Australian Government
Productivity Commission

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Impacts of heavy vehicle reform

Study report

June 2026

Acknowledgement of Country

The Productivity Commission acknowledges the Traditional Owners of Country throughout Australia and their continuing connection to land, waters and community. We pay our respects to their Cultures, Country and Elders past and present.

About us

The Productivity Commission is the Australian Government's independent research and advisory body on a range of economic, social and environmental issues affecting the welfare of Australians. Its role, expressed most simply, is to help governments make better policies, in the long-term interest of the Australian community.

The PC's independence is underpinned by an Act of Parliament. Its processes and outputs are open to public scrutiny and are driven by concern for the wellbeing of the community as a whole.

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Request for advice

Dear Ms Wood

I am writing to request advice from the Productivity Commission (PC) on the impacts of a heavy vehicle productivity reform package. This advice will support continued pro-competitive reform under National Competition Policy (NCP).

This reform package aims to increase transport productivity for all heavy vehicles and support the uptake of heavy zero emissions vehicles (HZEVs).

To support this work, I am requesting advice from the PC, pursuant to Parts 2 and 4 of the *Productivity Commission Act 1998*, in the form of analysis and modelling for the following reforms (with further detail in Attachment A):

- Increasing heavy vehicle road access to reduce emissions and increase productivity.
- Accelerating the establishment of a National Automated Access System to streamline road access decision making for all heavy vehicles.
- Accelerating implementation of the National Heavy Vehicle Driver Competency Framework.
- Removing administrative and regulatory barriers to improve the availability of HZEV charging infrastructure.
- Reducing or removing curfews for HZEVs.

For each of these reforms, the PC should:

- Provide an assessment of the economic and revenue impacts, including expected:
  - impacts on GDP, GSP, dynamic efficiency and other measures of economic progress and national prosperity
  - costs and benefits for Australian households, including:
    - estimated impacts on aggregate measures of incomes, prices and wages
    - distributional impacts, where possible, including by age, gender, income and education, and any other relevant demographic classification (including impacts on First Nations Australians)
    - other impacts on consumers that may be difficult to quantify, such as improved quality of service or wellbeing, or greater choice.
  - impacts on relevant industries and sectors. To the extent possible, this should include estimated impacts on sectoral output, prices, productivity, employment and growth
  - net additional revenue accruing to the Commonwealth, state, territory and local governments.

The PC will consult as required, including with the Australian, state and territory and local governments in completing this advice. The advice should include an explanation of the methodology, assumptions and sensitivity analysis showing how results change under different assumptions.

The PC should provide an interim report, including initial modelling outcomes, to the Government by 31 March 2026 and a final report by 30 June 2026.

Yours sincerely

The Hon Jim Chalmers MP

[Received 30 September 2025]

Attachment A – Further detail on the heavy vehicle productivity reform package

- The Commonwealth is seeking to work with the states and territories to progress a package of heavy vehicle productivity reforms via a revitalised NCP agenda.
- The road access reform package aims to increase transport productivity for all heavy vehicles and support the uptake of heavy zero-emissions vehicles (HZEVs).
- The reforms are detailed below:

Increasing road access to reduce emissions and increase productivity

- There are current restrictions on which roads heavy vehicles are allowed to operate on. This disadvantages HZEVs and high-productivity freight vehicles due to their additional weight, reducing their potential payload and productivity compared to their Internal Combustion Engine (ICE)-driven counterparts.
- Actions to get more road freight carried by HZEVs and high-productivity freight vehicles would help reduce emissions and boost productivity as more payload can be carried in each journey. This could include increasing axle mass limits, expanding road access networks for certain vehicles, and targeted road infrastructure upgrades.

Accelerating the establishment of a National Automated Access System (NAAS)

- Vehicles above general mass limits face restricted road access due to the damage they cause to roads or the ability of road assets (such as bridges) to withstand the weight of the vehicle. In these instances, operators may be required to apply for a road access permit, which is an administratively burdensome and a time-consuming process.
- Accelerating establishment of the NAAS based on the Heavy Vehicle Access Management System (HVAMS) will boost supply chain productivity, optimise use of road networks, achieve ITMM's commitment to reduce permits by 90%, and is a high priority for industry.
- A NAAS based on the proven architecture of HVAMS will remove the need for most permits and provide instant decisions on network access, highly-tailored to individual truck combinations and loads.

Accelerating implementation of reforms to the National Heavy Vehicle Driver Competency Framework (NHVDCF)

- Operating high productivity vehicles requires qualified drivers, who must hold the appropriate class of heavy vehicle (HV) licence. With driver shortages – and an ageing workforce nearing retirement – faster licence progression is a critical enabler to realising the productivity potential of high productivity vehicles (HPVs).
- The NHVDCF reforms will address driver shortages by providing improved training and assessment outcomes and accelerate experience-based progression for drivers through HV licence classes.

Reducing or removing curfews for HZEVs

- Curfews on heavy vehicle movements restrict when certain heavy vehicles can use specific roads, often to minimise traffic noise particularly in residential areas.
- As HZEVs are quieter than ICE heavy vehicles, a reduction or removal of curfews of HZEVs would allow them to operate during non-standard business hours when there is less congestion and freight transit times can be reduced.

Removing regulatory barriers to improve the availability of charging infrastructure

- The future of Australia's HZEV fleet needs charging infrastructure that is optimised to reduce vehicle charging time during long trips.
- Charge point operators face a complex regulatory environment and administrative challenges to install and operate charging infrastructure.
- This reform seeks to address these barriers to accelerate the availability of charging infrastructure which also meets the mass, width and height characteristics of HZEVs.
- Publicly accessible HZEV charging infrastructure will support productivity by ensuring operators are competitive in a net zero economy.

Acknowledgments

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This report was prepared using the assistance of AI tools for the purposes of general research, summarising material from consultations, refining text and generating alternative text for figures. PC staff reviewed all AI-generated outputs for accuracy and quality.

Disclosure of interests

The *Productivity Commission Act 1998* (Cth) specifies that where Commissioners have or acquire interests, pecuniary or otherwise, that could conflict with the proper performance of their functions they must disclose those interests.

Commissioners Martin Stokie and Barry Sterland have no conflicts of interest.

Contents

Overview

Key points

- **Heavy vehicle transport plays an important role in the Australian economy, but productivity growth in the road freight sector has stalled for over a decade.**
  - Advances in technology and vehicle design provide opportunities to re-start productivity growth and improve emissions outcomes.
  - The recent fuel supply disruption has only strengthened the case for reform to unlock higher productivity and lower emissions vehicles.
- **High productivity vehicles, heavy zero emissions vehicles (HZEVs) and automated permits can support productivity uplift if deployed well. These opportunities will only be realised if all tiers of government collaborate to remove regulatory and other barriers to innovation and investment.**
  - Governments are working together on new national approaches, while individual jurisdictions are pursuing reforms that demonstrate how new technologies can improve vehicle access and how regulations can be updated to recognise electric vehicle charging as an emerging form of land use.
  - However, more can be done to accelerate this work.
- **The largest potential productivity benefits will arise from reforms that increase access to Australia's road network for high productivity vehicles.**
  - Increasing General Mass Limits (indicative of general increases to road access) would boost long-run GDP by about 0.03-0.10% ($900 million to $2.7 billion based on 2024-25 GDP), depending on the level of ambition.
  - Implementing the National Automated Access System (NAAS) would boost long-run GDP by about 0.02-0.05% ($600 million to $1.3 billion based on 2024-25 GDP).
  - Reforms that work towards 'as-of-right' access – reducing the time and costs associated with applying for a permit for pre-approved vehicles driving on pre-approved networks – should be prioritised, as should reforms that make it easier to get high productivity and low emissions vehicles on the road.
  - Additional funding for the road infrastructure assessments needed to support informed decision-making about access and a focus on building local government capacity will help ensure that the NAAS roll-out does not fall further behind.
- **Adjusting noise-based curfews to exempt HZEVs, ensuring planning rules are suited to HZEV charging, facilitating private investment in HZEV charging in heavy vehicle rest areas and improving information to guide charging site selection will assist uptake of HZEVs.**
- **National driver competency reforms to improve safety have been agreed, though implementation across jurisdictions will largely occur between 2026 and 2028.**
  - Implementing the National Heavy Vehicle Driver Competency Framework would boost long-run GDP by about 0.004-0.015% ($100 to $400 million based on 2024-25 GDP).

Road freight productivity growth has stalled

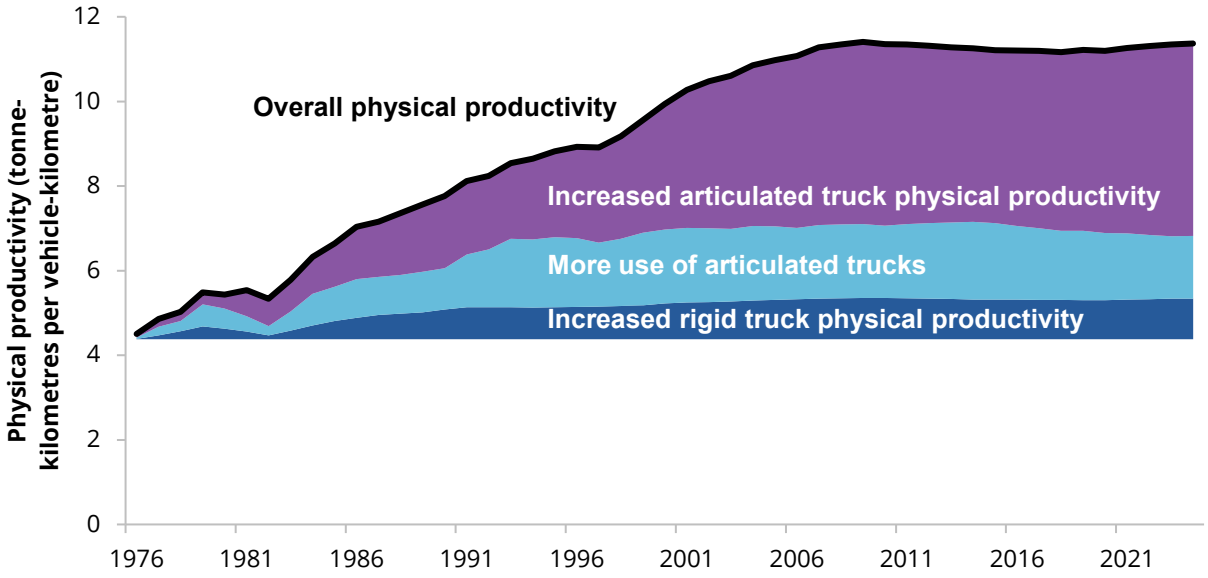
Heavy vehicle transport is central to the day-to-day functioning of our economy. Almost all goods have been moved by heavy vehicles at least once, and often several times – from ports, farms and factories to distribution centres, shops and homes. Overall, the road transport sector and in-house road transport activity represent around 5% of Australian GDP. The road transport sector alone employs 273,000 people.

Productivity growth in road freight transport reduces transport costs and, ultimately, the costs of goods and services across the economy that depend on it. Productivity growth used to be the norm – truck productivity (proxied by average payload size, also known as 'physical productivity') grew steadily from at least the 1970s to the mid-2000s (figure 1). But it has flatlined since then, as the increases in articulated truck physical productivity that drove much of the earlier productivity growth stopped.

Some slowing in the growth of articulated truck physical productivity may have been inevitable as technical limits to increasing truck size and weight are approached. The move from rigid to articulated trucks has also slowed, reflecting changes in logistics systems and consumer demand.

Figure 1 – Truck productivity growth has stalled

Decomposition of growth in rigid and articulated truck physical productivity



The decomposition shows the cumulative effect of changes in each factor on rigid and articulated physical truck productivity since 1976. Each year, the change in overall physical productivity is decomposed into changes in articulated truck physical productivity and rigid truck physical productivity, each weighted by their share of utilisation in the previous period, plus a contribution due to changes in utilisation weighted by current period differences in articulated versus rigid truck physical productivity.

Future productivity gains are likely to depend on smarter vehicle design – including adoption of the latest truck technologies – and improved network access, complemented by investments to optimise transport and logistics systems.

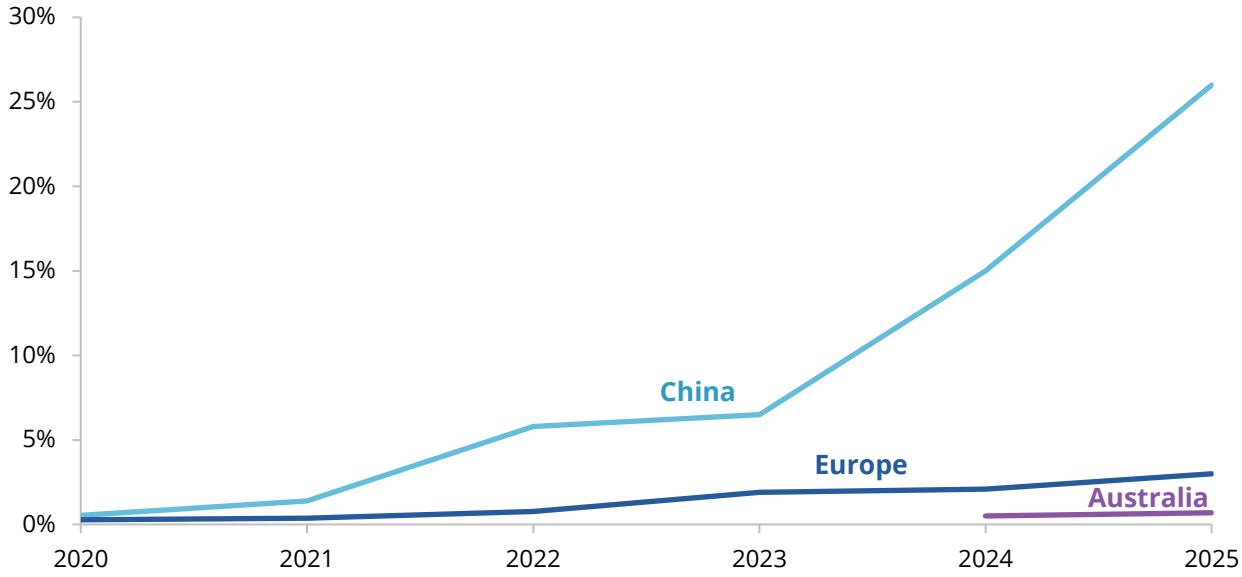
Increasing productivity can reduce emissions

Decreasing the fuel usage of the freight fleet via increased productivity and use of electric vehicles could support the Australian Government's commitment to achieve net zero emissions by 2050. It could also increase resilience in the face of supply chain disruption, such as the diesel fuel shortage generated by the 2026 conflict in Iran and closure of the Strait of Hormuz.

Some countries have adopted electric trucks more rapidly than Australia (figure 2). Sales of electric trucks in Australia increased following onset of the conflict, but from a low base.

Figure 2 – Some countries are ahead of Australia in electric truck adoption

Share of new truck sales that are electric



Data for Australia is for battery electric vehicles exceeding 3.5 tonnes, while data for China and Europe is for electric commercial freight vehicles exceeding 3.5 tonnes.

Heavy transport decarbonisation has not been an early priority in the drive towards net zero in Australia, but this may change if diesel fuel disruptions continue in some form, or if perceptions about ongoing fuel security change in response to this year's crisis. Modelling from prior to the conflict indicated the lowest-cost path to net zero would involve transport sector emissions declining by about two-thirds by 2050, with most of the reduction occurring between 2035 and 2050. While large-scale heavy zero emissions vehicle (HZEV) adoption is probably still some years off, higher or more uncertain diesel prices would boost the case for take-up of decarbonisation technologies.

Deploying new technologies can re-start productivity growth

High productivity vehicles, HZEVs, automated permits and telematics can all enable a productivity uplift if deployed well. But these opportunities will only be realised if governments collaborate to remove regulatory and other barriers to innovation and investment.

More needs to be done to ensure that regulatory settings and frameworks support optimal decision-making by both governments and heavy vehicle operators. Heavy vehicles represent significant, long-lived investments for freight operators, and fleet turnover occurs gradually. Australia's

truck fleet has a median age of 15 years, which is significantly older than in other OECD countries. Road access and design rules also limit fleet transition. Right now, the safest, most productive and lowest emission heavy vehicles face more barriers to get on the road than a standard 'prescriptive' heavy vehicle. As a result, potential productivity gains, safety improvements and decarbonisation opportunities are not being fully realised.

Governments are working together on new national approaches. For example, the National Automated Access System (NAAS) seeks to make it easier for operators to apply for permits and reduce the number of permits needed to access roads. This could increase productivity by reducing regulatory and administrative burden. Governments are also looking to introduce national consistency and higher standards of training and licensing through reforms to the National Heavy Vehicle Driver Competency Framework, which are expected to improve the supply of safe and competent heavy vehicle drivers.

Individual jurisdictions are also pursing reforms that demonstrate new technologies and regulatory approaches and create useful reference cases for national reforms. The Tasmanian Government developed its Heavy Vehicle Access Management System in 2016, and it is now the foundation for the NAAS. Earlier this year, the Victorian Government rolled out its Heavy Vehicle Structural Assessment Permit System, which allows manufacturers and operators to quickly assess whether their vehicles can safely operate over Victorian state bridges. And several state and territory governments have amended the definitions used for their service centres to include electric vehicle charging.

The PC has examined 5 heavy vehicle reform areas

The PC was asked to provide analysis and modelling across 5 reform areas:

- increasing heavy vehicle road access to reduce emissions and increase productivity
- accelerating the establishment of a NAAS to streamline road access decision-making for all heavy vehicles
- removing administrative and regulatory barriers to improve the availability of heavy zero emissions vehicle charging infrastructure
- reducing or removing curfews for heavy zero emissions vehicles
- accelerating implementation of the National Heavy Vehicle Driver Competency Framework.

The request for advice asks the PC to provide a detailed assessment of the economic and revenue impacts of each reform area – nationally and disaggregated by distributional groups, industries and levels of government. In undertaking analysis and modelling, it has become clear that there are interlinkages and shared challenges and opportunities across most reform areas, and not all have the same potential to boost productivity.

The largest potential productivity benefits will arise from reforms that increase access to Australia's road network for high productivity vehicles. Two reform areas – increasing heavy vehicle road access and the establishment of the NAAS – can enable this. However, the size of their potential impact will depend on the scope and ambition of their design and implementation.

Reforms that work towards 'as-of-right' access – reducing the time and costs associated with applying for a permit for pre-approved vehicles driving on pre-approved roads – should be prioritised. Achieving 'as-of-right' access will depend on:

- improvements in the accuracy and comprehensiveness of information – about road quality, and culvert and bridge tolerances and conditions
- support from local road managers to allow greater access, while still managing risk

- addressing the misaligned incentives between those who would benefit from expanding access to heavier vehicles or to more parts of the road network (mostly operators) and those who bear the costs of additional road damage and upgrades (mostly road managers).

There are also a number of reforms that can be sensibly considered 'without regret'. These include simplifying vehicle approval processes and reducing jurisdictional variation that does not serve a clear purpose. For example, the Australian Government could assist with coordinating the introduction of additional mass allowances for electric HZEVs across the country, with the potential for jurisdiction-level trials to provide an evidence base for a nationally consistent framework.

Road access settings need to better balance costs and benefits

Heavy vehicle road access regulation plays an important role in ensuring that the costs associated with road use (including pavement wear and tear and impacts on congestion, amenity and safety) are managed. But the current settings do not support road managers to make optimal trade-offs between the benefits and costs of increasing access. As a result, business and industry face unnecessary costs (via permit processing times and restricted access), and governments, including local governments, are missing opportunities to reduce their administrative load.

Reforms are in train to expand general mass and dimension limits

Access reforms could improve productivity and reduce heavy vehicle-related road crashes and emissions by allowing larger, safer trucks on more roads.

Some improvements to general access are already underway. For example, the National Heavy Vehicle Regulator (NHVR) is progressing work to explore incorporating the Euro VI mass concession – which provides an extra 0.5 tonnes of mass for compliant vehicles – into notices. Increases to baseline mass limits, length and height allowances will take effect in mid-2026.

Increased heavy vehicle access to the road network can generate productivity and emissions reduction benefits. The Bureau of Infrastructure and Transport Research Economics (BITRE) has estimated that increasing heavy vehicle General Mass Limits, which serves as a proxy for increasing heavy vehicle network access generally, would increase road freight sector productivity by 1.0% to 3.2%, depending on how much the limits are raised. On BITRE's modelling, these benefits would significantly outweigh the costs of additional road damage.

BITRE's work focusses on direct benefits and costs but increasing heavy vehicle network access would also have flow-on effects for the rest of the economy. Road transport services are an input into many other industries while road maintenance draws resources away from other uses. The PC commissioned modelling that gauges the broader economy-wide effect of increasing General Mass Limits, taking into consideration both the productivity benefits and road damage costs. This modelling found that long-run GDP would increase by about 0.03–0.10% ($900 million to $2.7 billion based on 2024–25 GDP), depending on the size of the General Mass Limit increase.

Access should be expanded for high productivity vehicles

Expanding access for Performance-Based Standards (PBS) vehicles is another way to support a productivity uplift. PBS vehicles are designed to achieve higher productivity than their non-PBS equivalents and have experienced strong uptake since the scheme was introduced in 2007, representing 21% of the road freight task in 2022. However, PBS vehicles often face greater barriers to

access than non-PBS equivalents, despite meeting or exceeding the same safety requirements. Governments should streamline access and design approvals for common PBS vehicle configurations to further promote the uptake of these high productivity vehicles.

Road managers should be encouraged to support as-of-right access for PBS vehicles where it is safe to do so. Governments should enable eligible PBS vehicles to be added to existing gazetted authorisation notices for equivalent non-PBS vehicles without requiring a new notice.

The NAAS roll-out can improve access decisions

There is also an opportunity through the planned roll-out of the NAAS to deliver faster, more consistent and more risk-based access decisions by automating approvals and, ideally, providing network-based access maps rather than case-by-case route permits.

The NAAS is an important reform – BITRE has estimated that its adoption would boost road freight sector productivity by 0.8% to 1.6%. The PC commissioned modelling to analyse how this targeted productivity boost would propagate to the broader economy, which found that implementing the NAAS would boost GDP by about 0.02–0.05% ($600 million to $1.3 billion based on 2024–25 GDP).

The NAAS rollout is behind the original agreed targets. While some states have begun to implement automatic access systems, it may be difficult to accelerate given the scale and coordination required – particularly the need for local governments to assess and digitise road and bridge asset data.

Given these constraints, getting NAAS design and national alignment right is critical to realising benefits in the long term. The benefits of the system would be maximised if:

- the NAAS adopted network-based access to give operators additional flexibility and support productivity
- states and territories adopted consistent front-end access systems to reduce the burden on operators undertaking interstate trips
- the design of the NAAS maximised the consistency and quality of local government decision-making on access and increased the information available to inform decisions, with additional support provided to local governments to facilitate this.

To build on the progress made so far, governments should prioritise filling remaining information gaps and supporting local government participation, including through funding future phases of the Strategic Local Government Asset Assessment Project.

More national consistency would facilitate fleet transition

The uptake of HZEVs will be vital for Australia to benefit from technological change and deliver significant transport emissions reductions. But electric HZEVs are typically heavier than their diesel equivalents due to the additional weight of battery systems. While technological improvements and innovation may reduce battery weight over time, operators currently face a payload penalty – that is, reduced freight capacity within existing mass limits – which can limit uptake.

The technology and transport operations underpinning these vehicles are evolving, particularly in relation to electric batteries, charging infrastructure and vehicle design. In light of this, there is a case for allowing a degree of transitional tolerance in regulations to support early deployment. Some support for the initial uptake can help accelerate the development of supporting infrastructure and industry practices – including to accommodate charging requirements – that may otherwise not develop in a timely manner.

State and territory governments have introduced some additional mass allowances for HZEVs, but these arrangements differ across jurisdictions. The Australian Government can help play a coordinating role and, along with state and territory governments, work to embed a consistent concessional mass limit to ensure electric HZEVs can operate across jurisdictions without significant payload disadvantages. The infrastructure impacts of a concessional mass limit for electric HZEVs are likely to be small in the immediate term, reflecting both the slow pace of fleet turnover and that these vehicles account for a small share of the heavy vehicle fleet.

These arrangements should be reassessed over time as batteries get lighter or are able to travel further with technological change. An option is to schedule 5-yearly reviews to ensure the concession is set to keep pace with decreasing payload gaps.

Other regulation has not caught up with HZEVs

The road access regulatory framework is not the only regulatory framework that has not yet caught up with the move towards HZEVs. Administrative and regulatory settings affecting charging infrastructure and curfews also need to change so that widespread heavy vehicle decarbonisation is not held back once the technology improves and costs fall.

Administrative and regulatory barriers to HZEV charging infrastructure should be reduced

To be commercially successful, HZEVs are likely to require:

- chargers located in freight centres (depots, distribution hubs and major warehouses), freight nodes (airports, ports and intermodal terminals) and heavy vehicle rest stops (rest areas and service centres along highways)
- different charging infrastructure from passenger electric vehicles – in particular, more powerful chargers and layouts that accommodate their size.

The most significant challenge for the rollout of this charging infrastructure is establishing connections to electricity networks, as high-powered charging can require network augmentation. But the administrative and regulatory barriers (the focus of this study) are important to address so that they do not create hold-ups once broader policy, market and technological developments are in place to drive the rollout forwards.

One such administrative barrier is that information to inform site selection is not always easily accessible. Data to support HZEV charging infrastructure investment should be made available in a single location and in an exportable format. This could either be through an update to the Electric Vehicle Charging Infrastructure Mapping Tool or a new HZEV-specific mapping tool.

Land use regulation is a potential regulatory barrier to charging infrastructure. Not all planning schemes have been updated to reflect this new type of infrastructure, which can create uncertainty and needlessly bespoke processes. State and territory governments should:

- alter the definitions of land uses that cover bus depots, freight centres, freight nodes and heavy vehicle rest stops to explicitly allow for electric vehicle charging on land used in this way
- exempt the installation of charging infrastructure from requiring planning permission where it is consistent with existing land use provisions. To the extent that jurisdictions apply conditions to

manage any public impact, these should be balanced against potential impacts on innovation and investment. The PC estimates that this would save about $5,000–$15,000 per site.

Looking further ahead, an emerging gap is the lack of policy to facilitate commercial installation of HZEV charging infrastructure in state and territory government-provided heavy vehicle rest areas. While only a minority of rest areas will need charging infrastructure, the lack of clear policy creates risks of future public works locking out charging and road authorities defaulting to risk-aversion when charging infrastructure owners enquire about investment opportunities. Austroads should update its Guidelines for the Provision of Heavy Vehicle Rest Area Facilities to reflect future HZEV charging infrastructure needs, and the Australian, state and territory governments should reflect these changes in policy. State and territory governments should also develop policies and guidance for contracting with charging infrastructure owners, including standard contractual terms and pricing principles.

