Submission to the Productivity Commission

Inquiry into the impacts of heavy vehicle reform

Submitted by: AVantage Insight

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1. Introduction

AVantage Insight welcomes the opportunity to provide input to the Productivity Commission's interim report on heavy vehicle reform.

AVantage Insight is an independent advisory business focused on autonomous vehicles and future transport, with experience across freight, infrastructure and emerging mobility technologies. This submission draws on analysis of international developments in autonomous trucking and their potential implications for the Australian freight sector.

The proposed reform areas – including expanded access for higher productivity vehicles, support for zero-emission heavy vehicles, improved curfew arrangements, driver competency reform, and the National Automated Access System – represent a coherent and practical package to improve the productivity and performance of Australia's road freight sector.

This submission is broadly supportive of the direction outlined in the interim report.

However, it seeks to contribute an additional perspective:

> **That the proposed reform package should be considered not only in the context of current technologies and operating models, but also against a plausible future in which automated heavy vehicles begin to emerge on Australian roads.**

This is not intended to suggest a shift in reform priorities. Rather, it is intended to ensure that reforms implemented today are robust and adaptable to likely future developments in the freight sector.

2. A balanced approach to reform and future-proofing

The priority should remain on progressing the current reform package in a timely and practical manner.

At the same time, given:

- the long life of heavy vehicle assets
- the enduring nature of infrastructure investments
- and the role of regulatory frameworks in shaping industry behaviour

it is appropriate to consider whether these reforms are sufficiently future-proofed.

Future-proofing should not:

- introduce unnecessary complexity
- delay implementation
- or rely on speculative modelling

Instead, it should involve:

- ensuring reforms do not inadvertently constrain emerging technologies

- identifying where modest adjustments could support future optionality
- and recognising where further work may be required over time

This perspective is relevant across several areas of the interim report, including access reform, curfew settings, digital access systems and infrastructure planning.

3. Autonomous heavy vehicles as an emerging productivity pathway

(Relevant to multiple Information Requests on productivity, technology and reform priorities)

The interim report appropriately focuses on established drivers of productivity, including vehicle mass, access, and administrative efficiency.

However, over the timeframe relevant to these reforms, it is plausible that automated heavy vehicles will begin to emerge in selected use cases.

International developments indicate that:

- early deployments are occurring on specific, well-defined freight routes
- operations are highly structured and geographically constrained
- adoption is likely to be gradual and use case–specific

While uncertainty remains regarding timing and scale, automated heavy vehicles represent a potential additional pathway to productivity improvement.

For example, early international deployments have focused on highly structured freight corridors, where trucks operate autonomously between logistics hubs at either end of the corridor. In these environments, removing the need for a driver allows vehicles to operate for longer periods, reduces labour inputs per trip, and improves asset utilisation.

More broadly, automation may influence productivity through:

- changes in labour inputs
- increased vehicle utilisation
- improved ability to operate across a wider range of hours
- and more efficient coordination of freight movements

Accordingly, it would be appropriate for the final report to:

> **Acknowledge automated heavy vehicles as an emerging, though uncertain, component of the future heavy vehicle landscape, and consider whether the proposed reforms are compatible with their eventual deployment.**

4. Implications for how productivity is assessed

(Relevant to Draft Findings on productivity measurement and performance)

The interim report recognises the importance of considering how effectively the freight sector uses capital, labour and energy.

In this context, automation has the potential to shift the balance of inputs used to produce freight services.

Over time, productivity may be influenced not only by:

- payload per vehicle
- or access to larger vehicle combinations

but also by:

- labour intensity
- vehicle utilisation rates

- the number of operating hours per day
- and the efficiency with which freight tasks are scheduled and coordinated

In practical terms, this means productivity modelling should not only consider tonne-kilometres per vehicle-kilometre. Automation may affect the cost of producing those tonne-kilometres, including labour inputs, hours-of-operation constraints and vehicle utilisation.

For example, a vehicle operating on a fixed freight corridor without a driver may be able to run for longer periods each day, increasing asset utilisation and reducing labour input per unit of output. Improvements in scheduling and coordination may further support more efficient use of vehicles and infrastructure.

This suggests that:

A broader interpretation of productivity – beyond physical output measures – will become increasingly important in assessing future reform outcomes.

5. Vehicle productivity & network design in an evolving environment

(Relevant to Information Requests on higher productivity vehicles and access reform)

The interim report places appropriate emphasis on increasing the use of higher productivity vehicles.

This remains a critical lever for improving freight efficiency.

However, in a future where labour constraints may evolve – including through partial or full automation in some use cases – the optimal configuration of freight movements may also change.

For example:

- there may be different trade-offs between payload per vehicle and frequency of movements
- different use cases may favour different vehicle sizes and configurations
- and network impacts such as congestion, safety and infrastructure wear may need to be considered alongside vehicle-level efficiency

In a conventional operating environment, labour constraints create a strong incentive to maximise payload per vehicle. In an automated environment, where the marginal cost of operating an additional vehicle may be lower, this trade-off may evolve.

This does not imply that larger, higher productivity vehicles become less important, or diminish the importance of current reforms. However, it suggests that:

The optimal balance between vehicle size, frequency of movements and network impacts may shift over time, and may differ across freight tasks and corridors. Further work may be warranted over time to understand how these trade-offs evolve under different technology scenarios.

