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Impacts of Heavy Vehicle Reform
Productivity Commission
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DUKA Tec Submission

Executive Summary

This submission is primarily responding to the Productivity Commission information requests on "Increasing heavy vehicle road access to reduce emissions and increase productivity" and "Curfews for EV trucks" and the eight policy recommendation headlines below.

Submission

My name is Tony Fairweather and I have extensive experience in the global commercial vehicle industry, with the last 12 years in electrification across Australia, ASEAN and USA, residing in the latter for the past 7 years.

After 5 years managing transport depots for TNT Express (which is now Fedex) from 2007, I commenced distributing commercial vehicles brands via exclusive agreements in Australia. In 2012, I identified the rapidly evolving electric commercial vehicle industry and commenced the development of proprietary 100% electric SEA-Drive® power-system technology via the establishment of SEA Electric. This technology was targeted at both the Light, Medium and (lighter end of) Heavy Duty truck segments.

After 5 years of technology development, validation and homologation, the commercialisation phase commenced (in 2017) and since that time, SEA Electric has deployed electric delivery vehicles into 8 countries across 5 continents. Those deployments have collected more than 10 million kilometres of in-service and independently tested operations as well as the granting of the SEA-Drive® patent in 16 global jurisdictions. This enabled SEA Electric to obtain OEM supply contracts (with both Mack Trucks (Volvo) in the US and Hino Trucks (Toyota) in both Australia and the US).

In April 2024, I exited SEA Electric via a merger with TSX listed Exro Technologies. DUKA Tec has recently been formed to further develop the light, medium and heavy duty electric delivery commercial vehicle industry in Australia, utilising the various learnings from markets in which the DUKA Tec team have substantial experience.

Combined Heavy Commercial Vehicle Segment - Australia

The VFACTS Motor Vehicle Classifications and Definitions of the Heavy Commercial Vehicle Segment:

- Light Duty – 3,501kg to 8,000kg GVM
- Medium Duty – =>8,001kg GVM and <=39,000kg GCM
- Heavy Duty – =>8,001kg GVM and >=39,001kg GCM

The above combined segments represent more than 50,000 new sales per annum. The majority of these annual sales are diesel powered and deployed in urban/metropolitan applications. It is well proven now that metropolitan commercial deployments perform low kilometre daily applications, resulting in a unique and efficient deployment of electrification technology that results in the following:

- Electric vehicle deployment that typically allows for up to 150km of daily operation WITHOUT the need to charge during the delivery shift.
- Back-to-base operations, that allow the charging strategy to focus on overnight parking locations – typically in depots.
- Charging strategies that allow longer charging periods, therefore utilising lower cost Type 2 charging overnight during lower energy cost consumption periods.
- A simple need for standard 3 phase, 400V power availability in order to execute low cost, full fleet deployments.

The above will be suitable for approximately 80% of the 50,000 unit per annum market (i.e. 40,000 new unit sales per annum target for this electrification strategy).

The targeted GVM range for the above electrification strategy is from 4,500kg GVM to approx. 26,000kg GVM, with the 4,500kg segment being largest due to it meeting the maximum allowable GVM for passenger car licensed drivers in Australia. This category makes up approx. 30% of the total industry, i.e. approx. 15,000 units per annum.

Positive Health Benefits of Reducing Diesel Particulate Matter in Metropolitan Areas

The California Air Resources Board (CARB) has conducted extensive research on the impacts of Diesel Particulate Matter (DPM) in metropolitan areas.

CARB have reported the estimated health effects of DPM in California as follows:

"DPM has a significant impact on California's population. It is estimated that about 70% of total known cancer risk related to air toxics in California is attributable to DPM. Based on 2012 estimates of statewide exposure, DPM is estimated to increase statewide cancer risk by 520 cancers per million residents exposed over a lifetime. Non-cancer health effects associated with exposure to DPM (based on 2014 - 2016 air quality data) are shown in the table below."

Health Effect	Estimated Annual Number of Cases*
Cardiopulmonary Death	730 (570 – 890)
Hospitalizations (Cardiovascular and Respiratory)	160 (20 – 290)
Emergency Room Visits for Asthma	370 (240 – 510)

**Values in parenthesis indicate 95% confidence interval.*

Recommended Reforms to Increase 4,500kg GVM to 26,000kg GVM Electric Truck Uptake

1. Increase Passenger Car Licensed 4,500kg GVM Category to 6,000kg GVM for EV

The above, Australian compliant, 4,500kg GVM electric delivery vehicle is capable of performing approx. 150km per shift on a single charge. The battery size required to achieve this, impacts the vehicle payload by approx. 500kg in comparison to the diesel equivalent. This creates a substantial productivity disadvantage to the operator. Many global markets have seen the same issue and have increased their allowable passenger car drivers licence limit from 4,500kg GVM to 6,000kg GVM for electric (zero emission) vehicles only. This

compensates for the additional battery mass as well as provides an additional 1,000kg payload as a substantial productivity incentive for the operate to transition their fleets to electric.

2. Defer Some Mandatory ADAS (Advanced Driver Assistance Systems) Implementation Dates

Certain ADAS requirements add substantial complexity and cost for initial, low volume deployments. These requirements can limit the ability for high quality OEM's and assemblers to introduce offerings until the market matures and grows.