Curfew burdens on HZEVs should be removed

In addition to regulatory barriers to charging infrastructure, other regulations, originally designed for internal combustion vehicles, can also limit HZEV operation. Two main sets of instruments (commonly referred to as curfews), prohibit the activity of heavy vehicles at certain times, with the aim of preserving neighbourhood amenity:

- local traffic controls restricting the movement of through traffic on a particular road. These are administered by state or local governments (or both), depending on the road, and apply to all heavy vehicles above a specified weight limit (including General Access Vehicles)
- local government planning restrictions set out in planning permits, such as restrictions on overnight truck deliveries to supermarkets.

Presently, no type of curfew distinguishes between internal combustion engine vehicles and HZEVs.

There is a strong case for reducing the burden of curfews on HVEVs in some form. While regulation should continue to aim to mitigate the impacts of heavy vehicle noise and protect community safety, HZEVs are significantly quieter.

State, territory and local governments should exempt HZEVs from time-related restrictions on activity (that is, deliveries). Governments should use existing outcomes-based regulations (like environmental or noise-management laws) to manage noise concerns.

Current reforms will improve driver capability

Current heavy vehicle driver training, assessment and licensing processes are poorly calibrated to the risks and priorities of the sector. Industry has reported that time-based licence progression has prevented drivers from entering the occupation and progressing to higher productivity heavy vehicles at a time of significant driver shortage. Industry also suggests that poor training and assessment requirements fail to deliver competent drivers and safe outcomes. Inconsistency across states and territories also adds costs for operators and training providers working across jurisdictions.

National Heavy Vehicle Driver Competency Framework reforms, endorsed in 2023, are set to expand driver competency and training minimums, create new licensing pathways based on experience and supervision, and support best-practice training and assessment. The reforms aim to improve safety and national consistency. Modelling by BITRE suggests they could also boost road freight productivity

by 0.1–0.3% by allowing faster progression through licence classes. PC modelling suggests this would boost long-run GDP by about 0.004–0.015% ($100 to $400 million based on 2024–25 GDP).

Implementation is underway, with most jurisdictions expected to roll out reforms between 2026 and 2028, but regulatory, IT, funding and capacity constraints mean faster acceleration is unlikely. Some jurisdictions will implement sooner while others are being delayed by ongoing decision-making. Certainty about reform details and funding, expected around mid-2026, should progress decision-making. There are already funding mechanisms in place through the National Competition Policy framework for the Australian Government to support state and territory governments to implement the reforms, with specific funding amounts to be determined. Implementation aimed towards full completion by the 2028 timeline should continue as planned and would be supported by confirmation of funding amounts to state and territories.

Other licensing issues warrant attention to better align the driver competency reforms with policy priorities, including ways to better manage the payload penalties associated with the battery weight in electric vehicles. Countries like the United Kingdom and New Zealand have adopted licence mass concessions for electric vehicles. Governments in Australia should work together to explore similar opportunities and better understand potential risks. There are multiple options to manage risks, such as committing to monitoring and evaluation, and appropriately targeting the licence concession so that it is conditional on various safety requirements.

Findings and recommendations

Access for high productivity and heavy zero emissions vehicles

Finding 2.1
Access reforms can unlock the benefits of a modern fleet

Growth in heavy vehicle productivity can be constrained by factors that restrict access, including:

- the reliance on permit-based access, limited flexibility in the application of access rules and inconsistency across jurisdictions
- a lack of harmonisation between domestic standards and international standards, which can limit the importation and use of modern technologies.

Modelling undertaken by BITRE indicates that there would be net benefits to increasing heavy vehicle General Mass Limits, suggesting net benefits to increasing heavy vehicle network access more generally. The benefits of higher freight productivity exceed the costs of additional road wear. Whole-of-economy modelling undertaken for this inquiry, using BITRE's modelling as inputs, indicates that increases in heavy vehicle General Mass Limits would boost GDP.

- Modelling commissioned from the Centre of Policy Studies at Victoria University found that increasing General Mass Limits would raise GDP by 0.03–0.10% by 2040, depending on the extent of the increase.
- Modelling undertaken by the PC found that that increasing General Mass Limits would raise GDP by 0.03–0.15% in the long run, again depending on the extent of the increase. Unlike the Centre of Policy Studies' modelling, this modelling does not incorporate the costs of additional road wear.

Increasing access for Performance-Based Standards vehicles would likely yield higher freight productivity benefits relative to additional road wear costs than increasing access more generally. This is because Performance-Based Standards vehicles often carry larger payloads than non-Performance-Based Standards vehicles that cause equivalent levels of pavement damage.

Recommendation 2.1
Allow greater as-of-right access and simpler vehicle approvals for Performance-Based Standards (PBS) vehicles

State, territory and local governments should support greater as-of-right access for PBS vehicles. Road managers should provide in-principle consent for as-of-right access for PBS vehicles (which have met safety and infrastructure requirements) that is at least equal to access for equivalent non-PBS vehicles. Governments should enable eligible PBS vehicles to be added to existing gazetted access notices without requiring a new notice.

The National Heavy Vehicle Regulator should be empowered to coordinate reforms that ensure PBS vehicles are awarded the same level of access to the road system as their prescriptive counterparts.

In addition, the National Transport Commission should amend the Heavy Vehicle National Law so the National Heavy Vehicle Regulator can approve applications directly, removing the requirement to refer all PBS design approval applications to the PBS Review Panel for advice.

Recommendation 2.2
A nationally consistent additional mass limit for electric heavy zero emissions vehicles (HZEVs)

The Australian, state and territory governments should – through the National Transport Commission – work to embed a consistent additional mass limit in the Heavy Vehicle (Mass, Dimension and Loading) National Regulation so that electric HZEVs can operate across jurisdictions without significant payload disadvantages arising from battery weights.

The National Heavy Vehicle Regulator, together with Austroads, should monitor the development of electric HZEVs and the interaction with road wear over the 5 years after the introduction of an additional mass limit. If after 5 years the monitoring program shows the mass limit is not set appropriately, there should be a review on mass limit settings and the impact on new HZEVs. The review's scope should include, but not be limited to, consideration of whether:

- road access policy settings have materially changed, including the road user charge for electric HZEVs
- the payload gap between comparable diesel heavy vehicles and electric HZEVs
- how international jurisdictions are setting concessional mass limits for electric HZEVs.

The additional mass limit should sunset following a positive review determination that the payload gap between comparable diesel and electric HZEVs has materially closed.

Accelerating a National Automated Access System

Finding 3.1
The permit system for heavy vehicle access is costly

The heavy vehicle permit system imposes significant costs and uncertainty on operators, as well as administrative burden on road managers and the National Heavy Vehicle Regulator. There is a need to reform the system to promote flexibility, timeliness, consistency and quality of access decisions – this will support broader productivity.

Recommendation 3.1
Funding for the Strategic Local Government Asset Assessment Project

The Australian Government should fund future phases of the Strategic Local Government Asset Assessment Project, starting with Phase 4 in the 2027–28 Budget. Expansions or amendments to the scope should be considered if they would support the National Automated Access System.

Recommendation 3.2
Automated access systems should incorporate network-based access

As much as possible, automated heavy vehicle access systems should be designed to provide network-based access rather than automating access for prescriptive routes. This will maximise the benefits of the system for operators and the community.

Administrative and regulatory barriers to charging infrastructure

Recommendation 4.1
Create a heavy zero emissions vehicle (HZEV) charging infrastructure mapping tool

The Department of Climate Change, Energy, the Environment and Water should create a HZEV charging infrastructure mapping tool, either by making the existing Electric Vehicle Charging Infrastructure Mapping Tool more suited to HZEV charging infrastructure or creating a new HZEV-focussed tool. To populate the tool, it should:

- work with electricity distribution network service providers and the Australian Energy Regulator to incorporate more granular (distribution substation-level) distribution network capacity information
- work with the Department of Infrastructure, Transport, Regional Development, Communications, Sport and the Arts and the National Heavy Vehicle Regulator to incorporate information on freight locations and movements
- work with state and territory governments to incorporate information on where charging is an allowed land use (with and without planning permission)
- allow this data to be exported, where possible.

Recommendation 4.2
Adapt land use regulation to heavy zero emissions vehicle charging infrastructure

State and territory governments should alter the definitions of land uses that cover bus depots, freight centres, freight nodes and heavy vehicle rest stops to explicitly allow for electric vehicle charging on land used in this way.

State and territory governments should exempt the installation of charging infrastructure from requiring planning permission where it is consistent with existing land use provisions. To the extent that jurisdictions apply conditions to manage any public impact, these should be balanced against potential impacts on innovation and investment.

Recommendation 4.3
Facilitate private investment in HZEV charging infrastructure in heavy vehicle rest areas

Austroads should update its *Guidelines for the Provision of Heavy Vehicle Rest Area Facilities* to include HZEV charging infrastructure considerations, such as by adding charging bay design considerations and proximity to electricity networks as a site selection criterion.

State and territory governments should reflect these changes in their guidance, and the Department of Infrastructure, Transport, Regional Development, Communications, Sport and the Arts should require applicants to demonstrate that they have considered the HZEV charging infrastructure aspects of the guidelines as a condition of receiving funding under the Heavy Vehicle Rest Area initiative.

State and territory governments should also develop policies and guidance, such as standard contractual terms, that allow charging infrastructure owners to install and operate HZEV charging infrastructure in heavy vehicle rest areas on commercial terms.

Heavy vehicle curfews

Finding 5.1
There is a strong case for reducing curfew burdens on heavy zero emission vehicles

Heavy vehicle curfews largely arise from two sources – local traffic controls that restrict truck traffic through particular streets and conditions imposed on local government planning permits that restrict delivery hours to and from businesses. Local traffic controls are almost exclusively found in Victoria, while planning restrictions appear more widespread.

Many curfews were designed for conventional diesel vehicles and do not recognise the quieter noise profile of heavy zero emission vehicles. As a result, some curfews are no longer fit for purpose, and there is a strong case for reducing curfew burdens on heavy zero emission vehicles.

Recommendation 5.1
Exempt heavy zero emissions vehicles (HZEVs) from curfews

State, territory and local governments should exempt HZEVs from time-related restrictions on activity (i.e. deliveries), Governments should use existing outcomes-based regulations (like environmental or noise-management laws) to manage noise concerns.

The National Heavy Vehicle Driver Competency Framework

Finding 6.1
Driver competency reforms are progressing

Reforms to the National Heavy Vehicle Driver Competency Framework appear on track to be implemented by most states and territories by 2028. Some state and territory governments may be able to deliver earlier under current arrangements. Others are not expecting to implement the reforms within the 2028 timeframe, with some still uncertain if they will be implemented in full. Support to implement changes, including to undertake regulatory reform, policy work and IT systems updates, may aid implementation.

Finding 6.2
There may be benefits from licence mass concessions for electric vehicles

Other countries, such as New Zealand and the United Kingdom, have adopted licence mass concessions for electric vehicles. A mass concession would bring environmental benefits but could have safety implications. Were governments to introduce a mass concession, the most promising design would target the C class licence, be based on reasonable payload penalties, and mandate safety features for eligible vehicles. Safety effects could be better understood via evaluations and continued monitoring of developments abroad.

1. Context for this study

1.1 What have we been asked to do?

In 2024, the Australian, state and territory governments agreed to a 10-year reform program aimed at boosting competition and productivity across Australia (Chalmers and Saffioti 2024).

The Productivity Commission's role in this National Competition Policy (NCP) process is to (at the Treasurer's direction) identify pro-competitive reforms and estimate their economic and revenue impacts. The PC previously modelled a first tranche of reforms (PC 2024) and provided advice on occupational licensing and adopting international standards (PC 2025b).

In this study, the PC was asked to provide analysis and modelling on the impacts of a heavy vehicle reform package aimed at increasing productivity and supporting the uptake of heavy zero emissions vehicles (HZEVs). In December 2025, the NCP Federation Funding Agreement Schedule was updated to include outputs and performance milestones related to the reform package (Commonwealth of Australia 2025).

This report examines the 5 reform areas under the heavy vehicle productivity reform package:

- increasing heavy vehicle road access to reduce emissions and increase productivity
- accelerating the establishment of a National Automated Access System to streamline road access decision making for all heavy vehicles
- removing administrative and regulatory barriers to improve the availability of HZEV charging infrastructure
- reducing or removing curfews for HZEVs
- accelerating implementation of the National Heavy Vehicle Driver Competency Framework.

1.2 Conduct of the study and consultation

After the Request for Advice for this study was received on 30 September 2025, the PC issued a call for submissions on 14 November 2025 and an interim report on 13 April 2026. The PC consulted with participants to prepare both its interim report and this final report, including the National Transport Commission and the National Heavy Vehicle Regulator, Australian, state, territory and local governments, the freight industry and heavy vehicle manufacturers. The PC received 42 submissions and 3 brief comments from interested parties prior to the release of the interim report, and a further 25 submissions and 6 brief comments following the interim report's release. These are all published on the PC's website: www.pc.gov.au/inquiries-and-research/heavy-vehicle-reform/submissions.

Meeting participants and participants who made submissions are listed in appendix A. The PC has greatly benefited from the consultations and thanks the participants for their contributions to the study.

This report sets out the PC's final analysis, modelling, findings and recommendations.

1.3 Heavy vehicles perform a range of critical functions

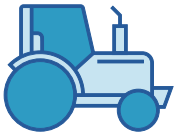
Heavy vehicles are usually defined as vehicles with a gross vehicle mass (the maximum weight when fully loaded) exceeding 4.5 tonnes (NHVR 2025m). They are mostly used to carry freight and transport passengers, although some, such as tractors and mobile cranes, perform more specialised functions (figure 1.1). When carrying freight, a distinction is often made between rigid trucks, in which the cab and load are fixed together, and articulated trucks, in which the cab and load are separate (a prime mover connected to one or more trailers).[1] Articulated trucks can generally carry larger freight loads than rigid trucks.

Figure 1.1 – Heavy vehicles can perform a range of functions

Freight vehicles
are used to transport goods – such as B-doubles and road trains

Passenger vehicles
are used to transport people – such as buses

Special purpose vehicles
such as cranes, truck-mounted concrete pumps and fire trucks



Agricultural vehicles
such as tractors and combine harvesters

Source: NHVR (2019a).

Heavy vehicles are regulated more heavily than light vehicles because their size, mass and operating characteristics come with extra safety and infrastructure considerations. For example, they generally damage roads more than light vehicles and cannot safely manoeuvre around some corners. The regulatory framework includes vehicle standards, road access limitations and driver licensing.

[1] Some rigid vehicles, known as light rigid trucks, weigh between 3.5 and 4.5 tonnes and so are not considered 'heavy vehicles'. Light rigid trucks comprised around 39.5% of registered rigid trucks in January 2025 (BITRE 2025b, p. 19).

1.4 Truck productivity growth has stalled

Heavy vehicle transport is a critical part of the Australian economy, supporting the movement of goods, passengers and the delivery of essential services. The road transport industry and in-house road transport activity together account for around 5% of Australian GDP,[2] and the road transport industry alone employs 273,000 people (BITRE 2025a, p. 15).

Productivity growth in road freight transport[3] reduces transport costs and, ultimately, the costs of goods and services across the economy that depend on it. Productivity growth used to be the norm – truck productivity (proxied by average payload size, also known as 'physical productivity') grew steadily from at least the 1970s to the mid-2000s (figure 1.2). But it has flatlined since then.

This is largely because the increases in articulated truck physical productivity that drove much of the earlier productivity growth stopped in the mid-2000s. The pre-2000s growth was partly due to increases in network access and mass limits. For example, increased B-double access to roads, which boosted payload capacity by about 50% without greatly increasing road wear, and a series of increases in more general mass and dimension limits (BITRE forthcoming).

Some slowing in the growth of articulated truck physical productivity may have been inevitable. Larger vehicles must be either longer or carry more mass for a given length. Longer vehicles or vehicle combinations are unsuited to some parts of the road network. Carrying more mass in a fixed vehicle envelope generally requires more mass per axle, but road damage increases more than proportionally with increases in axle mass.

A secondary reason is that articulated truck utilisation stopped increasing relative to rigid truck utilisation in the 1990s and declined slightly in the past decade (figure 1.2). This may be because growth in online shopping has led to more 'last mile' deliveries or because goods are now commonly transported directly to retailers and consumers to reduce delivery times (TIC, sub. 35, attachment 1, p. 19).[4]

Nevertheless, there remains scope for improvement. Modelling by the Bureau of Infrastructure and Transport Research Economics (forthcoming) indicates that the productivity benefits of a series of increases to General Mass Limits would far outweigh the costs of additional road damage. Improvements in vehicle design (such as by spreading weight across more axles, as some Performance-Based Standards vehicles do) can help further.

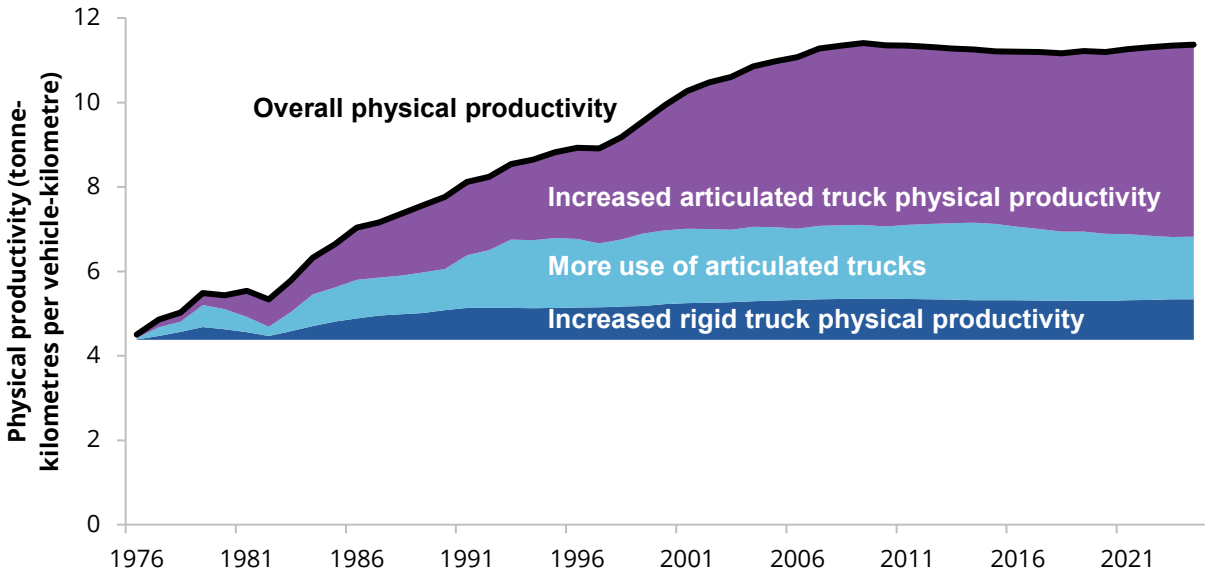
[2] PC estimates based on ABS (2022, 2023). In-house transport activity is undertaken by non-transport industries in the economy (ABS 2023).

[3] While some road freight transport is moved by light commercial vehicles, the vast majority is moved by rigid and articulated trucks (BITRE 2025a, p. 94).

[4] Both developments are positive and yet could reduce physical productivity, which highlights that it is an imperfect proxy for economic productivity measures.

Figure 1.2 – Truck productivity growth has stalled

Decomposition of growth in rigid and articulated truck physical productivity



The decomposition shows the cumulative effect of changes in each factor on rigid and articulated physical truck productivity since 1976. Each year, the change in overall physical productivity is decomposed into changes in articulated truck physical productivity and rigid truck physical productivity, each weighted by their share of utilisation in the previous period, plus a contribution due to changes in utilisation weighted by current period differences in articulated versus rigid truck physical productivity.

Source: PC estimates based on BITRE (2024).

The reforms considered in this study would boost productivity

The reform areas the PC has been asked to consider would boost heavy vehicle productivity – particularly increases to heavy vehicle road access and the accelerated establishment of a National Automated Access System.

Reforms to boost heavy vehicle road access would increase productivity by allowing larger payloads to be carried where this can be achieved safely and without disproportionate additional damage to the roads. As a general principle, regulation should enable as-of-right access wherever possible and reasonable to do so. A good example is the recent changes to allow an additional 0.5 tonnes of mass for trucks that meet the Euro VI standard.

The PC has focussed particularly on two areas in which boosting heavy vehicle access is most needed:

- Performance-Based Standards vehicles, which can carry greater payloads and are safer than other vehicles that would do the equivalent amount of damage to pavements
- heavy zero emissions vehicles, which assist with freight decarbonisation but can be heavier than diesel trucks owing to battery weight.

These are the modern versions of the reforms that drove the past waves of productivity growth.

A National Automated Access System would boost productivity by bringing the benefits of automation to antiquated processes for granting permits for heavy vehicle access. The PC has focussed particularly

on what is needed to make it a success – the biggest gap right now is insufficient information about the condition of local road assets, such as bridges and culverts, to allow for automated decisions.

The other reforms considered in this study would be productivity enhancing too, albeit with effects that are likely smaller. The HZEV charging infrastructure and curfews reform areas are largely about updating regulations that might have been justified in a pre-electric vehicle world, but now unnecessarily impede business activity. And reforms to the National Heavy Vehicle Driver Competency Framework could allow faster progression through licence classes, boosting average payload sizes, while also improving safety.

Broader funding reform would incentivise more efficient road use

Heavy vehicle access regulation and policy is challenging because of the mismatch between those who would benefit from expanding heavy vehicle access (mostly operators) and those who bear the costs of additional road damage and upgrades (mostly road managers). This creates misaligned incentives – it gives operators reason to use roads more intensively than is efficient, and road managers reason to limit access and underinvest in road upgrades.

Road user charging for heavy vehicles

Ideally, heavy vehicle operators would be charged the full long-run marginal external costs of their road use, including road damage costs. Marginal cost charges would incentivise operators to use roads only where the benefits exceed the costs. Operators would not bear the full brunt of the costs, as they would pass them through to businesses and consumers (who would see fewer of their tax dollars used to fund road maintenance).[5]

The PC has previously recommended that progress be made towards an improved road user charge, including in its 2023 Productivity Inquiry (PC 2023, p. 61, 2024, p. 78). Several participants to this inquiry also called for an improved road user charge (CCAA, sub. 13, p. 2; NHVR, sub. 4, pp. 8–11; Tasmanian Government, sub. 34, p. 1). The existing road user charge, which comprises per-litre of fuel (via fuel excise) and annual fee (via registration charges) components, is simple to administer but otherwise not ideal. Fuel-based pricing is only a loose proxy for long-run marginal road damage costs for heavy internal combustion engine vehicles, and not at all for HZEVs.[6]

In 2025, the Australian Government committed to considering future reforms to road user charging (Treasurer 2025). The National Heavy Vehicle Charging Pilot has also explored road user charges based on the vehicle mass and distance travelled (DITRDCSA 2026b). This could more closely proxy long-run marginal road damage costs.

[5] Whether operators should also pay an additional contribution (such as an annual fee) toward heavy vehicle-related construction and maintenance costs, that marginal cost charges are insufficient to recover, is more debateable. The primary intent of an additional charge would be to raise revenue rather than incentivise efficient road use, and so funding from other tax bases could be considered too.

[6] Fuel-based pricing is, however, a reasonable proxy for the marginal costs of carbon emissions, a different type of externality. The PC recently recommend phasing out fuel tax credits for heavy vehicles travelling on public roads for this reason (PC 2025a), which is discussed further in section 1.5.

Aligning the collection and distribution of road maintenance funding

Efficient funding arrangements would also see funding for road infrastructure allocated to the highest valued use. To this end, the PC has repeatedly recommended that governments establish hypothecated 'road funds' with rigorous governance arrangements (PC 2014, 2017c, 2023).

Current arrangements fall short of this. Heavy vehicle road user charges are collected through 2 channels: the Australian Government collects the per-litre component and state and territory governments collect the annual fee components. Local governments, who manage a large share of the road network, receive specific construction and maintenance funding streams but do not automatically receive a proportional share of heavy vehicle charge revenues or other funds.

Participants said that the funding arrangements for roads led local governments to limit heavy vehicle access more than optimal.

> Without transparent funding mechanisms aligned with road use and vehicle impacts, councils may restrict access or even remove roads from the functional freight network due to cost pressures. (Australian Industry Group, sub. 15, p. 4)

> [The current heavy vehicle charging framework] has two major structural limitations:
>
> 1. It recovers past expenditure rather than funding current or future needs thereby ignoring current and future freight pressures and typically underestimates the investment needed for future demand.
>
> 2. It distributes revenue only to state and territory governments, not to Local Governments. (CCAA, sub. 13, p. 7)

1.5 The fuel supply disruption has boosted the decarbonisation imperative

Several of the reform areas the PC has been asked to investigate would boost heavy vehicle decarbonisation, particularly improving road access for HZEVs, removing administrative and regulatory barriers to HZEV charging infrastructure, and reducing or removing curfews for HZEVs.

The impetus for heavy vehicle decarbonisation has grown in recent months. The fuel supply disruption caused by the conflict in Iran and closure of the Strait of Hormuz led to a sharp spike in diesel prices (figure 1.3) and has shifted perceptions of fuel supply resilience over the longer term.