6. Curfews, electrification and the potential for overnight freight

(Relevant to Information Requests on curfews and zero-emission heavy vehicles)

The interim report's consideration of curfew reform for zero-emission heavy vehicles is well founded.

Many curfews were designed around the noise and operating characteristics of conventional diesel vehicles and may not reflect the capabilities of newer technologies.

There is a strong case for:

- reconsidering curfews for low-noise vehicles
- moving toward more performance-based approaches
- and enabling greater utilisation of existing infrastructure outside peak periods

Electrification plays a central role in this, by reducing vehicle noise and enabling reconsideration of long-standing curfew restrictions.

However, realising the benefits of expanded overnight freight is not solely a function of vehicle technology. In practice, it may be constrained by the availability and cost of labour required to operate freight services during overnight periods.

In this context, **automation may act as a critical enabler of electrification** by reducing reliance on driver availability for freight tasks, and making it more feasible to operate freight movements outside traditional daytime windows.

At the same time, autonomous and electric vehicles do not in themselves resolve all barriers to overnight operations. Freight receivers still require staffing or automated handling, and noise impacts may arise from activities beyond the vehicle itself, including loading, unloading and yard operations.

For this reason, the most immediate opportunities are likely to be in environments already operating on a 24-hour basis, such as:

- port and intermodal precincts
- logistics hubs and distribution centres

Over time, as operational practices evolve and supporting systems develop, there may be scope to extend overnight activity more broadly.

This suggests that:

> **Curfew reform should be designed in a way that supports both low-noise vehicle technologies and the operating models required to make effective use of them, including those enabled by automation.**

7. National Automated Access System (NAAS) and data capability

(Relevant to Draft Findings and Information Requests on NAAS)

The proposed National Automated Access System represents a significant opportunity to modernise heavy vehicle access arrangements.

In addition to improving current access processes, NAAS will likely form a critical part of the future digital infrastructure underpinning freight operations.

Given this, consideration could be given to ensuring that:

- the underlying data model is designed so it can eventually support not only access for heavier and more productive vehicles, but **also route suitability assessments for automated freight operations**
- and the system is capable of evolving as freight operations become more data-driven

This would help ensure that NAAS:

- delivers immediate benefits
- while also supporting future developments in freight technology and operations

8. Infrastructure planning and freight system visibility

(Relevant to Information Requests on charging infrastructure and planning tools)

The interim report recommends improvements to planning tools such as the EV Charging Infrastructure Mapping Tool.

This is a positive step, particularly given the importance of:

- freight demand patterns
- infrastructure capacity
- and network constraints

As these tools are developed, there may be value in:

- incorporating more detailed freight movement data
- improving visibility of key freight corridors and nodes
- and supporting better coordination between infrastructure planning and freight operations

In addition, where feasible, these tools should **anticipate the potential emergence of automated freight operations**. This may include capturing information relevant to:

- route suitability for different vehicle types and operating conditions
- freight nodes, depots and staging areas
- access constraints and operational requirements
- and the ability to support 24-hour operations

Over time, such capabilities would support not only zero-emission vehicles, but also emerging automated freight use cases.

9. Workforce considerations

(Relevant to Information Requests on driver competency and workforce)

The interim report highlights challenges related to driver availability, workforce ageing and skill requirements.

These challenges are likely to remain significant.

Alongside measures such as driver training, licensing reform and workforce development, **automated heavy vehicles may represent a complementary pathway to addressing some of the underlying workforce constraints facing the sector.**

In particular, automation may help to:

- reduce reliance on drivers for certain repetitive or long-haul tasks
- improve the sustainability of operations that are currently difficult to staff
- and support more flexible operating patterns

While automation is not expected to eliminate the need for a workforce, it may change the nature of roles within the sector.

Potential areas of change include:

- increased emphasis on operational coordination and monitoring
- different skill requirements associated with technology-enabled operations
- and changes in how freight tasks are structured

This reinforces the importance of:

Ensuring that workforce policy remains adaptable, while recognising that new technologies may form part of a broader response to workforce challenges.

10. Automated freight demonstration corridors or precincts

Given the potential for autonomous freight to contribute towards improvements in heavy vehicle productivity, as a practical next step governments could **consider identifying a small number of potential automated freight demonstration corridors or precincts.**

These could include:

- port-to-intermodal movements within metropolitan areas
- hub-to-hub freight corridors on major interstate routes

Such corridors could be used to test:

- road access arrangements
- regulatory frameworks for automated vehicles
- infrastructure readiness
- curfew settings
- and operational integration with existing freight systems

This would provide a structured way to:

- assess the compatibility of current reforms with emerging technologies
- identify any gaps or constraints
- and inform future policy development

11. Conclusion

The interim report outlines a practical and well-considered set of reforms to improve the productivity of Australia's heavy vehicle sector.

These reforms should proceed as a priority.

At the same time, it is appropriate to consider whether they are sufficiently robust to accommodate plausible future developments in the freight system.

In particular:

> **Automated heavy vehicles, while uncertain in timing and scale, represent a potential additional pathway to productivity improvement that should be acknowledged in the final report.**

Incorporating this perspective does not require a fundamental change to the reform package.

Rather, it involves ensuring that:

- reforms do not inadvertently constrain future developments
- key systems and frameworks are designed with sufficient flexibility
- and areas for future work are identified

This balanced approach would help position Australia to capture the benefits of both current and emerging technologies in the freight sector.