In particular AEBS (Automatic Electronic Braking System) and ESC (Electronic Stability Control) require expensive and extensive integration and testing costs. Many counties have recognised this and have deferred the mandatory requirement for 2 years after the requirement for ICE vehicles. Allowing time for the EV market to mature.

3. Remove Curfews on Urban/Metropolitan Deliveries for Electric Delivery Vehicles

The 4,500kg GVM model (moving to 6,000kg GVM model) is almost solely used for urban/metropolitan delivery applications, mostly to residential areas. My removing curfews, these large fleets could perform deliveries 24 hours, hence dramatically increasing productivity and reducing the number of vehicles on the road during peak time as well as the number required in the fleets to perform the same number of daily operations.

The same can be said for the above distribution center delivery vehicles. They are also typically delivering to urban/metropolitan supermarket chains and would benefit greatly from allowing night time deliveries.

4. Introduce Zero Emission Delivery Zones

As a means to drive fleet uptake and allow smaller trial areas, the US has introduce a number of zero emission delivery zones. These are typically, small, high density areas (such as the few square mile area in Santa Monica, CA). These areas mandate that any deliveries performed in that small area, MUST be via zero emission delivery vehicle.

This has proven a successful way to enforce early uptake of electric delivery vehicles and ensure controlled trial areas for their use.

5. Incentivise Electric Vehicle Uptake for Tier 2 and Tier 3 Operators

Smaller fleets are typically more conservative when it comes to a change of technology, in particular when it may incur an upfront premium. As much as the sale of volume electric commercial vehicles in the future will be justified on purely a TCO (Total Cost of Ownership basis) initial deployments are needed to prove that annual operating cost saving of tradition ICE vehicles.

The most successful incentive program in the US is known as HVIP (the Heavy Vehicle Incentive Program) and is administered by CARB (the Californian Air Resources Board). Although created by California, it's framework has been adopted in more than 20 US states now. I would recommend any incentive program in Australia be singular and Federal. This program provides for up to 90% of the upfront cost of an electric commercial vehicle (typically capped at 5 units per fleet) to be subsidised. The program allocates fund across fleet sizes, to ensure equal opportunity. Some states have adopted a high attractive leasing program (instead of upfront subsidy), whereby the state government own the vehicle and lease to the fleets at very low lease costs, with option to buy after certain periods of operation.

6. Local Content Benefits within Incentive Programs to Promote Local Battery Assembly and Electric Vehicle Component Industry Development

Many of the US incentive programs have different levels of incentives for the fleets depending on whether the electric commercial vehicle model they chose had ANY local content. They are typically focussed on recognising the locally produced/assembled batteries, power-electronics and upfit component supply. This may be seen in the form of a 50% incentive for full imported CBU (completely built up) vehicles and 100% for a vehicle that has any local component installed in Australia (in particular batteries).

The reality is that the power-system installation can be very efficient when performed in scale, and a 40,000 unit per annum Australian TAM provides a foundation to provide this scale. The objective should be for everyone of those 40,000 new units to arrive in Australia as a rolling chassis (i.e. no engine or transmission installed by the OEM) or as a PKD (partially knocked down kit) for local finishing/assembly, with Australian batteries, motors, controllers, wiring harnesses, power electronics, inverters, chargers, brackets, mounts etc used.

The flow on benefits to Australia's battery storage industry (both resident and commercial) are evident with this incentive strategy.

7. Establish Mandatory Electric Vehicle Sales Milestones for Truck OEM's

Existing and new OEM suppliers to Australia, MUST be provided with future annual zero emission sales targets, scaling each year. These don't need to be excessive. They should simply enforce the start of zero emission development and supplier by the major OEM's.

It's interesting to note that the vast majority of sales of the 40,000 units per annum of commercial vehicle market in Australia are from 3 Japanese suppliers (Hino, Isuzu and Fuso)

yet the vast majority of electric commercial vehicles operating in Australia are from China. Until they are mandated, the Japanese will move very slowly. It's also interesting to note that all 3 of these Japanese suppliers have accepted zero emission sales mandates in the US for a number of years now, so can have no issue when Australia applies its own sales mandates.

8. Income Tax Rebate Program

The recently redacted IRA (Inflation Reduction Act) federal tax rebate provided successful in supporting uptake in those states that had no other incentives, as well as adding further incentive for those that do. This allowed for up to $40,000 per unit tax rebate at tax return time, for zero emission vehicles purchased the previous year.

Summary

My most important learning from my time overseas, is that electric commercial vehicle uptake requires a range of policy, incentives, mandates and education to be implemented consecutively in order to successfully commence a true zero emission transition. The combination of 'carrot' and 'big stick' is vital.

Once the transition commences, the momentum is self-sustaining. The hidden benefits of electric commercial vehicle deployment are enormous:

1. Reduced driver fatigue and comfort
2. Reduced driver and urban exposure to DPM's and fumes
3. Productivity gains via capacity, routes per day, AI generated diagnostics and real time route planning
4. Safety improvements via real time reporting and driver feedback
5. Reduced operating costs via linear acceleration, deceleration and vehicle/driver reporting
6. Reduced noise for driver exposure
7. Charging at bay whilst loading/unloading/parking. No fuel stops