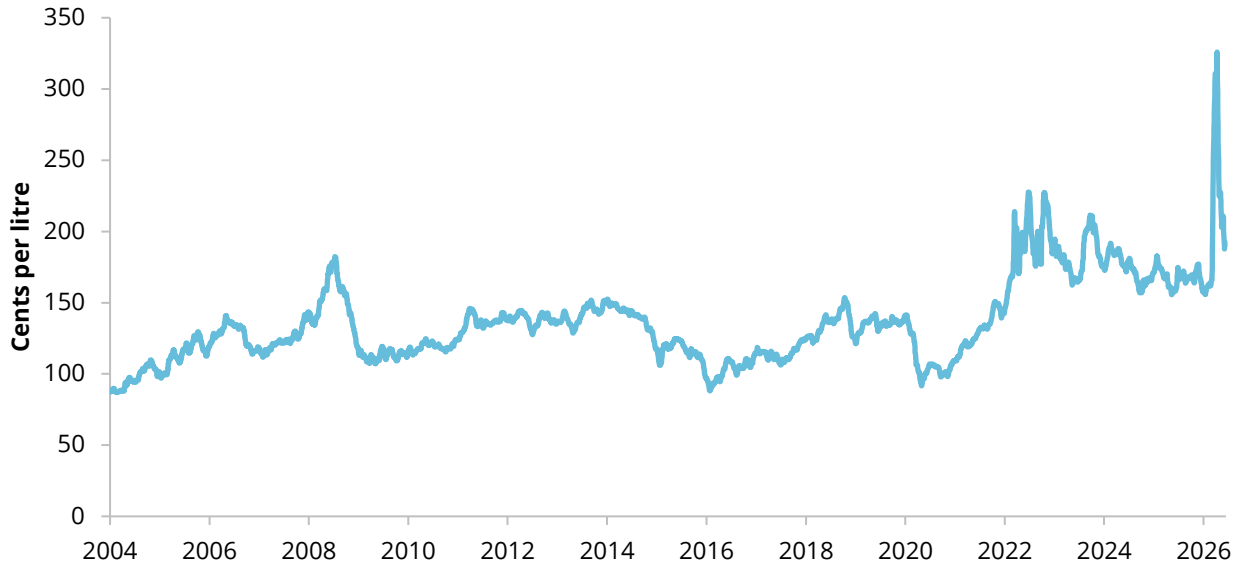
Sales of electric trucks in Australia increased in response to high diesel prices, but from a low base – electric trucks exceeded 1% of all trucks sold for the first time in March 2026 (Purtill 2026). Much less than 1% of the stock of registered heavy vehicle units were HZEVs as of December 2025 (PC estimate based on NHVR 2025b and unpublished NHVR data), with the majority being electric buses (figure 1.4, panel a). This low share reflects the generally higher (although falling) total costs of HZEV ownership (ARENA, sub. 25, p. 4; Queensland Transport and Logistics Council 2026) and higher upfront capital costs (Australian Logistics Council, sub. 10, p. 4). There are also regulatory barriers, including:

- those which are the subject of this report – barriers relating to vehicle access, charging infrastructure and curfews, which are discussed in the next section
- misalignment between Australian and international vehicle standards that require HZEVs to be redesigned to be used in Australia (AHC 2023, p. 2; ATA and EVC 2022, p. 14)

- restrictions that prohibit HZEVs from transporting most classes of dangerous goods (ARENA, sub. 25, p. 8).

Figure 1.3 – Diesel prices have spiked

Average diesel terminal gate price, Australia



Daily average prices, including GST, up to 12 June 2026.

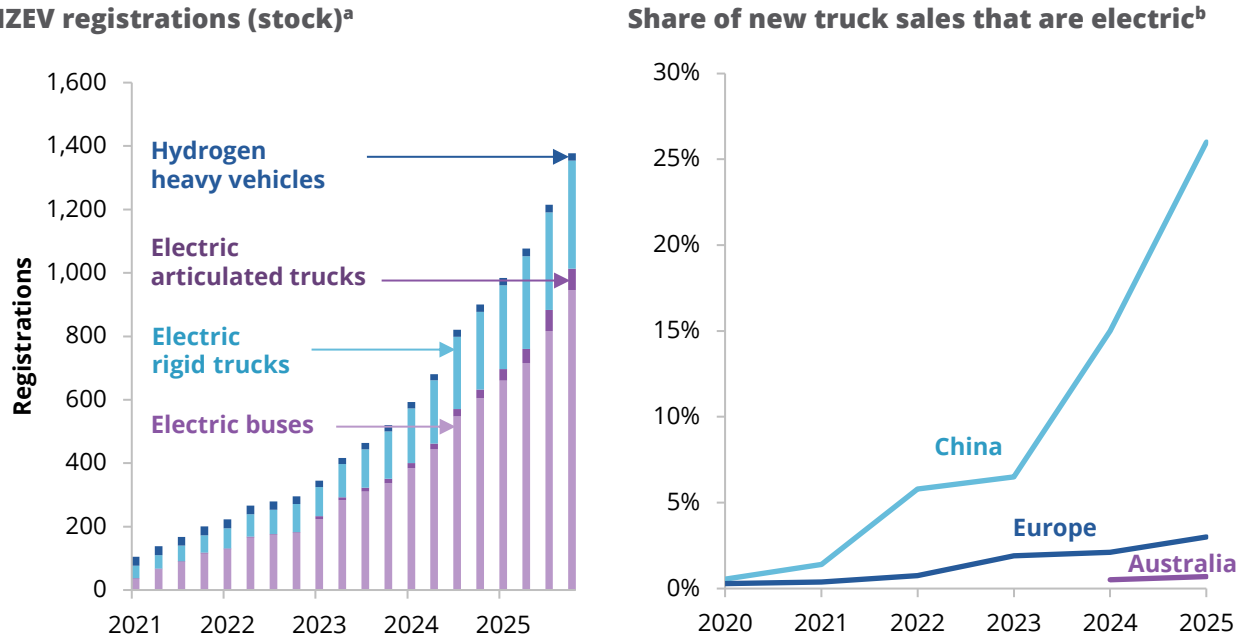
Source: Australian Institute of Petroleum (2026).

Some countries have adopted electric trucks at a faster pace. Electric trucks accounted for about 3% of new truck sales across Europe in 2025, and 26% in China (figure 1.4, panel b). There has generally been a strong policy and regulatory focus on HZEV adoption in these countries. For example, the European Union has introduced a fleet-wide emissions standard for heavy vehicles (European Union 2024).

Heavy vehicle transport has not been an early focus of Australia's decarbonisation efforts. The Treasury's 2025 baseline modelled scenario for Australia reaching net zero by 2050 at the lowest cost envisages transport sector emissions declining by about two-thirds by 2050.[7] Most of the reduction occurs between 2035 and 2050, and earlier falls are focussed on the light vehicle segment (DCCEEW 2025b; DITRDCSA 2025d). Other modelling from 2025 indicates the lowest cost pathway to net zero by 2050 involves transport emissions declining by at least three-quarters, with up to two-thirds of freight eventually electrified (CSIRO 2025). The *Transport and infrastructure net zero roadmap and action plan* presents a possible decarbonisation technology pathway for the freight sector that is roughly aligned with this thinking (figure 1.5).

[7] Heavy vehicles accounted for 22% of transport sector emissions in 2024–25 (PC estimate based on DCCEEW 2025a).

Figure 1.4 – Electric heavy vehicle adoption has been limited in Australia, and some other countries are ahead



a. Zero emissions vehicles exceeding 4.5 tonnes. **b.** Data for Australia is for battery electric vehicles exceeding 3.5 tonnes, while data for China and Europe is for electric commercial freight vehicles exceeding 3.5 tonnes.

Source: International Energy Agency (2026), Mandala (2026), NHVR (unpublished) data from the National Exchange of Vehicle and Driver Information System.

Changing perceptions of fuel security may reinforce or even accelerate these pathways. However, rapid replacement of the stock of heavy vehicles is unlikely as heavy vehicle are long-held investments. Less than one third of Australia's freight vehicles are expected to be replaced in the next decade (Mandala 2026, p. 3).

Figure 1.5 – Timeline of heavy vehicle decarbonisation technology pathways

2025–2030	2030–2035	2035–2050
Electrification of buses and smaller trucks, supported by more **charging infrastructure**	**Charging infrastructure** scales up. **Battery electric** and hydrogen fuel-cell adoption accelerates	**Battery electric** and **hydrogen fuel-cell** mass market adoption and efficiency improvements
Demonstrated use of **low carbon liquid fuels (LCLFs)**	**LCLFs** continue to support longer distance heavier vehicles	**LCLFs** where battery electric and hydrogen fuel-cell are not feasible

Source: Reproduced from the *Transport and infrastructure net zero roadmap and action plan* (DITRDCSA 2025d, p. 8).

Some reforms considered in this study would accelerate decarbonisation

This study has examined a series of reforms that would accelerate heavy vehicle decarbonisation.

Road access for HZEVs should be improved by giving a mass concession that compensates for their extra mass, which would boost their adoption and reduce the need for diesel trucks.

Administrative barriers to HZEV charging infrastructure should be reduced by the Australian Government. The information needed to inform charging infrastructure investment decisions, such as granular electricity network capacity information and heavy vehicle access routes, should be made available in a single location. Regulatory barriers should be reduced by updating land use regulation and developing frameworks to facilitate charging infrastructure investment in government-provided heavy vehicle rest areas.

Finally, the regulatory cost of curfews should be addressed by generally exempting HZEVs from time-related restrictions on activity (e.g. deliveries). The main intent of these restrictions is to reduce noise, but HZEVs are quieter than other vehicles.

While worthwhile, these reforms should not be considered a substitute for a consistent, industry-wide price signal to incentivise efficient decarbonisation. To this end, the PC recently recommend phasing out fuel tax credits for heavy vehicles travelling on public roads (PC 2025a, p. 3) – a better option than the fleet-wide emissions standard approach taken by the European Union.

1.6 Roadmap for this report

The remainder of this report examines each of the five reform areas under the heavy vehicle productivity reform package.

- Chapter 2 discusses increasing heavy vehicle road access to reduce emissions and increase productivity.
- Chapter 3 discusses accelerating the establishment of a National Automated Access System to streamline road access decision-making for all heavy vehicles.
- Chapter 4 discusses removing administrative and regulatory barriers to improve the availability of HZEV charging infrastructure.
- Chapter 5 discusses reducing or removing curfews for HZEVs.
- Chapter 6 discusses accelerating implementation of the National Heavy Vehicle Driver Competency Framework.

Modelling results are presented throughout these chapters. Further detail on the PC's in-house modelling is presented in appendix B and on modelling commissioned from the Centre of Policy Studies at Victoria University in their report published on the PC's website: www.pc.gov.au/inquiries-and-research/heavy-vehicle-reform/report. More detailed results for both sets of modelling are available in Excel workbooks also published on the PC's website: www.pc.gov.au/inquiries-and-research/heavy-vehicle-reform/report.

2. Access for high productivity and heavy zero emissions vehicles

Key points

- **Heavy vehicle road access reform is an important lever for achieving productivity and emissions reduction goals while managing risks to the road network.**
  - Access arrangements not only affect how freight is moved, but also what vehicles operators invest in and how quickly safer and lower emissions technologies are adopted.
  - Increasing general mass limits (indicative of increasing general road access) would boost long-run GDP by about 0.03-0.10% ($900 million to $2.7 billion based on 2024-25 GDP), depending on ambition.

- **To improve access and unlock the benefits of a modern fleet, governments should:**
  - promote as-of-right access by expanding general access and use of notices, with regulatory settings that can be applied consistently but flexibly across jurisdictions
  - support fleet transition by ensuring vehicle design and access rules enable the uptake of innovative technologies, including by aligning domestic standards more closely to international standards.

- **Supporting access for Performance-Based Standards (PBS) vehicles will promote productivity and emissions reduction in the near term.**
  - PBS vehicles are designed to achieve higher productivity while meeting defined safety and infrastructure standards. They can carry larger payloads than vehicles that cause equivalent levels of road damage.
  - The PBS scheme remains heavily reliant on permits and case-by-case approvals. State, territory and local governments should support as-of-right access for PBS vehicles where it is safe to do so. Governments should enable eligible PBS vehicles to be added to existing access notices without requiring a new notice.
  - The PBS approval process should be simplified by allowing the National Heavy Vehicle Regulator to assess and approve routine PBS design applications directly, removing the requirement to refer all PBS design approval applications to the PBS Review Panel for advice.

- **Arrangements to facilitate access for heavy zero emissions vehicles (HZEVs) should be made more consistent to support their role in delivering emissions reductions over time.**
  - State and territory governments have introduced additional mass allowances for electric HZEVs to help offset reduced payload capacity due to the additional weight of battery systems. However, this mass concession currently differs across jurisdictions.
  - A nationally-consistent additional mass limit should be introduced for electric HZEVs. This should be reviewed over time to ensure it is set appropriately as technology (and markets) mature.

Heavy vehicles are central to the day-to-day functioning of our economy. Almost all goods have been moved by heavy vehicles at least once, and often several times – from ports, farms and factories to distribution centres, shops and homes. However, heavy vehicles can also impose costs on society, including infrastructure wear, congestion, road accidents, pollution and emissions. Governments regulate what types of heavy vehicles can operate on the roads and where they can drive to manage these costs. The challenge for governments is to regulate heavy vehicle access in a way that does not impose unnecessary costs on society.

Heavy vehicle access and approval regulations should better support sound decisions for governments and operators. Rules on access affect more than day-to-day operations. They can also signal expectations for – and certainty about – how heavy vehicles can be used, shaping investment decisions. Right now, the safest, most productive, and lowest emission heavy vehicles face more barriers to get on the road than a standard 'prescriptive' heavy vehicle, and as a result, potential gains from greater use of these vehicles may not be fully realised.

Shifting from a regulatory default that requires businesses to apply for and justify the case for access, to an approach that provides automatic access subject to appropriate safeguards, will help position Australia to benefit from new and improved technology and drive better social, environmental and economic outcomes.

2.1 How do access arrangements currently work?

The Heavy Vehicle National Law (HVNL) aims to support the safe and productive transportation of goods and people. Introduced in 2014, it establishes a framework for regulating heavy vehicles, including vehicle standards, mass and dimension limits, fatigue management, speed compliance, road access and enforcement (NHVR 2025b, p. 5). The HVNL applies to all Australian jurisdictions except Western Australia and the Northern Territory, which continue to regulate heavy vehicles under their own state and territory laws (NHVR 2025f).

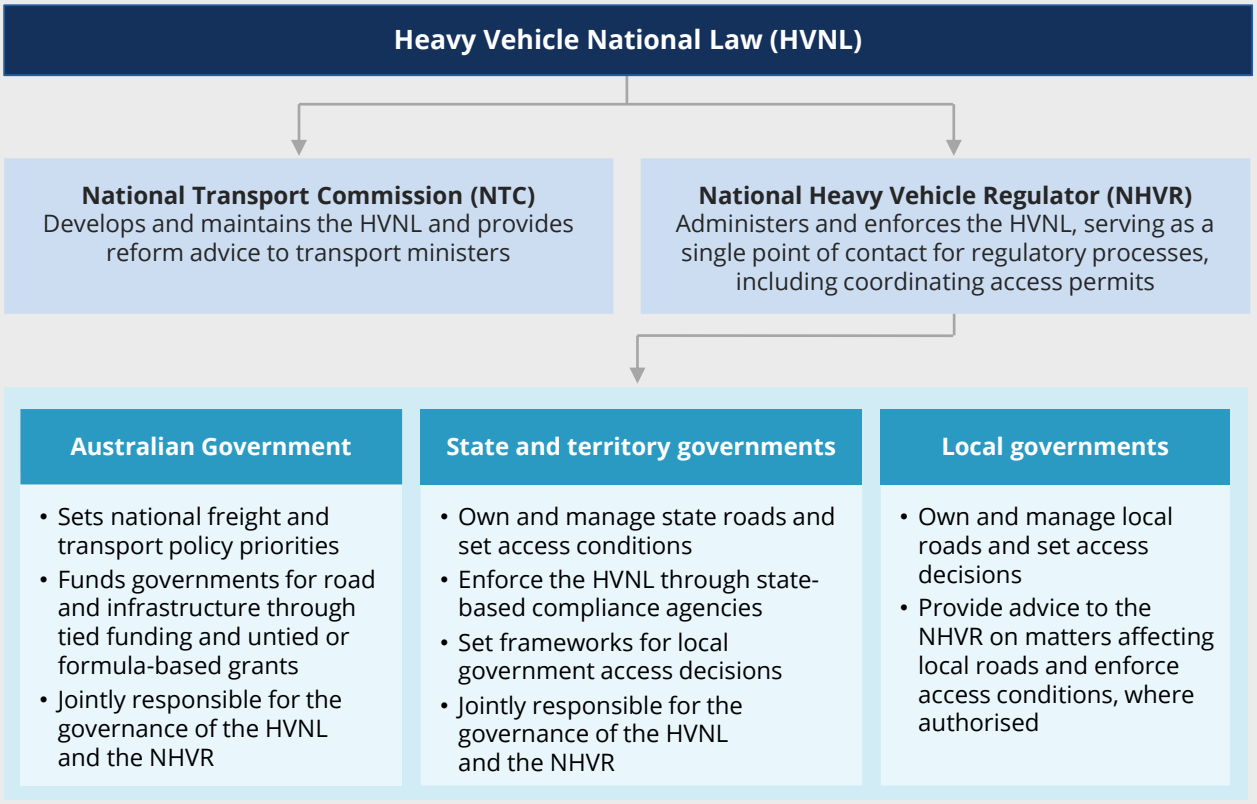
Australia has a decentralised road governance system, with governments at all levels having some responsibility for road and infrastructure funding and setting access restrictions. Under the HVNL, responsibility for road ownership, infrastructure management and approving access decisions remains with local, state and territory road managers (box 2.1).

Australia's heavy vehicle fleet comprises a diverse range of truck types and combinations, each with different access permissions and restrictions (box 2.2). 'General access vehicles' can use most roads without special approval while 'restricted access vehicles' are restricted to areas that have been approved for their use.

Approval from road managers can be provided by a permit or a notice (NHVR 2026c). Permits allow a specific vehicle to operate on certain routes or within defined areas. In contrast, notices issued by the National Heavy Vehicle Regulator (NHVR) provide as-of-right access, allowing specified classes of vehicles to use approved routes without a specific approval process. As-of-right access is generally the most certain and efficient form of access for operators, particularly when planning routes and making fleet investment decisions. Compared with permit-based approvals, which require discretionary approval from relevant road managers, notices establish pre-determined conditions for network use, reducing administrative burden and processing times while providing greater certainty about where and how vehicles can operate (PC 2020, p. 189).

Box 2.1 – The architecture and governance arrangements of the HVNL

The Heavy Vehicle National Law (HVNL) is a regulatory framework that governs the use of vehicles with a gross vehicle mass greater than 4.5 tonnes (NTC 2026). When a state or territory government adopts or duplicates the HVNL through its own legislation, it then becomes part of the national heavy vehicle system (NHVR 2025f). This approach is intended to deliver consistent rules across participating jurisdictions and establish a shared governance structure. The HVNL has several key building blocks.



Source: NHVR (2025b, p. 5, 2026d, 2026b); NTC (2026).

Box 2.2 – Overview of heavy vehicle types and access arrangements

Mass limits regulate the maximum permissible mass of a vehicle or combination (a vehicle towing a trailer). This weight – including the vehicle, driver and cargo – is referred to as the allowable **gross vehicle mass** or **gross combination mass.** Mass limits also restrict the weight that may be carried by individual axles or axle groups to ensure the load is distributed safety across axles (**axle mass limits**).

Heavy vehicles will have a minimum of two axles including the axle at the front of the vehicle (**steer axle**) and a set which transmits power generated by the engine to the wheels (**drive axles**). Articulated heavy vehicles will also have an axle located on the trailer to support the mass of the vehicle (**trailer axle(s)**).

Steer axle Drive axles Trailer axles

General Access Vehicles comply with dimension and mass limits for the eligible vehicle or combination, and have as-of-right access to the road network (unless signposted otherwise). Examples include buses, and prime movers and rigid trucks towing one semitrailer up to 19 m in length.

Restricted Access Vehicles (RAVs) require a permit or notice to access road networks. Permits are assessed by road managers and provide case-by-case access for a specific operator, vehicle and route. A notice grants access for a specified heavy vehicle type on an approved road network. For example, the *National 2 B-double Authorisation Notice 2024 (No 1)* applies to B-double trucks, allowing them to access stated routes without needing individual permits, provided they meet mass and dimension limits.

Performance-Based Standards (PBS) vehicles are a type of RAV designed to achieve higher productivity (such as by carrying larger or heavier loads) than their non-PBS equivalents, while meeting specified safety and infrastructure standards to ensure they are suited to the road network.

PBS vehicles are classified into four levels based on their performance against nationally agreed standards, which determines the parts of the PBS network they may be eligible to access. PBS Level 1 have as-of-right access to the road network (subject to mass limits). Higher-level PBS vehicles can access roads that have been formally approved for their classification and included in gazetted PBS networks. Outside these networks, PBS access is subject to approval by the relevant road manager.

High productivity freight vehicles are larger, more productive freight vehicle combinations. In Victoria, they are a regulated vehicle class that must meet PBS requirements and operate under prescribed network access rules, dimension thresholds and mass limits (generally over 26 m in length and/or has a gross combination mass greater than 68.5 tonnes.

Example of a B-double combination

Example of a PBS B-double combination

Source: DITRDCSA (2026a); Farminer et al.(2025); Fleet Auto News (2020); NHVR (2025h, 2025d, 2025k, 2026h, 2026g); Victorian Government (2026).

2.2 Opportunities to improve productivity and environmental outcomes

Heavy vehicle access depends on two related areas of regulation: approving the heavy vehicle designs and then allowing those vehicles to operate on the road network. Vehicle design and access rules will together affect heavy vehicle investment decisions and productivity. To improve access and unlock the benefits of a modern fleet, governments should:

- promote as-of-right access by expanding general access and notices, with regulatory settings that can be applied consistently but flexibly across jurisdictions
- support fleet transition and competitiveness by ensuring vehicle design and access rules enable the uptake of innovative designs and best-practice technologies, including by aligning domestic standards more closely to international standards.

Promote as-of-right access, along with consistency and flexibility

Increasing access can enable operators to better use existing infrastructure and drive productivity growth. By enabling drivers to carry more freight per trip or take shorter and more direct routes, improved access could reduce the number of trips required to move a given volume of freight. This in turn can lower the use of inputs (such as fuel), emissions, labour and vehicle utilisation per tonne of freight transported, while also reducing road wear and maintenance. The flow-on effects of improved heavy vehicle access can also provide benefits to consumers, including through cheaper and faster deliveries of goods, and can reduce production input costs to make Australian exporters more competitive.

As a general principle, regulation should enable as-of-right access wherever possible and reasonable to do so. In 2020, the Productivity Commission (PC) (2020, p. 30) recommended that governments expand as-of-right heavy vehicle access networks. The PC indicated that governments should expand key freight routes covered by notices to allow as-of-right access for high productivity vehicles, which included expanding gazetted access networks for PBS vehicles and types of vehicles for which permit applications are almost universally approved.

The basis for rejecting access applications should also be clear and applied consistently across road managers. In practice, however, the quality and consistency of permit access decisions can vary between road managers, reflecting differences in resourcing, capability, priorities and risk tolerance. The PC (2020, p. 31) recommended that the NHVR negotiate with individual road managers to facilitate more risk-based assessment of permits and more flexible arrangements for permit pre-approvals. The PC also recommended that local governments should be provided with the financial and technical capacity they need to perform their role as asset managers for local roads. The National Automated Access System is intended to promote faster, more risk-based and more consistent access decisions and may assist here (chapter 3).

Improvements to general access are underway

Some improvements to general access are already underway. While inquiry participants broadly supported these reforms and noted expected productivity improvements (CICA, sub. 48, p. 1; Team Global Express, sub. 46, p. 3; Volvo, sub. 49, p. 4), several participants noted limitations to the reforms and opportunities for the reforms to go further.

In 2024, the Australian Government introduced a new emissions standard for heavy vehicles (ADR 80/04) that aligns with the European Euro VI standard. To account for the additional weight of

emissions control equipment, the HVNL was amended to provide an additional mass concession of up to 0.5 tonnes for Euro VI-compliant vehicles (NHVR 2026a). The NHVR is working to incorporate the Euro VI mass concession into notices (NHVR 2025b, p. 22).

The policy intent of the additional mass concession for Euro VI-compliant vehicles was to allow the additional mass to be distributed across steer and drive axles. However, the legislation as originally drafted did not fully reflect this intent, and regulatory amendments are now being progressed to clarify the position. In the meantime, enforcement has been aligned with the approved policy intent (NHVR 2025g).

More broadly, increases to baseline mass limits, length and height allowances are expected to take effect from August 2026 (NHVR 2026f; NTC 2025, p. 9). General Mass Limits apply by default to all heavy vehicles, but operators can be accredited to use mass limits above the national general limits, known as Concessional Mass Limits, if they have robust mass management systems (NHVR 2021, p. 3). Under the upcoming changes, General Mass Limits will be increased to the Concessional Mass limits, and the maximum length for general access vehicles will be increased from 19m to 20m (NHVR 2026f).

There may be a case for some flexibility in the application of the increased maximum length limit. The increased length limit will not be accompanied by a corresponding change for B-doubles. As B-doubles may use the same A-trailers as general access vehicles, differences in length limits can affect interoperability and influence equipment and investment choices (Truck Industry Council, personal communication, 18 February 2026). Considering length limits across vehicle types may support more efficient use of existing trailers, equipment and loading infrastructure, while retaining appropriate safety and infrastructure safeguards. Volvo recommended there be:

> flexibility on where and how the additional metre is utilised i.e. cab or trailer, as different operations and applications will have different preferences. (Volvo, sub. 23, p. 6)

Support fleet transition through vehicle design and access rules

All imported vehicles and vehicles manufactured in Australia must comply with the Australian Design Rules (ADRs), which are national standards for road vehicle safety, anti-theft and emissions. Aligning the ADRs with international standards is important as Australian heavy vehicles are closely tied to international vehicle design and manufacturing decisions. The Crane Industry Council of Australia highlighted costs involved in importing vehicles that have already met international standards.

> Most mobile cranes imported into Australia are engineered in Europe or Japan … cranes that already have been verified to comply with the more stringent international standards, must then commission detailed engineering assessments, prepare documentation that explains how the crane satisfies the intent of the ADRs, and justify exemptions where necessary. The challenges lie in the administrative burden, engineering costs, and the need to navigate exemptions for vehicles that do not fit neatly into the rules. (CICA, sub. 12, pp. 3, 5)

The Australian Government should ensure the regulatory framework supports innovation and the uptake of new technologies. In addition to reforms to access regulations, ensuring that the ADRs support the importation and use of the best and newest technologies (such as high productivity vehicles and heavy zero emissions vehicles (HZEVs)) from overseas can support the transition to a modernised fleet and strengthen industry competitiveness.

Some recent changes to ADRs facilitate the import of newer and larger vehicles into Australia. For example, in 2023, the maximum width of heavy vehicles fitted with the most modern safety features was increased from 2.5 to 2.55 metres, and this was accompanied by general access for these vehicles

(NHVR 2023b, 2024c). The Impact Analysis of the change to the ADR, though, noted that some industry stakeholders thought the changes did not go far enough.

> Most industry stakeholders support a width limit of 2.60 m for trucks and trailers … These stakeholders argue that this would avoid the need to modify vehicles based on EU and US designs to be narrower for Australia, provide the best access to electric trucks from the world market, and deliver the greatest safety and productivity benefits. (DITRDCA 2023, p. 2)

There will be other ADR changes to support the importation of electric HZEVs. In 2026, plans were announced to clarify administrative requirements for electric HZEVs related to emissions control (ADR 80/04) and acoustic vehicle alerting systems (ADR 113/00) (Ritzinger 2026).

But there are still barriers to importing and using some newer heavy vehicles in Australia when compared to overseas, including due to misalignment between Australian and international standards.

