stations at Euroa and Barnawartha North have shown, a small public contribution can quickly unlock private investment in such infrastructure.

**Fast charging infrastructure on Victorian highways**

VicRoads manages 23,000km of freeways and arterial roads. While there are on average petrol stations every ~50km across Australia’s road network, there are currently 15 DC fast-charge sites in Victoria. A $40m investment by Victoria electrify the state’s arterial roads, unlocking private investment and building over 100 fast-chargers across the state. This would instil Victorians with the confidence to rapidly accelerate the transition to zero emissions vehicles.

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⁹Refer - Bloomberg New Energy Finance, Electric Vehicle Outlook 2018