Aligning domestic standards more closely to international standards could increase the availability of newer vehicles, equipment and technologies that are suited to the Australian market. In 2020, the PC (2020, p. 237) recommended that ADRs should allow for new transport technologies with proven productivity and safety benefits, including through achieving national and international consistency.

Transport for NSW (sub. 64, p. 9) noted opportunities for regulatory alignment to occur more quickly.

> Euro emissions standards for instance are telegraphed well in advance however Australia is slow to adopt and even slower to adjust regulatory settings to enable ease of uptake. Euro 6 standards were in place in Europe in 2014; however, Australia did not mandate Euro 6 until 2024 … transport operators can be commercially disadvantaged for choosing the latest technology and the NSW community potentially miss out on the benefits of newer vehicles with better emissions performance and more advanced safety technology on the road as well.

The *ADR harmonisation review 2024-25* examined opportunities to better align ADRs with international standards and streamline regulatory processes (DITRDCSA 2025a). Inquiry participants raised the importance of ADR reform and indicated that the findings from the review are yet to be released (CICA, sub. 12, pp. 3–11; HVIA, sub. 17, p. 4).

Reforms can deliver community-wide net benefits

Increased heavy vehicle access to the road network can generate productivity and emissions reduction benefits.

The Bureau of Infrastructure and Transport Research Economics (BITRE) estimated that increasing heavy vehicle General Mass Limits would increase road freight sector productivity by 1.0% to 3.2%, depending on how much the limits are raised (box 2.3).

BITRE also conducted a cost–benefit analysis of increasing General Mass Limits, which compared the benefits of this increase in road freight sector productivity (which translate to cost savings for freight operators) and other smaller benefits due to safety improvements and reductions in emissions, against the costs of additional road maintenance (box 2.3). It found that the benefits significantly exceeded the costs for all General Mass Limit increases considered.

BITRE's work focusses on direct benefits and costs but increasing heavy vehicle network access would also have flow-on effect for the rest of the economy, because road transport services are an input into many other industries and road maintenance draws resources away from other uses. The PC used

computable general equilibrium modelling to gauge the economy-wide impact of increasing General Mass Limits, which serves as a proxy for increasing heavy vehicle network access generally.

- Modelling commissioned from the Centre of Policy Studies at Victoria University, using their VURMTAX model, found that increasing general mass limits could raise GDP by 0.03–0.10% by 2039-40, depending on the extent of the increase (box 2.3). This incorporates both the increases in road freight sector productivity and the costs of additional road maintenance. This modelling required assumptions and the impacts on governments' net budgetary positions should be considered with these assumptions in mind (box 2.4).
- Modelling undertaken in-house, using our PC National model, found that increasing general mass limits could raise GDP by 0.03–0.15% in the long run, again depending on the extent of the increase (box 2.3). Unlike the Centre of Policy Studies' modelling, this modelling does not incorporate the costs of additional road wear, only the increases in road freight sector productivity.

Box 2.3 – Whole-of-economy modelling of increasing General Mass Limits

The *Productivity Impact of Selected Heavy Vehicle-Related Measures report* (BITRE forthcoming) modelled three scenarios that increase General Mass Limits:

- raising General Mass Limits (GML) to current Concessional Mass Limits (CML)
- increasing GML by 5 per cent (GML + 5%)
- increasing GML to CML plus 5 per cent (CML + 5%).

The results of these scenarios are presented below.

	Scenario 1 CML	Scenario 2 GML + 5%	Scenario 3 CML + 5%
	Present value, 20-years, 7% discount rate, $ million		
Benefits			
Freight operator cost savings	8,803	17,741	27,419
Safety benefits	143	274	422
Emissions benefits	236	435	668
Costs			
Additional road wear	4,002	7,238	11,851
Total net benefits	5,180	11,212	16,657
	Annualised present value (%)		
Productivity impact by sector			
Road freight sector productivity impact	1.0	2.1	3.2
Road-related construction expenditure, including maintenance	-0.8	-1.4	-2.3

The PC used computable general equilibrium modelling to gauge the fuller economy-wide effect of increasing General Mass Limits in the long run, using BITRE's estimates as inputs. We used two CGE

Box 2.3 – Whole-of-economy modelling of increasing General Mass Limits

models – our in-house PC National model (appendix B) and the Centre of Policy Studies' VURMTAX model (see report published on PC website). The PC National modelling captures only the freight operator cost savings effect of increasing heavy vehicle road access, while the VURMTAX modelling captures this and the additional road wear costs effect. Additional road wear reduces GDP, because it requires additional resources to be used to produce the same output – adequately maintained roads. These resources cannot then be used elsewhere.

	Scenario 1 CML	Scenario 2 GML + 5%	Scenario 3 CML + 5%
PC National modelling (includes freight operator cost savings)			
GDP (% change)	0.03		0.15
VURMTAX modelling (includes freight operator cost savings and additional road wear costs)			
GDP (% change)	0.03		0.10

VURMTAX is a dynamic model that produces estimates out to 2039-40, while PC National is a static model that produces steady-state estimates and has been calibrated such that these steady-state estimates can be interpreted as estimates of long-run effects. This table shows VURMTAX's estimate for 2039-40 as it is most comparable with PC National's estimate. The PC National estimates use more conservative assumptions for scenario 1 and less conservative assumptions for scenario 3 to reflect additional uncertainty. See appendix B for more information.

Box 2.4 – Whole-of-economy modelling and distribution of additional road maintenance costs

Distribution of road maintenance costs

This study's whole-of-economy modelling of increases to General Mass Limits using the Centre of Policy Studies' VURMTAX model drew on BITRE's national estimates of additional road maintenance (box 2.3). This required assumptions about how the road maintenance would be distributed across states and territories and which level of government would fund it.

- Additional road maintenance *activity* was assumed to be distributed across states and territories in proportion to their shares of the heavy vehicle-related road expenditure on which BITRE's additional road maintenance estimates are based. This is total heavy vehicle-related maintenance expenditure plus 10% of construction expenditure from 2018–19 and 2019–20 (BITRE forthcoming; NTC 2021). The shares are: 29% for New South Wales and the Australian Capital Territory, 21% for Victoria, 29% for Queensland, 13% for Western Australia and the Northern Territory, 5% for South Australia and 2% for Tasmania.
- Additional road maintenance *funding* was assumed to be split between governments, with 24% funded by the Australian Government and 76% funded by state/territory and local governments

Box 2.4 – Whole-of-economy modelling and distribution of additional road maintenance costs

in each state/territory. This is the split of all road-related expenditure at a national level for 2023–24 (the most recent year for which data are available) (BITRE 2025a).

The assumption about road maintenance funding has larger impacts on governments' net budget positions than on non-budgetary variables, like GDP. These impacts are informed by historical funding arrangements and would change were reforms to be pursued.

Road user charging

Existing heavy vehicle road user charges (both the per-litre charge collected by the Australian Government and vehicle registration charges collected by state and territory governments) are intended to recover road expenditure attributable to heavy vehicles. Under current policy, it is plausible that the costs of some of the additional road maintenance activity would be recovered via higher heavy vehicle road user charges, as the costs would appear in the cost base used to determine the charges. However, the modelling does not incorporate this dynamic.

Finding 2.1
Access reforms can unlock the benefits of a modern fleet

Growth in heavy vehicle productivity can be constrained by factors that restrict access, including:

- the reliance on permit-based access, limited flexibility in the application of access rules and inconsistency across jurisdictions
- a lack of harmonisation between domestic standards and international standards, which can limit the importation and use of modern technologies.

Modelling undertaken by BITRE indicates that there would be net benefits to increasing heavy vehicle General Mass Limits, suggesting net benefits to increasing heavy vehicle network access more generally. The benefits of higher freight productivity exceed the costs of additional road wear. Whole-of-economy modelling undertaken for this inquiry, using BITRE's modelling as inputs, indicates that increases in heavy vehicle General Mass Limits would boost GDP.

- Modelling commissioned from the Centre of Policy Studies at Victoria University found that increasing General Mass Limits would raise GDP by 0.03–0.10% by 2040, depending on the extent of the increase.
- Modelling undertaken by the PC found that that increasing General Mass Limits would raise GDP by 0.03–0.15% in the long run, again depending on the extent of the increase. Unlike the Centre of Policy Studies' modelling, this modelling does not incorporate the costs of additional road wear.

Increasing access for Performance-Based Standards vehicles would likely yield higher freight productivity benefits relative to additional road wear costs than increasing access more generally. This is because Performance-Based Standards vehicles often carry larger payloads than non-Performance-Based Standards vehicles that cause equivalent levels of pavement damage.

2.3 Reforms to access for high productivity vehicles

When access for modern (high productivity and HZEV) vehicles is more uncertain, restrictive or cumbersome relative to standard 'prescriptive' heavy vehicles, operators often resort to retaining older or less productive vehicles that have established and predictable access arrangements (Transport for NSW, sub. 38, p. 5; TIC, sub. 35, attachment 1, pp. 9–10). Heavy vehicles represent significant, long-lived investments for freight operators in Australia, and fleet turnover occurs gradually. Australia's truck fleet has a median age of 15 years, which is significantly older than other OECD countries, including Japan and Europe (TIC, sub. 35, attachment 2, p. 2).

In Australia, the PBS scheme is intended to facilitate the design and use of vehicles optimised for specific tasks, but that fall outside prescriptive HVNL standards. As a world first when it was introduced in 2007, the scheme sought to deliver innovative, industry-led solutions and efficiencies that maximised the delivery of freight across Australia (NHVR 2024b, pp. 4–5, 17) (figure 2.1).

PBS vehicles often carry larger payloads than comparable non-PBS vehicles that cause equivalent levels of road damage (Industrial Logistics Institute 2017, p. 18; NHVR 2019c, pp. 5, 12). This is achieved through design features that minimise pavement wear, such as by increasing vehicle length and including additional axle groups (NHVR 2019c, p. 5). Since the weight of the load is distributed among a longer combination and a greater number of axle groups, the road damage of each individual axle group is often less or comparable with existing prescriptive combinations. The increased payload capacity of PBS vehicles also means that the same freight task can be achieved in fewer trips, which reduces pavement wear and increases productivity.

In addition, PBS vehicles can safely travel on more roads than comparable non-PBS vehicles because they meet higher safety standards and often make use of newer safety equipment (NHVR 2019c, p. 4).

PBS vehicles experienced strong uptake since their introduction, representing about 6% of the total freight task and 21% of the road freight task in 2022 (NHVR 2024b, p. 12). In 2024–25, the number of PBS vehicles reached over 33,000, with uptake more than double the average growth over the previous five years (NHVR 2025b, p. 9).

Figure 2.1 – PBS performance compared to non-PBS vehicles

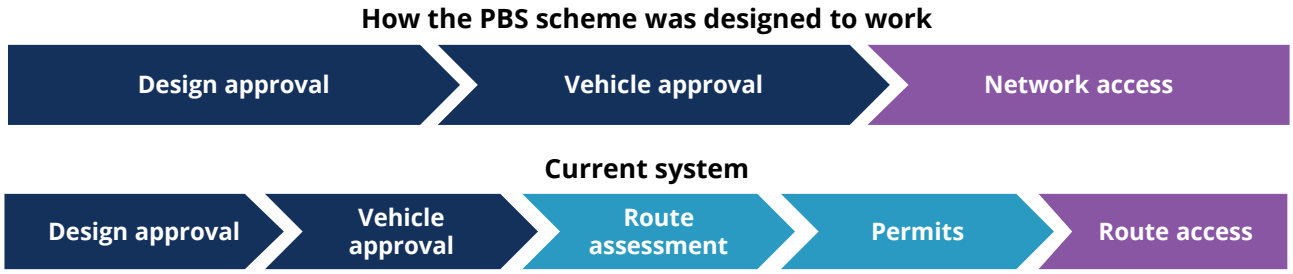
Productivity	Environmental	Safety
15–30% greater productivity Up to **260 million fewer** kilometres travelled annually as at 2019	**30.8%** less fuel and carbon dioxide emissions. As of June 2025, this equates to over: • **300 million** litres less fuel use annually • **800,000 tonnes** less carbon dioxide emissions annually	**143 lives** forecast to be saved over 20 years **60% fewer major crashes** per kilometre travelled

Productivity is measured as the reduction in vehicle kilometres travelled to complete the same freight task, accounting for differences in operating costs between vehicle classes. Estimates compare PBS vehicle performance with the performance of non-PBS vehicles undertaking the same freight task. Forecast reflects the reduction in fatal crashes associated with PBS vehicles relative to non-PBS vehicles, while considering the expected growth in PBS vehicles between 2013 and 2033.

Source: NHVR (2019c, 2025b, pp. 25–26, 2025k, p. 5); NTARC (2021, pp. 3, 12).

While the intent of the PBS scheme was transformative, the regulatory and procedural requirements of the scheme two decades on impose costs to operators and governments that can limit how well the scheme achieves its original intent (figure 2.2). Even after receiving design and vehicle approval, there is no certainty that an applicant will obtain access to their required routes (NHVR 2024b, p. 16). For example, NatRoad (sub. 41, p. 4) said that the complexity of PBS approvals processes hinders uptake, 'limiting the number of operators willing to invest in high productivity PBS vehicles, especially smaller operators or those with volatile or unpredictable freight demand'.

Figure 2.2 – PBS scheme process



Source: NHVR (2025j); NTC (2018, p. 19).

Under the PBS scheme, a vehicle design is first assessed to confirm it meets performance standards. Once constructed, the build must then be certified to confirm that it has been constructed in accordance with the approved design (NHVR 2025j). There are challenges with this regulatory process:

- **application and compliance costs** – Applicants are required to demonstrate that a vehicle design meets nationally agreed performance standards (including swept path, tracking, braking and stability criteria), including for common, tried and tested PBS vehicle designs (NHVR 2024b, p. 17; NTC and NHVR 2022).
- **time and capital holding costs** – PBS design approval and vehicle certification can take several weeks and, in more complex cases, several months (Advantia Transport Consulting 2024). During this period, operators cannot operate the vehicle as an approved PBS combination.

Promoting PBS vehicle access

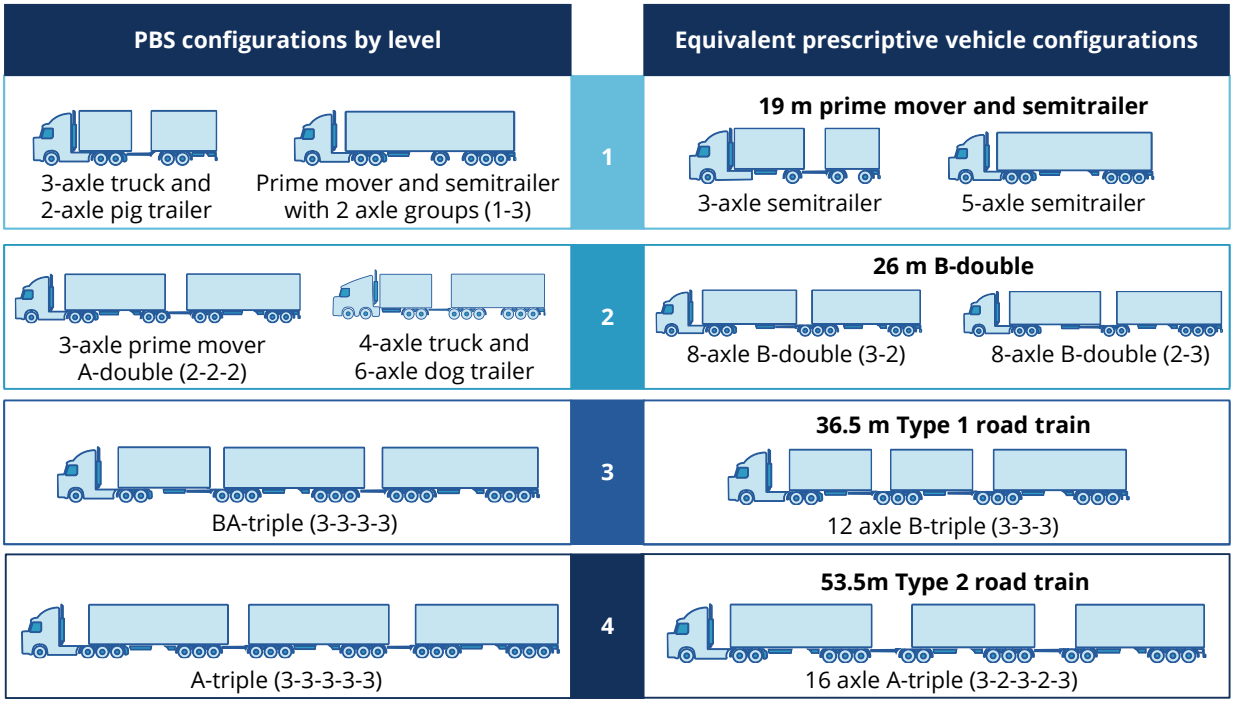
The PBS scheme was developed around the principle that access should be determined by on-road performance, rather than solely by vehicle configuration. To enable this, the PBS standards have been designed so that a PBS vehicle for a given level will perform no worse in terms of safety and road impacts than its equivalent prescriptive vehicle configuration and have access to the network corresponding to these specific equivalent prescriptive vehicles (table 2.1, figure 2.3) (NHVR 2019c, p. 12).

Table 2.1 – Existing network types for PBS vehicles

PBS level	Equivalent prescriptive vehicle configuration	Existing network
1	19m prime mover and semitrailer	General access
2	26m B-double	B-double network
3	36.5m Type 1 road train	Double Type I road train network
4	53.5m Type 2 road train	Triple Type II Road train network

Source: NHVR (sub. 63, attachment, p.2).

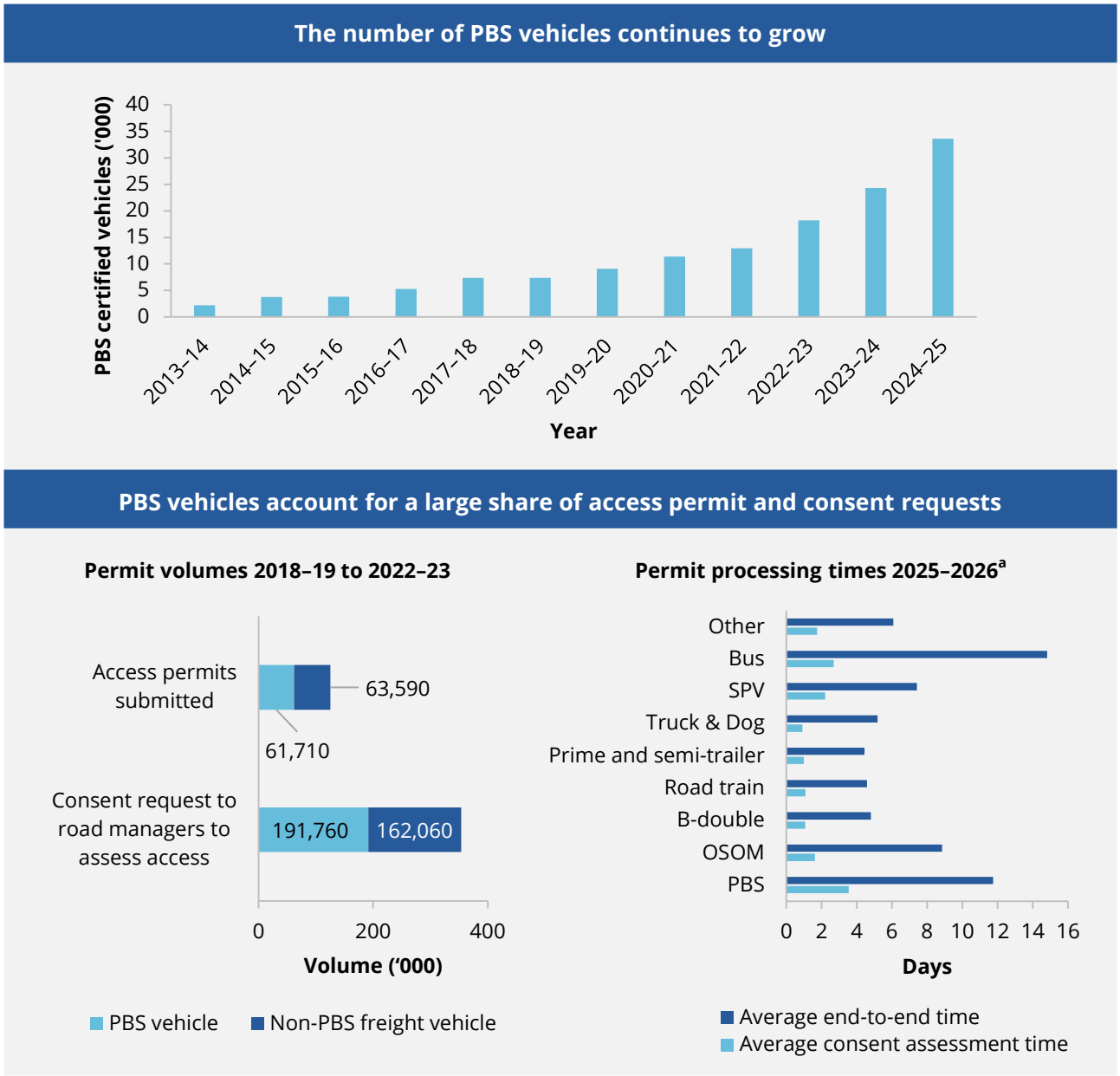
Figure 2.3 – Examples of PBS combinations by classification and existing equivalent prescriptive vehicle configurations



Source: NHVR (2019c, pp. 12, 30–31, 2019b).

PBS was designed to operate primarily through gazetted networks but PBS vehicles still represent a significant share of permit applications and consent requests. Between 2019–20 to 2022–23, over 54% of road manager consent requests related to PBS vehicles (191,000 out of 350,000) (NHVR 2024b, p. 16). In 2025, PBS vehicles had among the longest average end-to-end permit assessment times (11.75 days) – second only to buses (14.83 days), and the longest average consent processing times among all vehicle classes (3.54 days) (figure 2.4).

Figure 2.4 – PBS vehicles and PBS access and permit approvals



a. Consent assessment time refers to the time road managers have the case opened until they respond, and end-to-end time refers to the total time between receiving the application and the final response.

Source: NHVR (2024b, p. 16, 2025b, p. 10) and NHVR (unpublished) permit data.

Some jurisdictions have made steps to improve PBS access. For example:

> NSW implemented the Heavy Vehicle Access Policy that enables access for innovative PBS vehicles that achieve productivity gains of up to 65-100 per cent over existing high productivity vehicles, with the same on road vehicle performance. (Transport for NSW, sub. 38, p. 5)

However, there is scope for further reform. Study participants noted that a reliance on permits has resulted in adverse outcomes including inconsistent outcomes for operators.

> Access to local roads under the Performance Based Standards system is inconsistent across [local government areas], increasing transport costs and creating unnecessary barriers to accessing markets, port, and value-adding opportunities. (NSW Farmers, sub. 16, p. 1)

In particular, PBS vehicles are not automatically included in heavy vehicle access notices that exist for other prescriptive vehicles. Currently, PBS vehicles need to secure road manager consent and undergo network assessments on a case-by-case basis before being included in notices. This can delay or limit their access. The need to re-obtain access approvals for vehicles that demonstrate improved performance can also lead to duplication of assessments, particularly as new and improved PBS combinations continue to be developed over time.

Road managers should provide in-principle consent for as-of-right access for PBS vehicles (which have met safety and infrastructure requirements) that is at least equivalent to access for equivalent non-PBS vehicles. Governments should add eligible PBS vehicles to existing gazetted authorisation notices for equivalent non-PBS vehicles, reducing the need for repeated network assessments and case-by-case approvals.

While some notices already provide as-of-right access for PBS vehicles, they are typically limited to specific vehicle types, do not always apply consistently across all HVNL jurisdictions, and can retain jurisdiction-specific conditions. National notices, rather than state-specific notices, can reduce regulatory fragmentation and improve operational efficiency for industry – though existing national notices can still contain state-level variation. For example, the *National Class 2 Performance Based Standards (High Productivity) Authorisation Notice 2024 (No. 1)* provides gazetted network access for eligible PBS vehicle combinations only across New South Wales and Victoria, with differences in those eligible combinations across each state (NHVR 2024a).

The NHVR should coordinate and commit to reforms that will embed the principle of equivalence into the PBS scheme so that PBS vehicles are awarded the same level of access to the road system as their prescriptive counterparts. The NHVR should also be empowered to ensure this principle is applied consistently.

Expanding access for PBS vehicles could have economic benefits. While neither the PC nor BITRE modelled the effects of expanding access for PBS vehicles, BITRE's modelling of the effects of increasing general mass limits gives a clear indication that doing so would yield net benefits (box 2.3). To model the effects of increasing general mass limits, BITRE assumed that the total output of the road freight industry would remain unchanged, but mass-constrained vehicles would carry more mass, meaning that operating costs would fall (fewer trips are required) but road damage would increase. If an analogous approach were used to model expanded access for PBS vehicles, operating costs would fall as fewer trips would be required, but road damage would likely fall too as the newly adopted PBS vehicles would not create additional road damage per trip to achieve the same freight task.[8]

[8] The reduction in operating costs would be somewhat offset by additional (amortised) capital costs of investing in the new vehicles, but it can safely be assumed that the net effect would be cost-saving as operators would not generally invest in new vehicles if it was not profitable to do so.

Simplify PBS vehicle design approvals processes

The PBS vehicle design approval process should be simplified. There should be clearer and more timely pathways for 'proven' vehicle designs to enter the PBS system without requiring design approval (NHVR 2024b, p. 20). For vehicles that do require design approval, the NHVR is required to consult with the PBS Review Panel. But the PBS Review Panel has generally been weighted towards asset management rather than engineering expertise.

> Transport agencies have a dual role, as both policy makers and access decision-makers. These lines have become blurred, with the PBS Review Panel, comprising members from transport agencies, often deliberating matters unrelated to bettering the PBS scheme and therefore not advancing safety, productivity and sustainability. (NHVR 2024b, p. 18)

The NHVR (2024b, p. 20) recommended the requirement to refer all design applications to the PBS Review Panel be removed and replaced with a jurisdictional advisory group where contentious or complex matters may be referred (NHVR, personal communication, 20 March 2026). Under this approach, routine applications could be assessed and approved directly by the NHVR without receiving advice from the PBS Review Panel. The expectation should be that common PBS vehicle types are automatically approved where performance and design parameters are identical to an already approved vehicle or undergo rapid assessment where they are similar (but not identical). This is a low-risk option to improve PBS vehicle assessment processes that would save time for operators (box 2.5).

Box 2.5 – Simplifying PBS design approvals can generate benefits for both operators and the regulator

Lengthy approval process for operators

The process for approving vehicles can be lengthy, with the Panel arrangement adding an average of 15 additional working days to the design approval process (NHVR, sub. 63, attachment, p. 3). This processing time results in delays to progressing vehicle builds and subsequent business activities.

Proposed solution: Submissions broadly support modifying the formal requirement for the NHVR to consult with the PBS Review Panel prior to making a design approval (Australia Post, sub. 61, p. 2; Department of State Growth, sub. 60, p. 4; Team Global Express, sub. 46, p. 4). Where specific applications warrant it (such as those that are complex or contentious), the NHVR could seek advice from the jurisdictional advisory group as required.

Expected benefits through reduced delays:

The Productivity Commission estimates that the formal requirement for Panel deliberation costs operators $3.2 million per year in delays in operating trucks.

Recommendation 2.1
Allow greater as-of-right access and simpler vehicle approvals for Performance-Based Standards (PBS) vehicles

State, territory and local governments should support greater as-of-right access for PBS vehicles. Road managers should provide in-principle consent for as-of-right access for PBS vehicles (which have met safety and infrastructure requirements) that is at least equal to access for equivalent non-PBS vehicles. Governments should enable eligible PBS vehicles to be added to existing gazetted access notices without requiring a new notice.

The National Heavy Vehicle Regulator should be empowered to coordinate reforms that ensure PBS vehicles are awarded the same level of access to the road system as their prescriptive counterparts.

In addition, the National Transport Commission should amend the Heavy Vehicle National Law so the National Heavy Vehicle Regulator can approve applications directly, removing the requirement to refer all PBS design approval applications to the PBS Review Panel for advice.

2.4 Overcoming the 'payload penalty' for HZEVs in the longer term

Electric HZEVs face payload disadvantages

Electric HZEVs are typically heavier than their diesel equivalents due to the additional weight of battery systems, resulting in a 'payload penalty' (under existing mass limits) relative to a comparable diesel vehicle.[9] This can reduce the amount of freight carried per trip, effectively acting as an access constraint, limiting the types of freight tasks they can be used for under current mass limits.

> The additional battery weight of an electric truck means that electric heavy vehicles may be restricted in the roads that they can access. Given that electric trucks already have limited range, the compounding negative impact is that vehicles may not be operating efficiently – by driving more kilometres with less volume, due to the reduced carrying capacity. (IKEA, sub. 37, p. 4)

To the extent that regulatory arrangements hinder uptake, there is a broader community cost. Slower adoption of HZEVs means more air pollution, noise and greenhouse gas emissions, and holds back broader innovation in the transport system that comes from new technology.

The Australian Government can support HZEV uptake by increasing mass limits so these vehicles can carry more payload per trip and more closely match conventional freight capacity while battery technology improves. This would strengthen incentives for freight operators to choose electric HZEVs over diesel alternatives. Transitional regulatory support could also help bring forward investment in enabling infrastructure and industry practices, including charging infrastructure, that might otherwise be delayed.

[9] ARENA, sub. 25, p. 6; BIC, sub. 21, attachment 2, p. 3; DUKA Tec, sub. 5, p. 3; IKEA, sub. 37, p. 4; Powering Australia, sub. 9, p. 2; TIC, sub. 35, attachment 1, p. 9; Volvo, sub. 23, p. 6.

Globally, there is a growing understanding that governments can play an important role in facilitating uptake through enhanced access for electric HZEVs.

> This challenge is not unique to Australia and New Zealand (ANZ). Jurisdictions around the world are updating policy positions which may include implementing increased mass limits and assessing road asset capability to support additional mass. (Farminer et al. 2025, p. 1)

State and territory governments have responded differently

Some state and territory governments have introduced additional axle mass allowances for electric HZEVs to address the payload disparity. The scope, duration and conditions of the additional axle mass allowances differ across jurisdictions and, in some cases, are temporary (table 2.2). Study participants said the differences across jurisdictions reduced regulatory certainty for operators, potentially affecting investment decisions and fleet planning (EVC, sub. 18, pp. 4–5; Tesla, sub. 20, p. 3; Volvo, sub. 23, p. 7).

> Current inconsistencies between state-based concessions create logistical headaches for operators and undermines investment confidence. A patchwork of temporary "trials" and differing rules fragments the national freight market. Any concessionary scheme must be nationally consistent in its eligibility, vehicle specifications, and duration. (Tesla, sub. 20, p. 3)

> NSW and Queensland have an 8-tonne limit, while Victoria's is 7.5 tonnes. The discrepancy forces interstate operators to reduce load volumes to cross the border, stifling the commercial viability of driving between the three states. Queensland and Victoria also require operators to apply for permits to drive heavier vehicles on only select parts of their road networks, while NSW offers broader access for heavier trucks under a trial system. (Irvine 2026)

Table 2.2 – Mass limits for eligible electric HZEVs across jurisdictions

	Single steer axle load (tonnes)	Tandem drive axle group load (tonnes)	Access arrangement
New South Wales	**8.0**	**18.5**	Access via *New South Wales Class 3 Zero Emission Vehicle Mass and Dimension Exemption Notice* for B-doubles with trailers fitted with tri-axle groups, rigid trucks, prime mover and semitrailer combinations
Victoria	**7.5**	16.5	Access via permit to pre-approved networks for Volvo FM or FH prime mover and semitrailer combinations
Queensland	**8.0**	**18.5**	Access via permit under the *Queensland Zero Emission Heavy Vehicle Permit-Based Scheme* for rigid 3-axle trucks and prime mover and semitrailer combinations
Western Australia	**7.1**	16.5	Access via the *Electric and Safer Vehicles Order* for single heavy vehicles powered by an electric motor
South Australia	**7.5**	**18.5**	Access via permit to pre-approved networks for prime mover and semitrailer combinations, B-doubles and road trains
Tasmania	7.0	16.5	No concessional mass limits for electric HZEVs

	Single steer axle load (tonnes)	Tandem drive axle group load (tonnes)	Access arrangement
Australian Capital Territory	7.0	16.5	No concessional mass limits for electric HZEVs
Northern Territory	7.0	16.5	No concessional mass limits for electric HZEVs

Bolded values indicate concessional mass allowances for eligible HZEVs under corresponding access arrangement.

Source: NHVR (2026e); Volvo (sub. 23, p. 7).

To overcome the deterrent to HZEV uptake created by the differences in jurisdiction-specific mass concessions, the Australian Government should establish an additional mass allowance on a statutory basis. A consistent mass concession across jurisdictions would provide operators and manufacturers with the confidence to invest in HZEVs and plan fleet transitions. The Australian, state and territory governments should – through the National Transport Commission – work to embed a consistent additional mass allowance in the Heavy Vehicle (Mass, Dimension and Loading) National Regulation so that electric HZEVs can operate across jurisdictions without significant payload disadvantages.

The mass concession should be simple, consistent and large enough to overcome the payload penalty

Any future nationally consistent additional mass allowance should be simple and consistent, while also overcoming the HZEV payload penalty without imposing net costs through additional road wear. The infrastructure impacts of a concessional mass limit for electric HZEVs are likely to be small in the immediate term, reflecting both the relatively slow pace of fleet turnover and the small share these vehicles currently account for in the heavy vehicle fleet.

The concession should be large enough to overcome the payload penalty

While it is a matter for governments to agree to a consistent mass concession, it should be sufficiently large to overcome the payload penalty. Inquiry participants said that the payload penalty generally falls within the range of one to three tonnes (CICA, sub. 48, p. 2, NHVR, sub. 61, attachment, p, 4; Team Global Express, sub. 46, p. 4; Volvo, sub. 23, p. 15).

The EU is considering reforms that would increase the allowable mass concession for HZEVs from 2 tonnes to up to 4 tonnes and introduce a higher allowable drive axle mass, reflecting a shift from its current approach of providing concessions primarily through increased gross vehicle mass limits alone (European Commission 2023; European Parliament 2026; T&E 2026). International approaches – including the size of the concession and where it applies – are highly dependent on the underlying regulatory framework. In Australia, where allowable GVM is generally closely linked to axle group limits, GVM concessions without corresponding axle mass concessions would be less effective than in jurisdictions where allowable GVM operate independently of axle limits (box 2.6).

There may be merit in governments considering the higher concession being used in New South Wales and Queensland, and in drawing on any evidence about the impact of these concessions.

Box 2.6 – Comparing international approaches to HZEV concessions

Additional mass limits for electric HVEZs internationally have included increasing gross vehicle mass limits and in some instances implementing increases to axle group mass limits. The size of the concession and where it is applied can be highly influenced by local considerations, how axle mass limits and allowable Gross Vehicle Mass (GVM) interact, as well as the extent to which existing limits are binding in practice. This has influenced the design of electric vehicle mass concessions internationally.

Although Australian axle mass limits are often lower than those in overseas jurisdictions, they are generally not further constrained by GVM limits (as allowable GVM usually equate to the sum of the approved axle groups limits). In practice, this means axle mass limits are typically the binding constraint on vehicle loading, and operators can usually fully utilise the allowable axle masses.

> Australia faces unique legal constraints regarding axle limits, unlike many other countries globally that permit significantly higher limits to counterbalance the impact of battery tare weight. The European Council Directive 96/53/EC allows 10 tonne on the front axle for example, compared to Australia's 6.5 tonne (7.0 tonne for Euro VI compliant vehicles), and are currently reviewing their policies to increase this further with another 2 tonne concession for some axle configurations. (Volvo, sub. 23, p. 6)

By contrast, some overseas jurisdictions apply GVM limits independently of axle group limits (for example, in Sweden GVM limits are determined by the spacing between the first and last axle based and road load classification) (Farminer et al. 2025, p. 26). In these regimes, the allowable GVM may be lower than the combined allowable axle masses, meaning vehicles cannot fully utilise all permissible axle capacity under existing GVM limits. Consequently, providing an electric vehicle GVM concession without increasing axle limits – as initially adopted in the European Union – can still increase payload capacity by allowing operators to make greater use of existing available axle capacity while accommodating additional battery weight.

Jurisdiction	Concession (tonnes)	Access arrangement
UK	+2.0	Increased mass limits for vehicles operating under 44 tonne GVM via the Road Vehicles (Authorised Weight) (Amendment) Regulations 2023.
Norway	Up to +6.0	Access for specified six- and seven-axle truck-and-trailer combinations via Regulations on the use of vehicles (Forskrift om bruk av kjøretøy).
United States	Up to +0.9	Access on an interstate highway system via 23 U.S. Code § 127(s) and Public Law 116-6.

Source: Farminer et al. (2025, p. 19); Lovdata (2026); US Department of Energy (2026); Zósfia (2025).

A transparent review mechanism will be required

The additional mass limit should be phased out as the technology (including battery weight, charging and vehicle design) matures. Policy change could also affect the relevance of the additional mass limit. For example, broader reforms to road user charging or the consideration of carbon pricing signals (discussed in the PC's (2025a) *Investing in cheaper, cleaner energy and the net zero transformation* inquiry) would allow the costs and benefits of different vehicle technologies to be reflected more consistently across the heavy vehicle fleet.

Additional mass limits should be transparently reviewed, supported by analysis against specified benchmarks, so that they remain set at appropriate levels to allow electric HZEVs to operate without significant payload disadvantages compared with diesel equivalents. This approach would give industry confidence that concessions will remain while payload penalties persist, while allowing them to be progressively removed in the longer term as technology improves, electric battery weights potentially decline and take-up increases. To this end, our interim report suggested that a review could occur in 3 years for to monitor the development of electric HZEVs and the interaction with road wear.

Some participants said that this relatively short time span could create uncertainty. Volvo Group Australia (sub. 49, p. 6) highlighted that the pace and nature of technological advancements are not definite.

> While Volvo is not averse to the idea of three-yearly review process being adopted, it does stress the importance of not introducing any cause for lack of certainty across the industry. For example, concern that increased mass concessions may be reversed in 3 years' time.
>
> Regarding the common belief that battery weights may decrease in the future, Volvo would like to stress this is not a given scenario. Instead of decreasing weight, globally we are seeing and predicting that industry will likely focus on improved capacity and range instead.

To allow sufficient time to observe the advances in technology, and to provide greater certainty to industry, the review should be conducted 5 years after the introduction of an additional and consistent mass limit. The additional mass limit should sunset following a positive review determination that the payload gap between comparable diesel and electric HZEVs has materially closed.

In the meantime, the NHVR and Austroads should monitor the development of electric HZEVs and the interaction with road wear. This ongoing evaluation provides an ongoing opportunity to gather feedback on how the mass concession is performing and to provide data in relation to asset management and uptake.

Recommendation 2.2
A nationally consistent additional mass limit for electric heavy zero emissions vehicles (HZEVs)

The Australian, state and territory governments should – through the National Transport Commission – work to embed a consistent additional mass limit in the Heavy Vehicle (Mass, Dimension and Loading) National Regulation so that electric HZEVs can operate across jurisdictions without significant payload disadvantages arising from battery weights.

The National Heavy Vehicle Regulator, together with Austroads, should monitor the development of electric HZEVs and the interaction with road wear over the 5 years after the introduction of an additional mass limit. If after 5 years the monitoring program shows the mass limit is not set appropriately, there should be a review on mass limit settings and the impact on new HZEVs. The review's scope should include, but not be limited to, consideration of whether:

- road access policy settings have materially changed, including the road user charge for electric HZEVs
- the payload gap between comparable diesel heavy vehicles and electric HZEVs
- how international jurisdictions are setting concessional mass limits for electric HZEVs.

The additional mass limit should sunset following a positive review determination that the payload gap between comparable diesel and electric HZEVs has materially closed.

3. Accelerating a National Automated Access System

Key points

- **The existing permit system for heavy vehicle road access acts as a dampener on productivity. Permit access is often time-consuming, costly, prescriptive, uncertain and inconsistent.**
- **The goal of the National Automated Access System (NAAS) is to create a system of faster, more risk-based and more consistent heavy vehicle access decisions. The NAAS is modelled on a successful Tasmanian system (the Heavy Vehicle Access Management System).**
- **The NAAS could have broader economic benefits. Implementing the NAAS would boost long-run GDP by about 0.02-0.05% ($600 million to $1.3 billion based on 2024-25 GDP).**
- **The NAAS is behind its original schedule. While some states have begun to implement automatic access systems, it may be difficult for the remaining jurisdictions to accelerate much further given its size and complexity. To build on the progress made so far, governments should prioritise filling remaining information gaps and supporting local government participation.**
  - The biggest short-term constraint is gathering information on road assets. The Australian Government should fund future phases of the Strategic Local Government Asset Assessment Project to collect this information and consider expanding its scope, or providing support through other means.
- **The design of the NAAS is critical to maximise its benefits and overcome the limitations of the current system.**
  - The NAAS should adopt network-based access, giving heavy vehicle operators a network of all possible routes to get to their destination. This would give operators additional flexibility and support productivity.
  - States and territories should work to reduce access barriers on operators undertaking interstate trips.
  - The NAAS presents an opportunity to improve the consistency and quality of local government decision making about access.

Heavy vehicles need permits to access many roads. The current system of assessing permit applications is often inefficient, inconsistent and costly for operators and road managers (section 3.1).

A National Automated Access System (NAAS) is being developed with the objectives of greater timeliness, quality, consistency and certainty in access decision-making (DITRDCSA 2025c, p. 1). The NAAS is intended to automate the access approvals process, so that most heavy vehicle trips that

normally require a permit can gain instant access to approved routes. The NAAS is modelled on a highly successful Tasmanian system (section 3.2), and work is needed to ensure the NAAS is as successful as that system (section 3.3). The NAAS is behind schedule (section 3.4) but will have significant economic benefits once it is implemented. Steps should be taken to close information gaps and complete it as soon as practicable.

3.1 The existing heavy vehicle access system is not fit for purpose

Multiple reviews of the heavy vehicle access system, as well as participants in this study, have identified problems with the existing system that create inefficiencies and unnecessary burden on operators and road managers.

> The current patchwork of access rules amounts to a de facto 'productivity tax' on operators. Industry experience clearly shows that the current access and permitting system is slow, unpredictable, and inconsistent across jurisdictions. One operator recently reported that a standard Adelaide-Sydney movement required over 16 weeks of approvals, including numerous road access applications and alignment with multiple technical requirements as a result of the different state-based rules. (Australian Industry Group, sub. 15, p. 3)

Permit applications can be costly, as can delays in decisions

Permit applications typically require operators to pay a fee to help cover the administrative costs to the National Heavy Vehicle Regulator (NHVR) of processing a request (the fee in February 2026 was $91) (NHVR 2025c). Some applications can impose additional costs on operators. For example, if local governments need to assess road assets such as bridges, each assessment can cost operators tens of thousands of dollars. In 2026 Victoria introduced an automatic approval system for bridge access (section 3.2), but prior to that manual assessment of bridges and culverts could take 6 to 9 months and cost $8,000 for a single vehicle on a single route, to over $50,000 for multiple vehicles (HVIA 2025; NHVR nd). This process can be duplicative, with multiple bridge assessments required in some cases for similar access requests from different operators.

> The permit application process is not risk-based and requires almost every application to be made via the same process, with limited recognition of any similar decisions that have previously been made and that could provide precedent. (Frontier Economics 2020, p. 135)

Permit applications can cost operators time and resources that exceed the direct cost in application fees. The NHVR estimated that each permit application costs industry an average of $220 in fees and application time (sub. 4, p. 15). In some cases, operators may apply for multiple permits for the same task to improve certainty of access, but at additional cost.

> The continuous applying for these permits places an unreasonable administrative burden on heavy vehicle operators. (Team Global Express, sub. 8, p. 4)

Operators of restricted access vehicles need access approval to carry out a job. The time spent waiting for permit approval decisions can be costly. In 2024-25, the average time between applying for and receiving a permit was 17 days, but 4% of applications exceeded the 28 day statutory limit, with an average turnaround time of more than 50 days (NHVR 2025i, pp. 28, 67).

These delays impose costs on both operators and other parties relying on heavy vehicles to complete a task. For time-sensitive tasks in particular, delays can add significant costs to projects – such as needing to hire equipment for longer, or incurring holding fees while waiting for goods to be transported. In some cases, delays can have serious consequences, such as when an operator needs to move equipment to avoid a flood or bushfire.

The permit system takes a prescriptive approach to access, which adds to administrative burden and drives sub-optimal outcomes

Unlike network-based access, which gives heavy vehicles access to a network of possible routes, permits typically approve a specific type of vehicle for a specific route. While prescribed routes may be necessary in some cases (such as for an Oversize and Overmass vehicle that cannot physically fit on alternative routes), they can limit operators' ability to use the most efficient vehicle and route for the task. For example, a truck with less capacity may be used, requiring more trips, because obtaining access approval for a higher capacity truck may be more difficult or costly. In addition, prescribed routes can reduce the ability of operators to vary their route to avoid congestion.

> The permit system stifles innovation and productivity. Operators will either stick to older vehicle combinations such as rigids and semi-trailer or otherwise submit applications with a high probability of approval, rather than go through the full assessment process. (Victorian Department of Treasury and Finance, sub. 28, p. 10)

The growing number of permit requests has increased the administrative burdens on the NHVR and road managers (including local governments who manage 77% of Australia's roads by length, ALGA sub. 33, p. 1). In 2024-25, local governments received over 318,000 requests for heavy vehicle access permits, while the NHVR received over 196,600 cases relating to permit approvals (NHVR, sub. 4, p. 15).

Processing permit requests can be resource-intensive for local governments and the NHVR. The NHVR advised that each permit application costs road managers over $450 in assessment time on average (sub. 4, p. 15). Permit assessments draw time and resources away from other responsibilities and can delay access decisions. Transport for NSW (sub. 38, p. 10) said:

> Without proportionate efforts to address the compounding volume of consent request applications, teams will continue to face increasing operational pressures, failing to process requests within legislative timeframes and limiting the capacity to engage in strategic planning.

Access decisions are inconsistent across local government areas

Permit decisions can be inconsistent between local governments. In 2020, the Productivity Commission (PC) found that road managers were granting access inconsistently and making different assessments on similar roads (PC 2020, p. 221). Participants in this study said this inconsistency was still causing problems (CICA, sub. 12, p. 14). For example, a single road that crosses multiple local government areas may allow different levels of heavy vehicle access, depending on the tolerance of each individual local government.

> Current arrangements require operators to navigate complex approval processes that vary across jurisdictions and often involve multiple local road managers. In some cases, a single freight route can require approval from dozens of local councils, each with different decision processes and timelines, leading to significant delays and inefficiencies that restrict the productivity potential of the network. Where a single access request is declined, entire delivery pathways must be redesigned, forcing longer travel distances and additional handling across the retail supply chain. (ARA and NRA, sub. 29, p. 2)

Differences in access decision-making among local governments stem from several factors. Some local governments have more comprehensive information about road assets, enabling more confident decisions, while others with less information tend to be more cautious and restrict permits on certain routes. Resource levels also vary: less-resourced councils may be risk-averse due to concerns over funding repairs or asset replacement, whereas larger managers might benefit from economies of scale (PC 2020, p. 318). Finally, tolerance for heavy vehicle impacts differs, reflecting residents' preferences.

> Road managers cannot afford, nor would it be prudent, to continually reconstruct their roads and structures to match contemporary heavy vehicle access demand and fleet innovation. However, jurisdictions cannot afford not to safely facilitate this same access demand and fleet innovation. (DSG 2021, p. 3)

Finding 3.1

The permit system for heavy vehicle access is costly

The heavy vehicle permit system imposes significant costs and uncertainty on operators, as well as administrative burden on road managers and the National Heavy Vehicle Regulator. There is a need to reform the system to promote flexibility, timeliness, consistency and quality of access decisions – this will support broader productivity.

3.2 About the NAAS

In 2022 a review of the Heavy Vehicle National Law (HVNL)[10] found strong support among stakeholders for an online access system similar to the one used in Tasmania (Kanofski 2022b). By this stage, some jurisdictions had already commenced work to develop automated access systems. The review recommended a national automated access system, with a target that it be in place and reduce permits by 50% within three years, and reduce permits by 90% within five years for all heavy vehicle types (Kanofski 2022a).

Transport ministers agreed to the HVNL review recommendation and suggested timeline, and agreed to base the NAAS on the successful Tasmanian system. The objective was not only to speed up access decisions, but also improve the quality, consistency and certainty of decisions. This was the experience in Tasmania. Participants in this study strongly supported basing the NAAS on the Tasmanian system (Australian Industry Group, sub. 15, p. 3; Australian Livestock and Rural Transporters Association, sub. 19, p. 10; ALGA, sub. 33, p. 6; Crane Industry Council of Australia, sub. 12, p. 16; LGA South Australia, sub. 14, pp. 6–7; Team Global Express, sub. 8, p. 4).

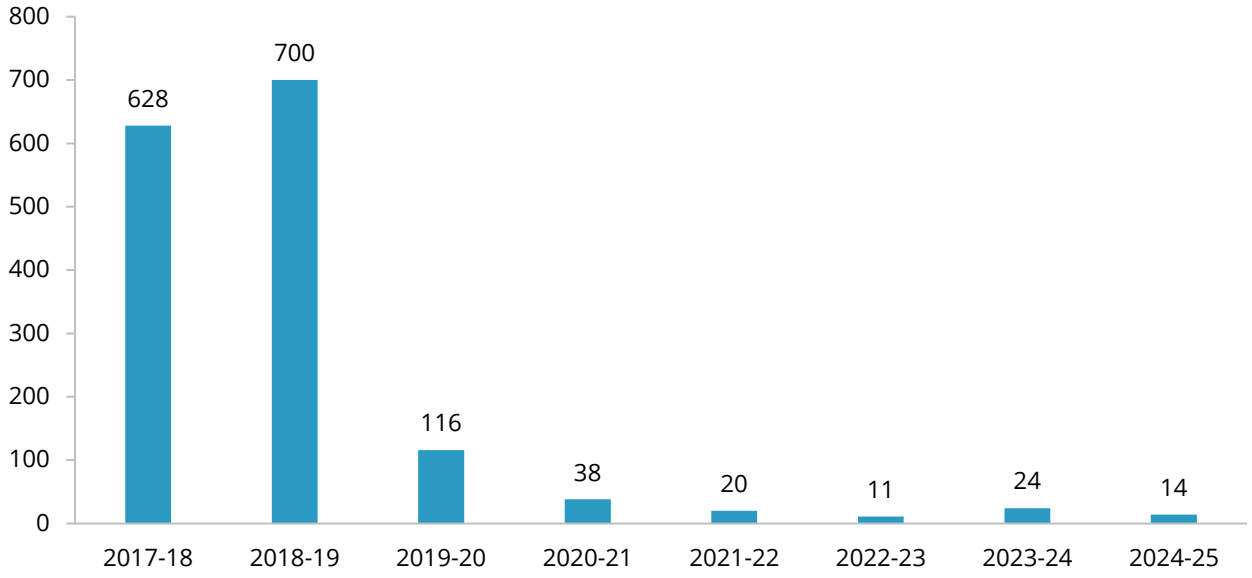
The Tasmanian system provides a sound proof-of-concept

The first automated access system for heavy vehicles in Australia was established in Tasmania in 2016. The Heavy Vehicle Access Management System (HVAMS) replaced the previous permit system in Tasmania – for Oversize and Overmass vehicles in 2016, and for special purpose vehicles in 2019. It

[10] Jurisdictions participating in the HVNL include all states and territories except Western Australia and the Northern Territory.

removed permit requirements for 80% of Oversize and Overmass vehicles in Tasmania, and for 95% of special purpose vehicles (DSG 2021, p. 5) (figure 3.1). Performance-Based Standards (PBS) vehicles were included in 2025–26, and in 2026–27 it will include a wider range of PBS design options and improved bridge assessments (Tasmania Department of State Growth, pers. comm. 7 May 2026).

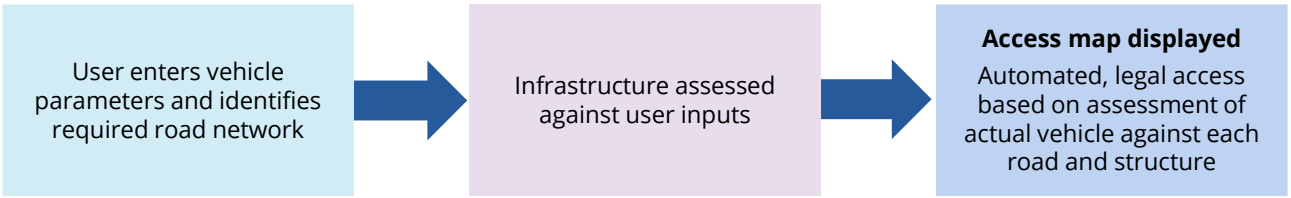
Figure 3.1 – Tasmanian special purpose vehicle access requests



Source: Tasmanian Department of State Growth (2026) (unpublished data).

HVAMS allows heavy vehicle operators to input their vehicle and travel requirements and receive an instant access map (figure 3.2).

Figure 3.2 – Heavy Vehicle Access Management System



Source: Tasmanian Department of State Growth (2021).

The Tasmanian system went beyond just automating approvals, but also aimed to maximise the productivity of the road network, while maintaining safety. The HVNL review said:

> … in some cases the philosophical approach to access decision making was one of asset protection in a constrained budget environment. While the budget constraints are real and acknowledged, the interests of the community are maximised if access is seen through the philosophical prism of roads fulfilling a significant economic purpose of moving people and freight. The goal in granting heavy vehicle access should be to maximise the safe use of roads and infrastructure to efficiently move freight rather than protect the asset. The success of the Tasmanian HVAMS system owe as much to this philosophical change as it does to the systems that support the decision making. (Kanofski 2022a, p. 4)

A key innovation of HVAMS is that it is underpinned by a notice which provides exemptions from requiring a permit for operators who are granted access under the system (DSG 2021, p. 7). Notices provide as-of-right access on gazetted routes for specified vehicles, bypassing the need for permits. The design of HVAMS provided several important benefits for road managers, which gave them greater assurance and acceptance than traditional notices. First, road managers retain control but are provided a high degree of assurance by the highly granular vehicle information that users provide to use the system. Second, road managers are given more confidence to allow access through the matching of the user information with road and infrastructure condition assessments. This is reinforced by the requirement that heavy vehicles using the system have a telematics unit installed, improving compliance. Third, road managers are also able to input changes to road conditions, making the system highly responsive. ALGA (sub. 33, p. 6) said:

> Tasmania's Heavy Vehicle Access Management System (HVAMS), which the NAAS is based upon, demonstrates that automated access systems can work effectively for local government. All 29 Tasmanian councils voluntarily participate in the system. This voluntary adoption reflects HVAMS' practical benefits for local road managers: councils potentially gain real-time visibility of heavy vehicle movements on their networks, automated compliance checking reduces manual permit processing, and the system generates reliable data on actual road usage patterns.

Different approaches to automated access

Jurisdictions are taking different approaches as they work towards automating access decisions for heavy vehicles. This variation reflects the different needs and priorities of jurisdictions, who agreed to base the NAAS on the 'high-level architecture' of the Tasmanian system (ITMM 2025).

Victoria launched the Heavy Vehicle Structural Assessment Permit System in January 2026, which removed the need for manual bridge assessments (and the charge to operators for these assessments) and aimed to speed up approvals for Class 1 and PBS vehicle operators. The system is integrated into the existing permit application system, NHVR GO, and the intent is to integrate this system into the NAAS in 2026 (Vic DTF, sub. 28, p. 9).

An assessment under the Victorian system can take between 20 minutes and an hour, depending on the bridges and the complexity of the vehicle (Vic DTF, sub. 28, p. 9). In June 2026, more than 60% of assessments were completed within 30 minutes (Horne 2026). Manual assessments were being processed within 5 business days, compared with up to 3 months under the previous system (Horne 2026).

While the system is based around permits, not notices, it still supports network-based access (section 3.4) and allows users to 'test' vehicle combinations to reduce uncertainty.

New South Wales has been developing an Automated Access Assessment Program as part of the NAAS system, to introduce automated assessments for routes and road assets, with the intent to move away from permits towards notices to allow as-of-right access to certain networks (Transport for NSW 2024, p. 42). NSW has also worked to adopt Victoria's Heavy Vehicle Structural Assessment Permit System (CICA, sub. 12, p. 14, Transport NSW sub. 64, p. 22).

Queensland rolled out the NAAS for Australian Defence Force heavy vehicles in 2025 (DITRDCSA 2025c, p. 1). Queensland is working towards adding special purpose vehicles and class 1 Oversize and Overmass vehicles through 2026 and 2027 and aims to include PBS vehicles in early 2028 (DITRDCSA 2025c, p. 1; TMR 2025, 2026b). Queensland's system is based around 'dynamic notices' to present network-based access (TMR 2026a).

Potential economic benefits are significant

The success of the Tasmanian system was highlighted by a cost-benefit analysis which estimated net benefits of $69.5 million to $207.6 million (HoustonKemp 2022, p. 3). This comprised benefits of $74.1 million to $212.2 million and costs of $4.6 million (HoustonKemp 2022, p. 3). The benefits could be larger than estimated – the analysis did not include several potentially significant benefits, such as greater network access, or the ability for operators and road managers to better plan for the future.

The Bureau of Infrastructure and Transport Research Economics (BITRE) (forthcoming) conducted a cost-benefit analysis of introducing the NAAS (box 3.1). The benefits (largely freight operator cost savings due to permit assessment time savings) were found to vastly outweigh the costs.

Box 3.1 – Whole-of-economy modelling of introducing the NAAS

The *Productivity Impact of Selected Heavy Vehicle-Related Measures report* (BITRE forthcoming) modelled low, medium and high scenarios for the costs and benefits of introducing the NAAS. The results of these scenarios are presented below.

	Low scenario	Medium scenario	High scenario
	Present value, 20-years, 7% discount rate, $ million		
Benefits			
Freight operator cost savings	6,950	9,673	14,108
Regulator cost savings	72	85	103
Road manager consent cost savings	92	115	146
Costs			
Road agency costs	193	193	193
Industry, technology and system costs	271	362	452
Total net benefits	6,650	9,318	13,712
	Annualised present value (%)		
Productivity impact by sector			
Road freight sector productivity impact	0.8	1.1	1.6
Government administration and regulatory services	0.0	0.0	-0.1

The PC used computable general equilibrium modelling to gauge the fuller economy-wide effect of introducing the NAAS in the long run, using BITRE's estimates as inputs. We used two CGE models – our in-house PC National model (appendix B) and the Centre of Policy Studies' VURMTAX model (see report published on PC website). Both models capture only the freight operator cost savings effects of introducing the NAAS, but these significantly outweigh all other effects. The VURMTAX modelling explicitly assumes the NAAS would be introduced in all states and territories except the Northern Territory and Western Australia. The PC National modelling assumes the same national reduction in freight operator cost savings, but that the cost savings are shared across all states and territories as PC National is a national model.

Box 3.1 – Whole-of-economy modelling of introducing the NAAS

	Low scenario	Medium scenario	High scenario
PC National modelling			
GDP (% change)	0.03		0.07
VURMTAX modelling			
GDP (% change)	0.02		0.05

VURMTAX is a dynamic model that produces estimates out to 2039–40, while PC National is a static model that produces steady-state estimates and has been calibrated such that these steady-state estimates can be interpreted as estimates of long-run effects. This table shows VURMTAX's estimate for 2039–40 as it is most comparable with PC National's estimate. The PC National estimates use more conservative assumptions for the low scenario and less conservative assumptions for high scenario to reflect additional uncertainty. See appendix B for more information.

BITRE's work focussed on direct benefits and costs, but the NAAS would also have flow-on effects for the rest of the economy, because road transport services are an input into many other industries. The PC used computable general equilibrium modelling to gauge the economy-wide impact of the freight operator cost savings from introducing the NAAS (box 3.1).

- Modelling commissioned from the Centre of Policy Studies at Victoria University, using their VURMTAX model, found that introducing the NAAS would raise GDP by 0.02–0.05% by 2039-40. This modelling explicitly assumes the NAAS would be introduced in all states and territories except the Northern Territory and Western Australia.
- Modelling undertaken in-house, using our PC National model, found that introducing the NAAS could raise GDP by 0.03–0.07% in the long run. This modelling assumes the same national reduction in freight operator cost savings as the VURMTAX, but these are shared across all states and territories as the PC National is a national model.

BITRE also estimated the benefits and costs of accelerating the NAAS. BITRE compared the net benefits of implementing the NAAS in 2027 compared with 2032 and found the net present value to be $2.8 billion to $4.5 billion.

A further cost-benefit analysis of an automated access regime for Queensland found net benefits ranging from $814 million (low scenario and automated access only for state roads) to $4.7 billion (high scenario, including state and local roads) (HoustonKemp 2023, p. 4).

3.3 Ensuring the NAAS is delivered in a timely way

While the states and territories have made progress in automating access decisions, the NAAS is running behind schedule. The NAAS has not met the original timeframes of replacing 50% of permits by mid-2025 and is not on track to replace 90% of permits by mid-2027. That said, the experience in Tasmania shows that outcomes can be achieved quickly once the system is up and running (figure 3.1).

Much of the reason for the prolonged rollout appears to relate to the size, complexity and required coordination to undertake the project. One time-consuming aspect is local governments assessing road

assets in their area and inputting this data into the system. And there are other capacity constraints. Transport for NSW (sub. 38, p. 17) said:

> The program requires a level of technical and operational competence that exceeds organisational capability and capacity. Without additional specialist resources or training, there is a risk that delivery obligations will not be met to the required standard. The program's success relies heavily on specialised RAV [restricted access vehicle] operational knowledge, which is presently held by only two experienced employees.

The NAAS should be implemented as soon as practicable. The request for advice for this study asked the PC to advise on how to accelerate implementation of the NAAS. Participants in this study had a range of suggestions about how to accelerate the NAAS (box 3.2).

Box 3.2 – Participant suggestions on how to accelerate the NAAS implementation

NHVR (sub. 4, p. 14) said:

> A national rollout requires addressing several operational, administrative and governance factors that will materially influence the timing and distribution of benefits across jurisdictions. These include:
>
> - IT and data requirements: A national platform requires integration with existing systems, consistent data inputs, and a complete set of asset parameters.
> - Administrative and workforce capability: Many road managers will need training and resourcing to maintain asset information to support automated decisions.

Team Global Express (sub. 8, p. 4, 5) said:

> TGE notes that there needs to be a focus on practical coordination, asset eligibility, scale-up of Tasmania's model, operator cost-benefit, and the datasets needed to make NAAS work and be trusted … TGE recommends adopting a corridor-first rollout where data quality is high and freight benefits are immediate. In addition, a focus on safety conditions (in particular speed, lanes and time-of-day) would increase eligible roads while protecting assets and communities.

ALC (sub. 10, p. 7) said:

> Ensure investment is made to ensure NAAS has the functionality expected by industry. Australian governments should establish a timetable by which the project is to be completed.

CCA (sub. 13, p. 14) said the Commonwealth should fund the national deployment of the NAAS and 'ensure Councils have the tools, capability and data needed to use it effectively'.

LGA SA (sub. 14, p. 7) said additional resources would be needed for training for councils on use of the system, including updating and improving road data inputs. The ALGA (sub. 33, p. 7) said the Australian and state and territory governments should provide support to:

- complete asset assessments through SLGAAP and similar programs.
- develop and maintain asset information systems compatible with NAAS requirements.
- train council staff in access decision-making and system use.
- provide technical support for smaller councils lacking in-house expertise.

Box 3.2 – Participant suggestions on how to accelerate the NAAS implementation

- build the organisational capacity needed to transition to NAAS operations.

The Australian Industry Group (sub. 15, p. 4) said:

> There should also be uniform pavement and bridge assessment methodologies to ensure all local government engineers are employing the same evaluation approach and feeding the road data into the national NAAS.

The Victorian Government (sub. 28, p. 9) said:

> … full automation that encompasses the entire Victorian road network would require several years and additional funding.

The Strategic Local Government Asset Assessment Project

Beginning 2019, the Australian Government has funded a project to assist local government road managers to undertake heavy vehicle assessments of on-road assets, such as bridges and culverts. In its first two phases, the Strategic Local Government Asset Assessment Project (SLGAAP), delivered by the NHVR, conducted over 1000 engineering assessments and inspections across 109 councils nationally (NHVR 2025l). Phase 3 commenced in December 2024, with an accelerated collection of local government asset data in Victoria and South Australia to support the inclusion of relevant information in systems to develop the NAAS. Phase 3 significantly accelerated coverage and collected data on more than 1,500 assets, with the NHVR expecting that more than 6,000 will be collected by the end of the funding round (NHVR, sub. 63, p. 6).

Total funding over the first three phases was $26.61 million (NHVR 2025l). Some participants in this study called for more funding for the project (ALC, sub. 10, p. 6; LGA SA, sub. 33, p. 6), while the Victorian Government said integration of local government road data will require additional funding beyond what has been provided (sub. 28, p. 9). The Australian Local Government Association said that, despite the progress so far, the project had assessed only a 'fraction of the ridges and culverts on local freight routes nationwide' (sub. 33, p. 7), while the Australian Livestock and Rural Transporters Association (sub. 19, p. 12) said:

> SLGAAP funding is very modest relative to the scale of the task and the demands NAAS will place on councils.

The investment in infrastructure assessments appears worthwhile, especially given the large amounts of information that will be needed for the NAAS and the NAAS's potential benefits. The intent of the of the project is closely linked to the to the goals of the NAAS in promoting greater heavy vehicle access. The NHVR said:

> … this program is more than conducting individual assessments using conservative processes leading to conservative outcomes … The program is about engineering judgment, cooperation, and collaboration with road managers and the NHVR to optimise heavy vehicle access on the road network. (NHVR SLGAAP assessment guide, p. 3)

This was echoed by the Australian Logistics Council (sub. 10, p. 3) who said:

> This engineering data [collected by the SLGAAP] underpins NAAS's capacity to make risk-based access decisions, moving away from overly conservative, manual permit approvals.

The Australian Government should continue to fund further phases of the SLGAAP to support implementation of the NAAS. There may be potential to expand the scope of the SLGAAP to assess or support the NAAS in other ways. For example, the NHVR said that as the NAAS matures, there will be a need for other data, such as road geometry and road surface condition (sub. 63, p. 6). The Victorian Government noted that the SLGAAP only collect structural data, not geometric data. The NSW Government said future phases of SLGAAP could include level crossings (sub. 64, p. 24). These or other expansions or amendments to the SLGAAP should be considered.

Recommendation 3.1
Funding for the Strategic Local Government Asset Assessment Project

The Australian Government should fund future phases of the Strategic Local Government Asset Assessment Project, starting with Phase 4 in the 2027–28 Budget. Expansions or amendments to the scope should be considered if they would support the National Automated Access System.

Other support for local government participation

The success of the NAAS depends on local government participation. As such, local governments should be provided with support to participate in the NAAS (or other automated access systems) beyond infrastructure assessments. The Tasmanian Government said it had provided 'financial, technical and leadership support to local government throughout the process of developing the systems and collection of all data' through both HVAMs and now the NAAS (sub. 60, p. 8). The NSW Government advocated for the Australian Government to provide financial support and training to local councils (sub. 64, p. 21) as did the Heavy Vehicle Industry Association (sub. 58, p. 6). The NHVR said that, whether through the SLGAAP or another process, local governments need to be provided with the systems and support to integrate the data being collected into the relevant asset capability modules (sub. 63, p. 6).

3.4 Getting the most out of the NAAS

While the NAAS, based on the Tasmanian system, has almost universal support, some participants in this study were concerned the NAAS may not live up to expectations (box 3.3). For the NAAS to deliver on its promise, it should continue to work towards promoting network-based access and reducing variability across areas (jurisdictions or local government areas).

Box 3.3 – Concerns about the implementation of the NAAS

Participants in this study had concerns the NAAS may not live up to its promise.

The Crane Industry Council of Australia (sub. 12, p. 14) said:

> The NAAS is being pushed as nationwide reform, however CICA has some concerns that overcomplicating the road management system by adding multiple layers of bureaucracy risks creating a burdensome and unwieldy framework that stifles progress and undermines efficiency.

The Electric Vehicle Council (sub. 18, p. 6) said:

> … at best the NAAS will streamline applications for access regimes that already exist; it will not actually expand access – for heavy EVs or any other vehicles. Unless as-of-right access is established nationally, heavy EVs will effectively remain banned from much of the road network and any new access routes will be determined on a case-by-case basis by state and LGA road managers. Even if fully implemented, the NAAS is unlikely to improve national productivity in this regard.

The Australian Livestock and Rural Transporters Association (sub. 19, p. 10, 11) said:

> NAAS will only be a reform if it shifts the default from individual, route-specific permits to pre-assessed networks and envelopes that operators can use repeatedly – especially for common livestock and rural freight configurations … NAAS will only lift productivity if it gives operators clear, repeatable networks access – not faster uncertainty.

Australian Trucking Association (sub. 22, p. 6) said:

> Industry is particularly concerned that the program, as currently structured, may fail to deliver on its fundamental objective: increased access certainty and the meaningful reduction in the use of permits.

The NAAS should adopt network-based access where possible

The NAAS is more than just a technology upgrade. Faster or instant processing of approvals is an improvement on the existing system, but there is also an opportunity to improve how access is managed and deliver greater benefits.

> Of course, automation isn't the answer to everything. There's a danger it could just be a Band-Aid if we layer it over the top of an already dysfunctional system. What we really need is a new approach to network-based access that slashes red tape for industry and removes administrative burdens for governments. (Clark 2025b)

Tasmania's access system provides network-based access. This means that where possible, operators are given a network of all the possible routes they can use to get to their destination. It also allows them to experiment with different vehicle combinations on the online mapping tool, to determine the optimal route and vehicle. This increased flexibility for operators can help lower their costs, increase certainty and allow for easier planning for tasks. In turn, this supports higher productivity in the sector.

The intent of the NAAS is to provide network-based access. The May 2025 update from ministers said the NAAS is working towards a system where decision making 'is effectively pre-loaded, allowing immediate generation of a map showing all roads that a particular vehicle can safely travel on' (DITRDCSA 2025c).

Recommendation 3.2
Automated access systems should incorporate network-based access

As much as possible, automated heavy vehicle access systems should be designed to provide network-based access rather than automating access for prescriptive routes. This will maximise the benefits of the system for operators and the community.

Governments should minimise fragmentation across jurisdictions

Automated access systems present an opportunity to reduce access barriers across state and territory borders. In the short to medium term, there is a risk of fragmentation within the NAAS if jurisdictions adopt different front-end systems and have different access settings for different vehicles. For example, a task that involves travelling across multiple states may require a combination of automated and manual permit access if not all jurisdictions include that type of vehicle in their NAAS. This could cause additional complexity and undermine the benefits of the NAAS for these tasks – for example, it may cause operators to use less optimal routes or vehicles to get faster approval, or increase the time taken to conduct trips.

> Proactive steps need to be taken by each level of government for harmonised road access. (Volvo, sub. 23, p. 9)

In the longer-term jurisdictions should work towards greater consistency in access decisions. Both the information needed to support automated access systems and the information they generate could lead to more evidence-based decision making. In addition, once the benefits of automated access are evident to industry and government, there may be added momentum to continue to reduce any remaining access barriers. Jurisdictional differences will make these more apparent. Work to improve the consistency and quality of access decisions by local governments could also seek to address access decisions by state and territory governments.

The consistency and quality of access decisions by local governments should be improved

The objectives of the NAAS include improving the consistency and quality of access decisions. One common area of inconsistency in access is at the local government level (section 3.1). This is in part due to differences in local governments' road asset information, resourcing, and tolerance for heavy vehicles.

The NAAS itself will not directly ensure more consistent and higher quality decision making by local road managers. The NAAS will not, for example, overcome differences in infrastructure capacity.

> NAAS can optimise access within existing asset constraints but cannot change bridge strength, pavement capacity or the physics underlying the interaction between these and heavy vehicles. (NHVR, sub. 62, attachment 1, p. 5)

The NAAS will also still account for different levels of risk tolerance among local road managers to heavy vehicle access (DITRDCSA 2025c, p. 1).

However, the NAAS, or other automated access systems could still help drive consistency. Automated access systems should mean that local road managers spend less time processing permits and have more time to make evidence-based decisions that better manage risk. The increased information flows on access decisions and the road network could also enable, say, state transport departments to work with local authorities on their access policies. State authorities that have adopted automatic access

systems could consult with local road authorities if they observe differences that are affecting access. The NHVR said that the NAAS could:

> … improve access decision-making by applying consistent, rules-based and engineering-informed logic across networks. Its value lies in improving decision architecture, rather than relaxing physical asset limits. (sub. 62, attachment 1, p. 5).

Further, part of the objective of the SLGAAP (discussed above) is to ensure consistent data collection, which could support more consistent access decisions across local governments.

It remains to be seen how effective the NAAS will be in improving access decisions, and whether additional guidelines or rules need to be developed and enforced. Natroad (sub. 53, p. 1) recommended the NAAS be accompanied by 'nationally mandated and consistent access rules and timeframes for road manager decisions', while the Heavy Vehicle Industry Association (sub. 58, p. 6) recommended standardised decision-making criteria. The NHVR already provides guidelines to road managers to help improve the quality and consistency of access decisions and conditions on access (NHVR 2023a). Governments should work with the NHVR to apply these guidelines rather than designing and implementing new rules at this stage.

A larger issue is that road managers are unlikely to be able to make consistent and high-quality access decisions while they face uneven resourcing. In 2020, the PC recommended the Australian, state and territory governments should ensure that local governments have access to the financial and technical capacity they need to perform their role as asset managers for local roads (PC 2020, p. 31). To incentivise local governments to build capacity and apply appropriate risk frameworks, the PC recommended that any additional support should be accompanied by greater transparency and accountability. The PC recommended data be reported on local government performance, particularly with respect to access permit processing times and the use of notices to gazette heavy vehicle routes (PC 2020, p. 31).

Making greater use of notices

The NAAS could encourage the greater use of notices to promote more as-of-right access. The use of notices is key to the operation of the Tasmanian system and how it was able to so dramatically reduce the number of permit requests. But broader use of notices to promote greater access is not dependent on the NAAS. In 2020, the PC recommended governments and road managers work with the NHVR to expand key freight routes covered by notices (PC 2020, p. 30). The NHVR (sub. 4, p. 15) said there is a:

> … need to reduce the reliance on individual permits by expanding as-of-right access under the existing notice regime. The promise of fewer permits under the NAAS could be partially achieved now through the expansion of access notices (which remove the need for individual permits).

Some jurisdictions have expanded the use of notices, separate to the NAAS. For example, in 2025 South Australia, together with the NHVR, introduced a notice for Oversize and Overmass vehicles which expanded existing networks and provided new network access to eligible vehicles (NHVR 2025e). Further efforts to improve as-of-right access through notices, including for PBS vehicles (chapter 2) could support the NAAS, or could be progressed separately.

The NAAS has the potential to promote greater use of notices while maintaining local control over roads. As Austroads (sub. 31, p. 21) said:

> The NAAS is being developed as a system with the potential to offer the best of permits (specificity and use of all available access capacity) and notices (administratively simple and instant 'permissioning').

4. Administrative and regulatory barriers to charging infrastructure

Key points

- **Heavy zero emissions vehicle (HZEV) charging infrastructure will facilitate the introduction of new technology and the decarbonisation of buses and freight. Administrative and regulatory barriers must not hold up the rollout as policy, market and technological developments drive it forwards.**
- **To be commercially viable, HZEVs are expected to need:**
  - chargers located in freight centres (depots, distribution hubs and major warehouses), freight nodes (ports, airports and intermodal terminals) and heavy vehicle rest stops (along highways)
  - powerful chargers and layouts that accommodate their size.
- **HZEV charging infrastructure requires larger electrical loads than passenger electric vehicle charging infrastructure and can necessitate electricity network upgrades. Better provision of information about existing electricity network capacity to guide site selection would assist with efficient site selection.**
- **The Australian Government should incorporate granular electricity network capacity data, heavy vehicle operations data and land use regulation data into a mapping tool to guide HZEV charging infrastructure investments. The tool should allow users to export as much of this data as is feasible.**
- **Land use settings should be updated to reduce barriers to HZEV charging infrastructure. State and territory governments should:**
  - redefine land use terms to explicitly allow charging at bus depots, freight centres, freight nodes and heavy vehicle rest stops
  - exempt charging infrastructure installations from requiring planning permission where consistent with existing land use provisions.
- **Governments should plan for and facilitate commercial investment in HZEV charging infrastructure at government-provided heavy vehicle rest areas.**
  - Austroads should update its heavy vehicle rest area guidelines to include HZEV charging infrastructure considerations and governments should reflect these changes throughout their policies.
  - State and territory governments should develop policies and guidance, such as standard contractual terms, that allow charging infrastructure owners to install and operate HZEV charging infrastructure in rest areas.

This chapter responds to the request that the Productivity Commission analyse reforms that would remove administrative and regulatory barriers to improve the availability of heavy zero emissions vehicle (HZEV) charging infrastructure.

This task sits within the context of rapid change in technology and the commerciality of electric propulsion of heavy vehicles, alongside broader efforts by the Australian Government to reach net zero by 2050 and facilitate the necessary transition of the energy system. The latter includes promoting the uptake of HZEVs and adapting electricity market regulation to better accommodate devices that can generate or store energy (such as electric vehicles) (box 4.1). This study focusses on removing 'grit in the gears' so that the charging infrastructure rollout – and hence the potential for electrification of heavy vehicles – is not held up by outdated or poorly designed regulations (regulatory barriers) or by poorly coordinated administrative processes (administrative barriers).

Box 4.1 – Broader policy development and implementation relevant to HZEV charging infrastructure

National Consumer Energy Resources Roadmap

The Australian, state and territory governments are currently pursuing reforms under the National Consumer Energy Resources Roadmap, endorsed by Energy Ministers in 2024. Consumer energy resources are devices that generate or store energy or can alter their energy consumption in response to external signals. This includes electric vehicle chargers, rooftop solar, batteries and electric vehicles themselves. If effectively integrated, consumer energy resources can smooth the demand for and supply of electricity, reducing the total required amount of electricity grid-scale generation capacity.

Owing to its commercial scale and application, HZEV charging infrastructure would generally sit outside the scope of the National Consumer Energy Resources Roadmap. However, one reform is directly relevant – reform P.2.3, which relates to harmonising and streamlining the processes for connecting large consumer energy resources to the grid.

Australian Renewable Energy Agency grants for HZEV charging infrastructure

The Australian Renewable Energy Agency has provided grant funding to support early HZEV charging deployments, including depot upgrades and new freight charging hubs under the Driving the Nation Program (ARENA, sub. 25, pp. 3–4).

These projects aim to demonstrate technical feasibility, trial business models and generate information about grid connections, administrative and regulatory barriers, construction requirements and operational performance. Knowledge-sharing reports are published as a condition of funding.

It is beyond the scope of this chapter to comment on these grants.

4.1 HZEV charging infrastructure

HZEV charging infrastructure comprises a charger, a charging bay, cabling and other electrical equipment needed to connect the charging station to the electricity network. To reduce the demands on the grid, some sites also have on-site load control, battery storage (which can smooth and shift electricity demand) and solar panels (which can supplement electricity from the grid).[11]

HZEV charging infrastructure differs from passenger electric vehicle (EV) charging infrastructure in two fundamental ways:

- HZEVs require more powerful chargers than passenger EVs (table 4.1) because they use more power, have higher-capacity batteries and, for some applications, need to charge more quickly to be commercially viable
- HZEV charging requires more space than passenger EV charging, both because the bay must be larger and because HZEVs require more space to enter and leave or may need entirely different configurations such as drive-through bays. Most publicly accessible EV charging stations are designed for passenger EV charging in this respect and are unsuited to HZEVs (ANC 2025).

Table 4.1 – Types of chargers

Type	Common name	Power	Relevant vehicle types
Level 1 chargers	Socket chargers	2.3kW	Light commercial vehicles
Level 2 chargers	AC fast chargers	3.5kW – 22.1kW	Light commercial vehicles, rigid vehicles
Level 3 chargers	DC wall chargers	25kW	Light commercial vehicles, rigid vehicles
	DC fast chargers	50kW – 150kW	Light commercial vehicles, rigid vehicles, articulated vehicles
	DC ultra-fast chargers	350kW – 1000kW	Light commercial vehicles, rigid vehicles, articulated vehicles
	Megawatt chargers	1000kW+	Articulated vehicles

Source: AECOM (2025).

While in its infancy, the rollout of HZEV charging infrastructure is expected to be a key enabler of emerging electrification technology options and Australia's pathway to net zero. The *Transport and Infrastructure Net Zero Roadmap and Action Plan* expects that buses and smaller trucks will be electrified first, with larger trucks to follow and in some instances needing to be powered by hydrogen or low-carbon liquid fuels, depending on how technology evolves (DITRDCSA 2025d). A major recent study for the Australian Renewable Energy Agency on freight electrification similarly found that urban freight (dominated by light commercial vehicles and smaller trucks) had the best prospects for electrification in the short term (AECOM 2025).

[11] While not yet common in Australia, 'vehicle-to-grid' applications (in which EV batteries are used for load management when connected to a charger) are being trialled for HZEV charging hubs. Vehicle-to-grid can allow further optimisation of electricity use.

Freight charging

The recent study for the Australian Renewable Energy Agency also suggested that up to 165 freight charging hubs were likely to be necessary, largely located in three core location types – freight centres, freight nodes and heavy vehicle rest stops (figure 4.1).[12]

Figure 4.1 – Key freight HZEV charger locations

Freight centres	Freight nodes	Heavy vehicle rest stops
Depots at or near distribution hubs and major warehouses. Will support a diverse array of trucks and business models, so charger types expected to vary.	Ports, airports and intermodal terminals. Will generally require level 3 chargers to support rapid and opportunistic charging – for example, while vehicles queue.	Heavy vehicle rest areas and highway service centres. Will generally require level 3 chargers to support rapid and opportunistic charging – for example, during short driver rest breaks.

Source: AECOM (2025).

Since urban freight has the best short-term electrification prospects and is expected to rely more on depot charging than en-route charging (e.g. at heavy vehicle rest stops) or destination charging (e.g. at freight nodes or more significant freight centres) (figure 4.2), freight centres are likely to be the initial focus of the charging rollout.

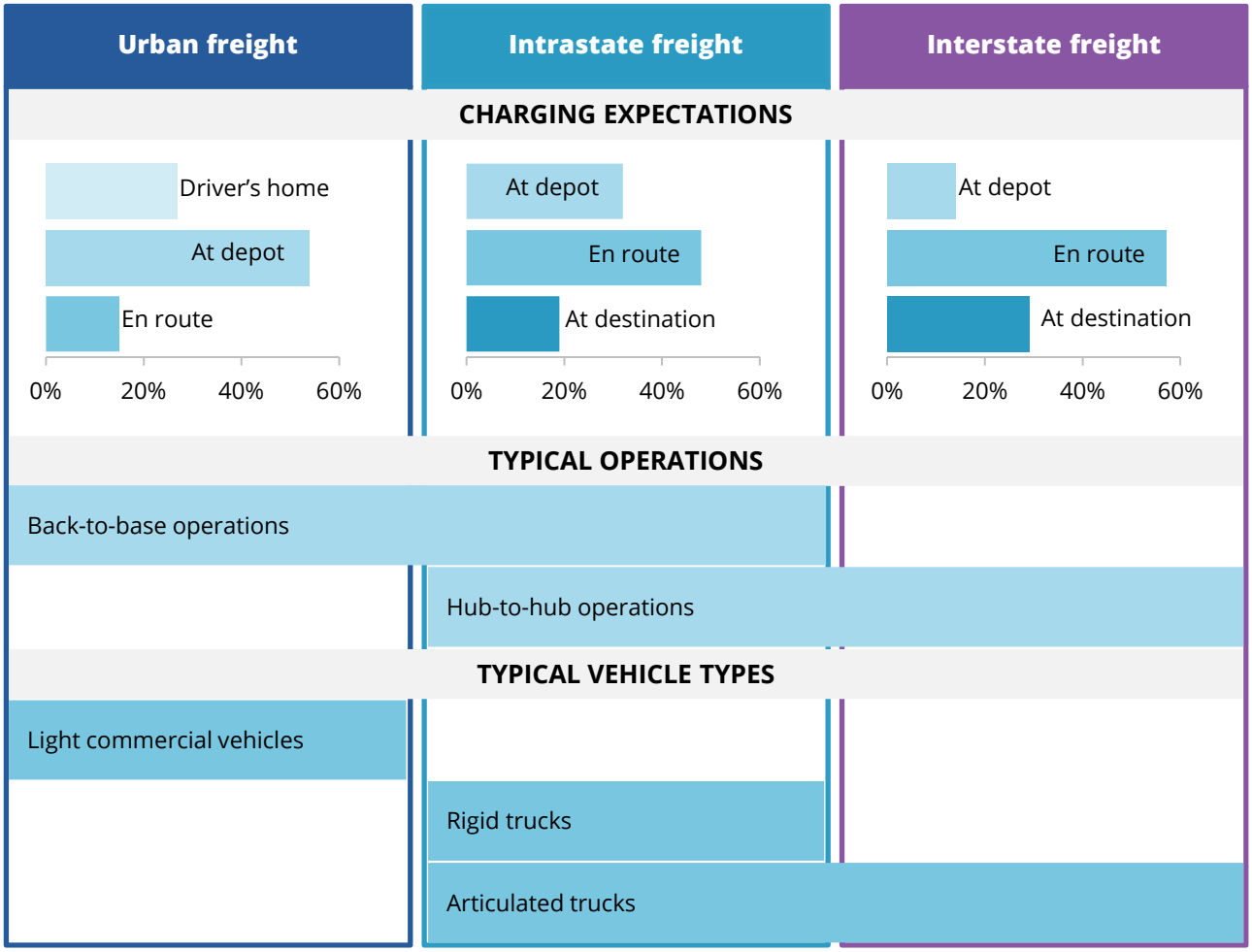
However, the ongoing innovation in HZEVs, charging technology and fleet management may lead to other solutions. For example, Janus Electric, a NSW-based start-up, opened a battery swap station in 2024 in the Moorebank Intermodal Precinct in Sydney (Hill 2024). Battery swapping offers an alternative to the need for rapid charging at freight nodes such as intermodal terminals. Where practical, this chapter strives for regulation to be technologically neutral so that market forces determine which technology most efficiently decarbonises the freight sector.

Bus charging

Depot charging has emerged as the dominant model for HZEV bus fleets, reflecting the more limited diversity in operating models compared with HZEV freight vehicles. An exception is the Brisbane Metro bus fleet, which charges both slowly at its depot and rapidly at end-of-route locations (Brisbane City Council 2025b).

[12] The PC has interpreted this to mean both 'heavy vehicle rest areas', which are generally provided by state and territory governments on a non-commercial basis, and 'highway service centres' (or the equivalent term in the relevant state/territory), which are commercial facilities that often feature service stations and food and beverage vendors.

Figure 4.2 – Charging requirements will vary across freight types



Charging expectations statistics are based on stakeholder input to AECOM (2025).

Source: Based on AECOM (2025).

4.2 Grid connections are challenging but largely not for administrative or regulatory reasons

Many participants raised connecting to the grid as a key challenge for rolling out HZEV charging infrastructure, with delays of several years not uncommon (Australian Industry Group, sub. 15, p. 6; Electric Vehicle Council, sub. 18, p. 12; NHVR, sub. 4, p. 22; Team Global Express, sub. 8, pp. 8–9).

The primary issue is that electricity distribution networks sometimes do not have adequate capacity to support high-powered HZEV charging, so costly and time-consuming network augmentations are required. While energy regulation influences how future network capacity is provisioned for and how network augmentations are funded, these issues have wide application to new industrial scale load use and are beyond the scope of this study (box 4.2).

While less significant, reviews have identified two administrative barriers related to grid connections that warrant action.

- Unclear and inconsistent guidance for connecting additional 'points of supply' at a site (which can be a preferred approach to establishing a grid connection) (Blunomy 2024; Oakley Greenwood 2024). Energy Networks Australia (which represents distribution network service providers) advised the PC that it had since developed guidance for distribution network service providers to facilitate a more standardised administrative approach, which providers are currently integrating into their operations (sub. 42, p. 2).
- Limited information about existing network capacity that would help guide site selection decisions. This is discussed in the next section.

Box 4.2 – National Electricity Market regulations indirectly influence grid connections

Aspects of the National Electricity Market regulatory framework can indirectly influence HZEV charging infrastructure connection costs, timing and investment incentives. Electricity distribution network service providers are subject to:

- regulation intended to prevent inefficient over-investment in their networks (AER 2020). This affects how much anticipatory investment in network capacity providers can undertake ahead of firm customer demand
- rules and guidance about how costs should be allocated when new connections trigger upgrades that may benefit later users (AER 2024). This is intended to prevent the first mover funding the upgrade in full and subsequent movers free riding, as that would disincentivise upgrades
- 'ring-fencing' arrangements that can prevent them from providing downstream services in contestable markets, such as charging infrastructure, as this might lead them to treat their own charging infrastructure preferentially (AER nd).

The Australian Energy Market Commission is currently reviewing how electricity pricing regulation interacts with consumer energy resources (AEMC 2026b).

4.3 Providing better information to guide investment

HZEV charging infrastructure is more suited to some sites than others for commercial and technical reasons. Prospective charging infrastructure owners prefer to install charging infrastructure where:

- there is an electricity distribution network nearby with ample capacity to provide the required load, as this means a connection can be established relatively quickly and at low cost
- it aligns with freight traffic patterns and modes of operation, as this allows charging to occur in a way that minimises disruption
- it complements existing charging infrastructure (whether publicly assessable or not), as this increases the demand for charging
- it is allowed by land use regulation.

Much of this information is only partly available in any format and is not available in a single location that would allow for sites to easily be compared across all criteria.

The Australian Government recently launched the Electric Vehicle Charging Infrastructure Mapping Tool (DCCEEW 2026), which was a commitment of the National Electric Vehicle Strategy to, among other things, 'inform future investment' (DCCEEW 2023, p. 27). The mapping tool is a map of Australia overlaid with information relevant to charging infrastructure investment (box 4.3). It has been designed with light EV charging in mind, which is the primary focus of the National Electric Vehicle Strategy. As such, it has not been designed to consider the needs of HZEV charging infrastructure investors.

Box 4.3 – Data contained within the Electric Vehicle Charging Infrastructure Mapping Tool

The Electric Vehicle Charging Infrastructure Mapping Tool (DCCEEW 2026) contains the following information:

- existing and planned level 3 public charging locations, including the power rating of the charger but not whether the site facilitates HZEV access
- key freight routes
- traffic volumes (annual averages with no separation by vehicle type)
- elevation (for major roads)
- postcode-level demographic information (number of people, vehicles and dwellings)
- electricity distribution network cables and transformers, and distribution network capacity at the zone substation level (a relatively coarse level, as discussed later)
- points of interest (attractions, fast food, service stations)
- local government areas and remoteness areas
- mobile network coverage for Australia's three mobile networks
- modelled region-specific demand for public EV charging out to 2034.

The mapping tool also allows some but not all data to be exported, owing to licencing arrangements. Where the data cannot be exported, users are unable to overlay other useful data (such as proprietary information on fleet use), view it in a different interface or run algorithms to choose optimal locations for charging infrastructure installations against their own criteria.

Study participants supported the interim report draft recommendation relating to improving the suitability of the mapping tool for HZEV charging infrastructure by incorporating more information relevant to HZEV charging and allowing all data to be exported (Climateworks, sub. 62, p. 3; HVIA, sub. 58, p. 6; Tesla, sub. 59, p. 4; TGE, sub. 46, p. 6; Volvo, sub. 49, p. 8). An exception was the Electric Vehicle Council (sub. 56, pp. 7–8), which called first for a review of the Electric Vehicle Charging Infrastructure Mapping Tool to address some of its limitations (relating to its current light vehicle orientation).

Our view is that data to support HZEV charging infrastructure investment should be made available in a single location and in an exportable format. This could either be through an update to the Electric Vehicle Charging Infrastructure Mapping Tool or a new HZEV-specific mapping tool. We do not have a view on whether a broader review of the Electric Vehicle Charging Infrastructure Mapping Tool (which would mostly go to its suitability for light vehicle charging) is warranted.

The following sections consider what data should be made available in this single location and in an exportable format. The initial focus should be on data relevant to electrifying buses and urban freight as this is expected to happen most quickly.

Electricity distribution network capacity

Information about electricity distribution network capacity is critical to choosing a site for HZEV charging and deciding on the number and type of chargers to install. Inadequate capacity necessitates a costly and time-consuming augmentation of the distribution network. It also leads prospective charging infrastructure owners to lodge connection applications for multiple sites and capacities with distribution network service providers in search of a suitable site and configuration (Blunomy 2024).

Previous reviews have recommended that distribution network service providers make more information about network capacity available in an easily accessible format.

- A 2024 review conducted for the Department of Climate Change, Energy, the Environment and Water (DCCEEW) recommended that distribution network service providers be required to develop 'tools or processes that allow a proponent to easily get information on the available capacity at a location and other relevant network information', but did not recommend that this necessarily be in the same format for all network service providers (Oakley Greenwood 2024, p. 17).
- Another 2024 review conducted for Energy Networks Australia led to them committing to working with distribution network service providers to provide network capacity maps (Blunomy 2024).

Both reviews considered the publicly available network capacity map provided by Essential Energy (a NSW distribution network service provider) to be best practice among distribution network service providers. This provides estimates of network capacity at the distribution substation level.

Since these reviews were conducted, DCCEEW has launched the mapping tool, which includes distribution network capacity estimates for many electricity distribution networks. However, the information is provided only at the zone substation level, which is considerably less granular than the distribution substation level. For example, figure 4.3 compares the Essential Energy map with mapping tool network capacity information for Coffs Harbour. Network capacity varies greatly within the footprint of a zone substation, so the information provided by the Essential Energy map is much more useful to a prospective charging infrastructure owner.

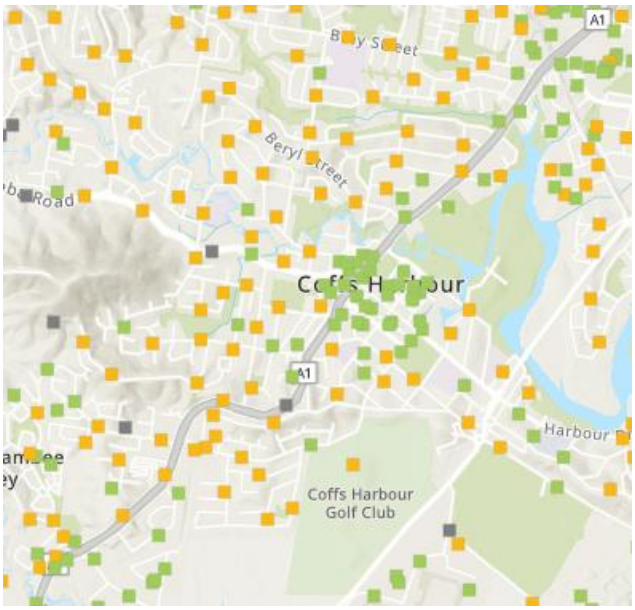
The differences between these maps are partly because, at present, Australian Government agencies cannot compel distribution networks to provide this data – but this may soon change. The Australian Energy Market Commission recently made a draft determination for a new rule that would give the Australian Energy Regulator powers to require distribution networks to publish network data, including network capacity data (AEMC 2026a). The Australian Energy Regulator has supported this aspect of the rule change throughout the process, and earlier indicated that high-voltage feeder and distribution substation-level network capacity data would likely be a priority for the new rule (AER 2025).

If the new rule is adopted, and if the Australian Energy Regulator chooses to require publication of high-voltage feeder and distribution substation-level network capacity data, DCCEEW should work with the Australian Energy Regulator to incorporate this data into either the Electric Vehicle Charging Infrastructure Mapping Tool or a new HZEV-specific mapping tool. If not, DCCEEW should continue to work with distribution networks to obtain data that is as granular as the data released by each network. Where there are differences in the level of granularity available across Australia, the focus should be on getting the most granular data possible into the mapping tool, not national consistency in granularity (which would guarantee a lowest common denominator outcome).

DCCEEW should also endeavour to make this data exportable. This will require either the agreement of the distribution networks or, if the new rule is adopted, the Australian Energy Regulator to compel that the data is reported in such a way that makes this feasible.

Figure 4.3 – The Electric Vehicle Charging Infrastructure Mapping Tool contains only coarse network capacity information

a. Essential Energy map example (dots indicate network capacity)[a]



b. Electric Vehicle Charging Infrastructure Mapping Tool example (shading indicates network capacity)

a. The dots correspond with distribution substation locations. Additional network information is available that indicates each substation's footprint.

Source: DCCEEW (2026); Essential Energy (2026).

Freight movements

Information about where HZEVs travel can indicate the demand for HZEV charging at a given site. However, the mapping tool only contains information on general traffic volumes (aggregated across all vehicle types) and on roads considered key freight routes. The National Heavy Vehicle Regulator (sub. 4, p. 23) submitted that government datasets relating to heavy vehicle operations could be used to guide investment in charging infrastructure, but this data is not currently available in the mapping tool.

Examples of the data that could be used to create layers in the mapping tool include:

- the locations and usage levels of heavy vehicle rest areas. The 'National Formal Rest Areas' dataset is publicly available and contains the locations of heavy vehicle rest stops and some basic information about their characteristics (for example, whether they have toilets and lighting). This has been combined with truck telematics data from the Bureau of Infrastructure and Transport Research Economics to estimate the frequency and lengths of stops made at each rest stop, available in map format within the National Freight Data Hub (DITRDCSA 2022)
- the locations of intermodal terminals. This dataset is publicly available and contains the locations of operational, under construction and proposed intermodal terminals (DITRDCSA 2025b)
- datasets summarising heavy vehicle movements on major roads. Examples include the Harmonised Traffic Counts dataset, which is publicly available and contains counts of the number of vehicles of each class passing traffic counter stations (DITRDCA 2024a) and truck telematics data from the Bureau of Infrastructure and Transport Research Economics

- gazetted heavy vehicle networks (roads that relevant classes of heavy vehicles can access as-of-right). This data is publicly available in government gazettes and the National Heavy Vehicle Regulator publishes it in map format (NHVR nd)
- routes commonly accessed via permit, which could be derived from permit data held by the National Heavy Vehicle Regulator. In future, this could be augmented with data from the National Automated Access System or similar systems.

DCCEEW should work with the custodians of these datasets to develop new layers in an exportable format for either the Electric Vehicle Charging Infrastructure Mapping Tool or a new HZEV-specific mapping tool.

Land use regulation

Land use regulation is a key consideration when choosing a site for HZEV charging infrastructure. It influences where HZEV charging infrastructure can be located, the types of chargers that can be used and the design of the site (box 4.4). State and territory governments or local governments (depending on the state in which they are located) have online maps that provide information on the zone a site is in and overlays that apply to it, although often this must be cross-checked with information elsewhere on the implications for HZEV charging infrastructure (section 4.4).

Box 4.4 – A primer on land use regulation

At a simplified level, land use regulation works by dividing land into zones, with each zone dictating:

- which *uses* of the land are prohibited, allowed subject to planning permission and allowed with no permission required. Uses are things like 'boarding houses', 'neighbourhood shops', 'medical centres', 'respite day care centres' and 'industrial training facilities'
- which forms of *building and works* are prohibited, allowed subject to planning permission and allowed with no permission required.[13]

Local governments have primary responsibility for land use regulation, but state and territory governments require consistency (to differing degrees) between local governments in how it is administered and apply state/territory-wide land use policies to this end.

In principle, land use regulation can be justified on the basis that it forces landowners and developers to internalise the impacts of their activities (both positive and negative) on the surrounding area, when they would otherwise have little incentive to do so. For example, heavy vehicle infrastructure could pose traffic, safety and amenity risks if people live nearby and so is not usually allowed in residential zones.

To make this information more useful, DCCEEW should work with state, territory and local governments to:

- transform existing land use mapping data into simplified HZEV charging infrastructure-relevant land use regulation information. For example, creating map layers with terms like 'charging not allowed as primary land use', 'charging allowed as primary land use with permission' and 'charging allowed as primary land use without permission'

[13] This is also regulated via building regulation, which is mostly focused on compliance with the National Construction Code.

- integrate either existing land use regulation information or this simplified HZEV charging infrastructure-relevant land use in an exportable format into either the Electric Vehicle Charging Infrastructure Mapping Tool or a new HZEV-specific mapping tool.

Recommendation 4.1
Create a heavy zero emissions vehicle (HZEV) charging infrastructure mapping tool

The Department of Climate Change, Energy, the Environment and Water should create a HZEV charging infrastructure mapping tool, either by making the existing Electric Vehicle Charging Infrastructure Mapping Tool more suited to HZEV charging infrastructure or creating a new HZEV-focussed tool. To populate the tool, it should:

- work with electricity distribution network service providers and the Australian Energy Regulator to incorporate more granular (distribution substation-level) distribution network capacity information
- work with the Department of Infrastructure, Transport, Regional Development, Communications, Sport and the Arts and the National Heavy Vehicle Regulator to incorporate information on freight locations and movements
- work with state and territory governments to incorporate information on where charging is an allowed land use (with and without planning permission)
- allow this data to be exported, where possible.

4.4 Updating land use regulation to meet the needs of HZEV charging

Outdated land use regulation can pose regulatory barriers to HZEV charging infrastructure.

Whether, in practice, land use regulation is adequately calibrated to balance the costs and benefits of different types of land use is beyond the scope of this study. Instead, our focus is on how land use regulation has not yet adapted to consider HZEV charging infrastructure, which creates uncertainty for prospective infrastructure owners and leads to unnecessary processes and associated administrative burdens.

Ambiguities in whether land can be used for HZEV charging

Whether land can be used for HZEV charging can be unclear. As the Australian Local Government Association acknowledged, 'charging infrastructure for heavy vehicles is a new land use category in most planning schemes' (sub. 33, p. 11).

There are two issues, each relating to the different ways in which land can be allowed to be used for HZEV charging.

The first issue is that the circumstances in which charging can be considered a secondary/ancillary use of land are unclear. Whether charging is considered primary or secondary/ancillary is critical for determining how land use regulation applies to it. In general, primary uses need to be allowed in the zone but secondary/ancillary uses do not. Charging is more likely to be secondary/ancillary if the land is used as a fleet's base, the charging infrastructure is used only by the site's owners, or significant other freight activities take place (such as at a freight node or distribution centre), but these lines are not especially clear-cut. The

PC has heard in consultations that local governments have typically erred on the side of considering charging ancillary, but this may change as more substantial charging operations become the norm.

The second issue arises if charging is to be a primary use of the site. This requires it to fall within the definition of an allowed 'use' of the site as dictated by the zone in which it is located. But many land uses in which charging may be desired – those related to bus depots, freight centres, freight nodes and heavy vehicle rest stops – are defined in ways that do or may not include charging, as most were created and defined prior to the electrification of road vehicles (table 4.2). As an example of an ambiguous case, the City of Sydney considered Zenobe's dedicated electric delivery truck charging facility that opened in late 2025 to be a 'truck depot', defined as 'a building or place used for the servicing and parking of trucks, earthmoving machinery and the like'. In this case, the definition of 'servicing' was interpreted to include charging (Zenobe 2024) – but this interpretation is not binding.

Table 4.2 – Many relevant land use terms do not allow vehicle charging as a primary activity

State or territory	Definition allows vehicle charging as a primary activity	Definition does not or may not allow vehicle charging as a primary activity
New South Wales	Highway service centre, service station	Car park, freight transport facility,[b] local distribution premises, passenger transport facility,[b] port facilities, truck depot,[b] warehouse or distribution centre
Victoria	Car park,[a] service station[a]	Freeway service centre, transport terminal, vehicle store, warehouse
Queensland	Service station	Parking station, transport depot, warehouse
Western Australia	Freeway service centre,[a] road house[a]	Car park, commercial vehicle parking, service station, transport depot, warehouse/storage
South Australia	Retail fuel outlet[a]	Heavy vehicle parking, store, warehouse
Tasmania	Vehicle fuel sales and service	Storage, transport depot and distribution, vehicle parking
Australian Capital Territory	Land management facility, municipal depot,[a] service station[a]	Car park, freight transport facility,[b] transport facility, warehouse
Northern Territory	Service station	Car park, transport terminal,[b] warehouse

a. Definition has been altered to explicitly allow vehicle charging. **b.** Definition allows for vehicle 'servicing'.

Source: Northern Territory Planning Scheme 2020; Planning and Design Code (SA); Planning and Development (Local Planning Schemes) Regulations 2015 (WA); Planning Regulation 2017 (Qld); Standard Instrument – Principal Local Environmental Plan (2006 EPI 155a) (NSW); Tasmanian Planning Scheme; Territory Plan 2023 (ACT); Victoria Planning Provisions.

To provide more clarity, state and territory governments have amended the definitions of some uses to explicitly allow electric vehicle charging. The Western Australian Government has amended the definition of 'freeway service centre' (and therefore 'road house', which refers to it) to allow EV charging. The Victorian and the ACT Governments have amended the definition of 'service station' to allow charging, as has the South Australian Government for its equivalent 'retail fuel outlet'. And the Victorian Government amended the definition of 'car park' to allow charging, but this was likely made with

passenger EV charging in mind, as car parks present a convenient opportunity for charging passenger EVs but less so HZEVs. But even in these jurisdictions, charging remains mostly outside the definitions of freight centre, freight node and heavy vehicle rest stop land uses.

Both issues could be addressed by state and territory governments amending the definitions of land use terms that describe bus depots, freight centres, freight nodes and heavy vehicle rest stops to explicitly allow for electric vehicle charging to occur at those sites. If state and territory governments wished to prevent the risk that this allows some of these uses to facilitate large-scale public EV charging sites with little or no connection to the broader freight- or bus-related use, they could define these uses to allow for charging of vehicles that use the broader facility without limiting charging as necessarily secondary/ancillary. Changing land use definitions in this way would be unlikely to impose significant *additional* negative impacts on the surrounding area, as heavy vehicles already routinely come and go from the sites, and HZEVs are generally quieter than internal combustion engine vehicles. This approach – a draft recommendation of the interim report – was supported by inquiry participants (Climateworks, sub. 62, p. 3; HVIA, sub. 58, p. 6; TGE, sub. 46, p. 6).

Amending land use definitions in this way would also align with how land use regulation has adapted to other new land uses. As discussed earlier, the Victorian, Western Australian, South Australian and ACT governments have already redefined some land use terms to accommodate charging in a similar way. And in 2021 NSW Government reforms to align land use regulation with data centres, which involved creating a new land use term ('data centre') and explicitly including data centres within the definition of 'high-technology industry' (NSW Government 2023).

Alternatively, state and territory governments could undertake broader reforms to reduce the prescriptiveness of land use regulation, as the PC has recommended in the past (PC 2017b).

Unnecessarily restrictive exemptions from planning permission for charging infrastructure

Some of the HZEV charging infrastructure rollout will involve relatively simple retrofits of existing freight sites with chargers, including depots and common destinations for last-mile deliveries like supermarkets. Many state and territory governments have exempted charging infrastructure installations from requiring planning permission, but sometimes in ways that are not amenable to HZEV charging.

- The NSW Government has exempted charging infrastructure installations from requiring planning permission when installed in 'bus depots', 'car parks', 'car washing facilities', 'highway service centres', 'public administration buildings', 'road maintenance depots' and 'service stations' (State Environmental Planning Policy (Transport and Infrastructure) 2021, s. 2.124D (NSW)). Elsewhere, charging infrastructure installations are generally exempted from requiring planning permission only when the unit is installed in or adjacent to a parking space associated with a building. Except for 'bus depots', 'highway service centres' and 'service stations', the land uses for which the more general exemption applies to do not facilitate HZEV charging, and many land uses that could are excluded, such as 'freight transport facilities', 'transport depots' and 'truck depots'. For example, Zenobe's electric delivery truck charging facility described earlier required planning permission to install chargers because it was considered a truck depot (Zenobe 2025).
- The Tasmanian Government has exempted the provision and maintenance of electric vehicle chargers from requiring planning permission if in a 'car park', which might limit its relevance to HZEV charging (Tasmanian Planning Scheme – State Planning Provisions, s. 4.2.9).

- The ACT Government has exempted electric vehicle 'charging points' installations from requiring planning permission provided that each individual charging point (including associated equipment) falls below a size threshold. This is easily manageable for passenger EV chargers but less so for more powerful HZEV chargers (Planning (Exempt Development) Regulation 2023, s. 1.140 (ACT)).
- The WA Government does not have a specific charging infrastructure planning permission exemption, but has issued a position statement clarifying the circumstances in which more general exemptions create an exemption for charging infrastructure installations (Western Australian Department of Planning, Lands and Heritage 2024). These are generally unsuited to HZEV charging – they require the charging infrastructure to be associated with a residential building or to be contained within a building/structure.

By contrast, the Victorian Government adopted an exemption that is more amenable to HZEV charging – it has exempted charging infrastructure installations from planning permission in any location with the provisos that it must not be visible from the street if a heritage overlay applies and that the exemption is void if the local planning scheme specifically requires planning permission for charging infrastructure installations (Victoria Planning Provisions, s. 62.02-2).

These issues could be addressed by all states and territories (including those which have no exemption from planning permission for charging infrastructure in place[14]) either adopting a broad exemption like the Victorian Government's or a limited exemption with the negative impacts on the surrounding area that the limitation aims to address clearly explained and based in evidence. Any assessment of the need for such a limitation should also consider potential negative impacts on innovation and investment. This approach – a draft recommendation of the interim report – was supported by inquiry participants (Climateworks, sub. 62, p. 3; HVIA, sub. 58, p. 6; TGE, sub. 46, p. 6). Based on feedback from inquiry participants, the PC estimates that this would reduce regulatory costs by about $5,000 to $15,000 per site (where there is not already an exemption in place) (box 4.5).

Note that such an exemption would not automatically allow land to be converted into a major HZEV charging hub without planning permission, as the exemption would not allow for changes in land use. Any requirements for building permits would also still apply, which would address issues like fire safety.

Box 4.5 – Regulatory cost savings from extending planning permission exemptions

The PC estimates that its recommended extension of planning permission exemptions for HZEV charging infrastructure would reduce regulatory costs by about $5,000 to $15,000 per site (where there is not already an exemption in place). This estimate is based on feedback from Patrick, ANC and Team Global Express.

Patrick reported that, in relation to its installation of two dual-port DC fast chargers at the Fremantle Port (ARENA 2025b), it incurred $6500 in planning permit application and review costs, plus an additional $10,000 in drawing and electrical load demand designs (Patrick, pers. comm., 25 May 2026). It is likely that at least some of the electrical load design work costs would have been incurred as part of the electrical network connection process. Therefore, the PC estimates a

[14] The South Australian Government has legislated to exempt charging infrastructure installations from planning permission from 1 July 2026 provided they meet yet-to-be-determined standards (PlanSA 2025).

Box 4.5 – Regulatory cost savings from extending planning permission exemptions

regulatory cost saving in the range of $6500 to $16,500 had a planning permission exemption for the charger installation been in place.

ANC reported that, in relation to its depot charger installations (ARENA 2025a), it generally incurred costs of $5,000 to $25,000 or more per depot on planning permit fees and supporting studies, network connection applications and assessments, landlord consents and electrical design work (ANC, pers. comm., 16 June 2026). It is likely that at least some of the network connection applications and assessments, landlord consents and electrical design work costs would have been incurred if no planning permits had been required.

Team Global Express provided more general advice on costs of approvals, design, engineering and compliance for depot electrification upgrades of various sizes – $5,000 to $20,000 for small depots, $20,000 to $80,000 for medium depots and $80,000 to $300,000 for large depots (Team Global Express, pers. comm., 7 May 2026). It is likely that the medium and large depot works to support charger installation go beyond what a planning permission exemption could reasonably cover, making the small depot upgrade scenario (covering 2–6 AC chargers) more reasonable to focus on here. The costs reported also include some costs that would likely be incurred if no planning permit were required, such as electrical design certification costs and fire engineering reviews, but these are likely to be less prominent for the small depot upgrade scenario.

In its submission, Team Global Express noted that the planning approvals process to electrify its Bungarribee depot in NSW was streamlined and reasonable, and the costs were less than $50,000 (TGE, sub. 46, p. 6). The scale of the works involved to electrify this depot would likely go beyond the intent of the planning permission exemptions recommended in this report.

Recommendation 4.2
Adapt land use regulation to heavy zero emissions vehicle charging infrastructure

State and territory governments should alter the definitions of land uses that cover bus depots, freight centres, freight nodes and heavy vehicle rest stops to explicitly allow for electric vehicle charging on land used in this way.

State and territory governments should exempt the installation of charging infrastructure from requiring planning permission where it is consistent with existing land use provisions. To the extent that jurisdictions apply conditions to manage any public impact, these should be balanced against potential impacts on innovation and investment.

4.5 Heavy vehicle rest areas warrant special attention

There is an emerging gap between the expectation that HZEV charging infrastructure will be installed in heavy vehicle rest stops (section 4.1) and the policies and guidelines governing state and territory government-provided rest areas – a key type of rest stop.

- Many state and territory governments' guidelines for heavy vehicle rest areas make no reference to charging infrastructure, even when issued or revised in recent years – for example, Western Australia's 2023 policy and guidelines for rest areas on main roads and highways and Tasmania's 2020 heavy vehicle driver rest area strategy do not mention charging at all, and the Northern Territory's 2022 rest facilities strategy makes only a passing reference to it (Main Roads WA 2023; Northern Territory Department of Infrastructure, Planning and Logistics 2022; Tasmanian Department of State Growth 2020).
- Austroads' 2019 guidelines for the provision of heavy vehicle rest areas, which are intended to assist road managers across Australia to plan, design and prioritise heavy vehicle rest areas (and are often referenced in state-level guidance), make only a passing reference to charging infrastructure (Austroads 2019).
- The Australian Government's Heavy Vehicle Rest Area initiative, which funds the construction of new and upgraded rest areas, makes no reference to charging infrastructure in its guidelines (DITRDCA 2024b).

Unlike the other locations at which HZEV charging infrastructure is expected, state and territory government-provided heavy vehicle rest areas are on public land and do not operate on a commercial basis. The absence of a policy to facilitate charging in these locations, where economically viable, acts as a quasi-regulatory barrier to installing charging infrastructure. Tesla described the situation as follows:

> Currently, when Tesla approaches local or state authorities to install infrastructure at government-owned sites, the lack of precedent often causes road managers to recoil. Without an established process, authorities default to risk-aversion, leading to ad-hoc, protracted, and often prohibitive negotiations. (Tesla, sub. 59, p. 4)

To ease this barrier, two changes are necessary – rest area design should consider the potential for charging infrastructure, and state and territory governments should adopt clear and efficient policies for contracting with charging infrastructure owners. These are discussed in turn.

Designing rest areas to support charging infrastructure

Austroads should update its guidelines for the provision of heavy vehicle rest areas to reflect future HZEV charging infrastructure needs. The revised guidelines should include:

- updated site selection guidance to consider proximity to electricity network infrastructure (especially where there is sufficient existing capacity to support charging infrastructure) and proximity to other publicly accessible HZEV charging infrastructure
- charging bay design considerations, including support for charging infrastructure up to the new megawatt charging system – suggested by Volvo (sub. 49, p. 8).

Importantly, these new considerations should be balanced against additional costs they entail and the myriad other factors that influence rest area design and placement. There will not be adequate demand for charging infrastructure at most rest areas. There are over 2,000 heavy vehicle rest areas across Australia (PC estimates based on DITRDCA 2026), while AECOM (2025) envisages freight electrification requiring up to 165 freight charging hubs (including those not in rest areas) in coming

decades. Supply-side issues will also have an impact – many rest areas are not located near electricity network infrastructure, making charger installation prohibitively expensive.

The Australian Government should further support these guidelines, once completed, by altering the Heavy Vehicle Rest Area initiative funding guidelines to require applicants to demonstrate that they have considered the HZEV charging infrastructure aspects of the guidelines. This alteration should note, consistent with the information above, that in most cases there will not be a need to cater to HZEV charging infrastructure.

Developing clear and efficient policies for contracting with charging infrastructure owners

State and territory governments should do more than just adopt this updated guidance from Austroads when it is available. They should develop policies and guidance for contracting with charging infrastructure owners, including standard contractual terms and pricing principles.

These policies should reflect the intent that this charging should generally operate on a commercial basis, especially as the market matures. They should:

- specify that leases will be set at market rates and with charging infrastructure owners permitted to charge market rates for charging
- protect the core fatigue-management function of rest areas from excessive encroachment of commercial charging[15]
- foster competition between charging infrastructure owners by considering the impacts on competition for charging when establishing leases
- impose less restrictive conditions on charging infrastructure owners for issues like maintenance and minimum uptime than when contracting non-commercial charging services (as charging infrastructure owners' right to set market rates should incentivise this)
- mandate that charging be publicly accessible to promote competition between heavy vehicle operators.

To invite investment, state and territory governments should publish lists of rest areas most suited to charging infrastructure investors, drawing on compliance with Austroads' updated guidelines when they become available.

While beyond the scope of this study, state and territory governments could additionally consider contracting charging infrastructure owners to provide charging services on a non-commercial basis at some rest areas where there is clear public benefit but insufficient commercial incentive.

[15] While beyond the scope of this study, state and territory governments could consider allowing or even requiring charging infrastructure owners to invest in improving rest area amenities, as was suggested by UNSW Canberra (sub. 52, p. 8).

Recommendation 4.3
Facilitate private investment in HZEV charging infrastructure in heavy vehicle rest areas

Austroads should update its *Guidelines for the Provision of Heavy Vehicle Rest Area Facilities* to include HZEV charging infrastructure considerations, such as by adding charging bay design considerations and proximity to electricity networks as a site selection criterion.

State and territory governments should reflect these changes in their guidance, and the Department of Infrastructure, Transport, Regional Development, Communications, Sport and the Arts should require applicants to demonstrate that they have considered the HZEV charging infrastructure aspects of the guidelines as a condition of receiving funding under the Heavy Vehicle Rest Area initiative.

State and territory governments should also develop policies and guidance, such as standard contractual terms, that allow charging infrastructure owners to install and operate HZEV charging infrastructure in heavy vehicle rest areas on commercial terms.

5. Heavy vehicle curfews

Key points

- **Curfews arise from two sources – local traffic controls that restrict truck traffic through specified roads, and conditions imposed in planning permits that restrict delivery hours to and from businesses.**
  - Local traffic controls are almost exclusively found in Victoria.
  - Planning restrictions appear more widespread, though it is unclear how common they are.
- **Heavy zero emission vehicles (HZEVs) are quieter than internal combustion engine vehicles. As such, HZEVs should be exempted from noise-based curfews.**

5.1 Curfews apply unevenly across Australia

There are two main types of curfews

The request for advice asks the Productivity Commission to consider 'reducing or removing curfews[16] for heavy zero emission vehicles (HZEVs)':

> As HZEVs are quieter than Internal Combustion Engine (ICE) heavy vehicles, a reduction or removal of curfews of HZEVs would allow them to operate during non-standard business hours when there is less congestion and freight transit times can be reduced.

The motivations behind curfews were not always clear and transparent (2016, p. 59). Time-based restrictions on heavy vehicle activity may exist for several reasons,[17] including:

- mitigating the impact of heavy vehicle travel noise
- mitigating the impact of loading dock noise (or other amenity impacts such as light or vibration)
- protecting community safety
- managing congestion
- managing road maintenance (Australian Local Government Association, sub. 33, p. 12).

[16] Governments do not explicitly call regulation in this area a 'curfew'. This study has used the term to remain consistent with the request for advice.

[17] Pollution reduction is sometimes cited as a reason for curfews (Australian Logistics Council, sub. 10, p. 5), but their effect on pollution is uncertain. Curfews generally do not reduce total pollution; they mainly shift when emissions occur. If curfews move travel away from congested periods, they may reduce pollution by cutting idling time. However, if they force heavy vehicles to operate during peak periods, they may increase time on the road and associated emissions.

The main distinction between HZEVs and other vehicles that would justify differential treatment with respect to curfews is that HZEVs are quieter (section 5.2). Therefore, for the purpose of this study, a 'curfew' is a time-based restriction that:

- is at least in part for the purpose of mitigating the impact of noise. In practice, restrictions that aim to mitigate noise impacts may also be motivated by preserving other aspects of neighbourhood amenity – in particular, protecting community safety is sometimes cited as a justification.
- prohibits heavy vehicle activity rather than prohibiting noise directly, as this would prevent HZEV activity even if sufficiently quiet (motivating the policy question of whether to exempt or differentially treat HZEVs). This distinction is illustrated in box 5.1.

There are two main types of curfews[18] (box 5.1).

- Local traffic controls that restrict heavy vehicles from driving on specified roads at night ('through traffic' restrictions, which apply to vehicles passing through the area, rather than stopping in it). These controls are administered by state/territory or local governments, depending on the road. They apply to all heavy vehicles above a specified weight limit (including general access vehicles).
- Local government planning restrictions set out in planning permits, which restrict overnight truck deliveries to and from premises such as supermarkets or shopping centres.

Some jurisdictions apply time-based restrictions on truck travel that are not designed to manage noise impacts and so would not be considered curfews for the purposes of this study. For example, Tasmania imposes some time-based restrictions on Oversize and Overmass vehicles, or longer vehicles, that are related to safety and congestion (Tasmanian Government, sub. 34, p. 6).

Presently, no type of curfew distinguishes between internal combustion engine vehicles and HZEVs.

Box 5.1 – Examples of curfews and non-curfew restrictions

Curfews on through-traffic in Melbourne's northeast

On their way to and from the Metropolitan Ring Road and Eastern Freeway, trucks often travel through some major and local roads in the Banyule and Nillumbik municipalities in Melbourne's northeast.

To address the impact of truck noise and emissions on local communities, a cluster of curfews was introduced near the eastern exit of the Metropolitan Ring Road (applying on, for example, sections of Rosanna Rd and Lower Plenty Rd) in August 2015, initially as part of a 12-month trial that prohibited vehicles weighing over 4.5 tonnes from travelling between 10pm and 6am. After the trial period elapsed, these restrictions were retained, though weight limits were relaxed to prohibit only trucks over 16.5 tonnes.

[18] Amenity-based curfew conditions could also, in theory, be placed on individual heavy vehicle permits for Restricted access vehicles under the NHVL, prohibiting activity outside of the pre-approved network – for example, deliveries to a distribution centre. These would be imposed by local road managers. However, these are unlikely to be material. The PC has yet to find a concrete example of amenity conditions applied to a heavy vehicle permit, and the Electric Vehicle Council (pers. comm., 28 January 2026) noted that curfews were 'overwhelmingly enforced via planning permits at the LGA level'.

Box 5.1 – Examples of curfews and non-curfew restrictions

Restrictions on night-time truck activity in local government planning permits

Curfews on heavy vehicles that apply regardless of noise

A planning permit for a new shopping centre and supermarket to be developed on 33 Albion Rd/70 Hudson Rd, issued by the Brisbane City Council, requires that 'hours of operation for the approved centre activities, including deliveries, must be within 6am to 10pm'.

While the intention of this clause may be (at least in part) to reduce impacts to surrounding homes and businesses, the restriction applies irrespective of the level of noise generated by a vehicle. This would therefore be considered a curfew for the purpose of this study.

Non-curfew restrictions on heavy vehicles that are based on noise level

A planning permit, issued by the Victorian Department of Transport and Planning, for the Coles at 158-163 High Street, Belmont, stipulates that:

> The noise from the operation of a truck-mounted refrigeration unit must not be audible within a habitable room of any residence (regardless of whether the door or window to the habitable room is open) during the following hours:
> a) 10pm – 7am Monday to Saturday
> b) 10pm – 9am Sundays and public holidays

As this restriction is based on the level of noise produced, HZEVs can already be used if they are sufficiently quiet. This would not be considered a curfew for the purposes of this study.

Sources: Brisbane City Council (2025a); VicRoads (2017); Victorian Department of Transport and Planning (2024, p. 8).

In addition to curfews, there are broader regulations that aim to limit the effects of truck noise. For example, noise-sensitive areas may install road signage that advises drivers to reduce vehicle noise (South Australian Department of Infrastructure and Transport 2025). Jurisdictions' environmental protection laws may also prohibit business activity making unreasonable noise, which could be from deliveries by heavy vehicles. For example, Victorian noise laws prohibit commercial premises from making an 'unreasonable' amount of noise, defined as that which either:

- exceeds certain noise levels (which depend on the time of day the noise occurs and whether there are noise-sensitive areas nearby) (Environmental Protection Authority Victoria 2026)
- has certain qualities – high volume and intensity; occurring frequently or for a long time; or having an 'annoying' character (such as high-pitched screeching) (Victorian Chamber of Commerce and Industry 2023).

Curfews impose costs on operators and the broader community

By restricting terms of operation, curfews impose costs on transport operators (figure 5.1).

Operators may respond to a curfew by:

- travelling during the day when roads are more congested. Through-traffic curfews may also cause operators to substitute towards non-curfewed roads (which may be more congested), even if they still choose to travel at night
- reducing the number of trips they take.

Substitution towards more congested roads increases travel times, fuel costs and emissions for both heavy vehicle operators and other road users. This can exacerbate congestion and queueing in centralised places like ports.

Curfews may also impose costs on businesses by reducing operational efficiency.

- Curfews restrict the window of time in which deliveries can occur. Time-pushed businesses must either fit deliveries into the allowed time or forego them altogether.
- Restricting how early in the morning a business can receive a delivery may make it more difficult to stock shelves in time for opening (IKEA, sub. 37, p. 11).
- Forcing deliveries to take place during set times also precludes electric vehicle operators from charging when optimal (for example, when electricity costs are low or there are opportunities to draw down from solar), or to help manage periods of peak electricity demand.

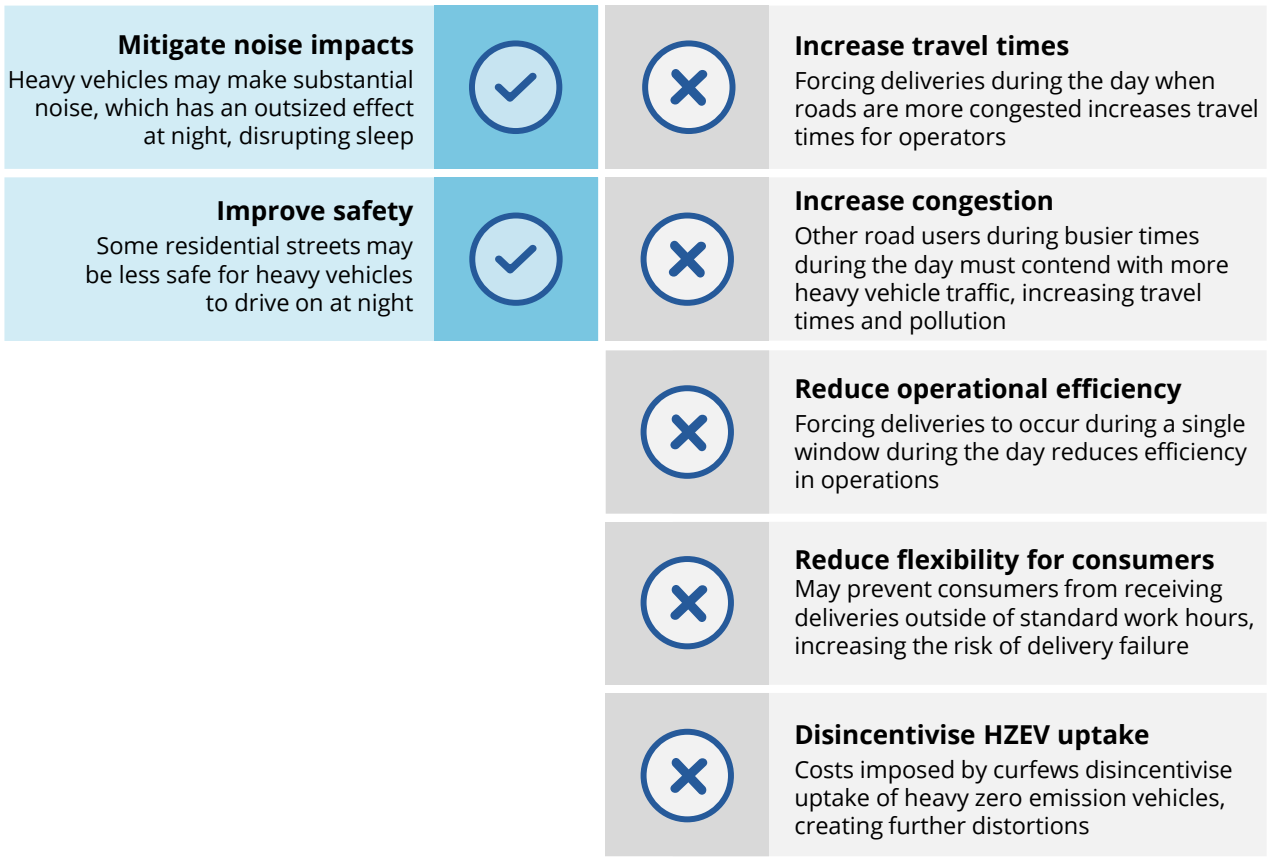
There may also be other reasons why it is desirable to travel at night – for example, when transporting rural and livestock freight, travelling when it is less hot may be critical for animal welfare and cold-chain integrity (keeping temperature-sensitive items cool and reducing risk of spoilage) (Australian Livestock and Rural Transporters Association, sub. 19, p. 28).

Where operators make outbound deliveries, curfews may also effectively restrict the times at which the end consumer can receive a delivery (as operators need to complete their routes and be back at their original location before the curfew begins). This may restrict deliveries outside of standard work hours in the evening (Team Global Express, sub. 8, p. 11) and increase the risk of failed deliveries if consumers must be present to receive them (Tesla, sub. 20, p. 4).

Unless HZEVs are exempt, curfews can also discourage investment in HZEVs. The Electric Vehicle Council submitted the case of ANC Delivers who runs a fleet of HZEVs. The Electric Vehicle Council estimated the costs of curfews to be $100 to $150 per vehicle per day, mostly comprising additional travel times from congestion during peak times (Electric Vehicle Council, sub. 56, p. 12). Other costs included inefficiencies from needing to compress routes into a single daytime window, higher re-delivery rates as some customers are unavailable during the day, and asset underutilisation (Electric Vehicle Council, sub. 56, p. 12). The Electric Vehicle Council said that the potential benefits of lifting curfews would be 'sufficient to fund approximately 80% of the current [total cost of ownership] gap between electric and diesel vehicles on dense urban delivery routes' (sub. 56, p. 13).

Curfews should be imposed only when the benefits outweigh the costs. The suitability of differentially treating HZEVs depends on whether they address the primary legitimate concern for curfews – noise impacts from truck movements (section 5.2). Safety concerns, while potentially justifiable, are likely better addressed through mechanisms other than curfews.

Figure 5.1 – Costs and benefits of curfews: a summary



Through-traffic controls are rare, and it is unclear how common local planning restrictions are

Curfews in the form of through-traffic controls appear to exist almost exclusively in Victoria (attachment 5.1, table 5.2). Victorian curfews are displayed on the National Heavy Vehicle Regulator (NHVR) access map (Victorian Department of Transport and Planning, pers. comm., 16 March 2026). Outside of Victoria, however, the PC is only aware of one other such curfew, which applies to Queensport Road South in Brisbane. Some jurisdictions have confirmed that they do not have these curfews, and even in jurisdictions where there is a legal basis for them to exist, the PC is not aware of any that do.

Curfews in the form of planning restrictions appear to exist to some extent in all jurisdictions. However, it is less clear how common they are (as there is no centralised list of these restrictions, and the documents specifying most are likely not publicly available). That said, there is some evidence to suggest that they may be relatively common in residential areas. Planning controls that prohibit overnight deliveries to and from supermarkets and shopping centres appear commonplace in South Australia (Government of South Australia 2024). The Electric Vehicle Council (pers. comm., 28 January 2026) said that while commercial facilities (such as distribution centres in industrial precincts) tend not to be subject to curfews, most retail premises (even those in large shopping centres, far from homes) have noise restrictions or curfews embedded as a condition of their local government planning approval.

5.2 Some curfews may not be fit for purpose in light of new technology

HZEVs are quieter

Curfews are typically imposed at night due to heightened noise sensitivity. Loud or intermittent noises have a greater negative impact at night than during the day. The ambient level of noise is lower, and these noises can disrupt sleep, which can contribute to a range of health issues (Basner and Smith 2023).

HZEVs are significantly quieter than their internal combustion engine counterparts in many respects. Manufacturer sound tests indicate that HZEVs produce less noise, especially at the low speeds relevant for deliveries in residential areas (box 5.2).

Box 5.2 – Tests show electric trucks are quieter than internal combustion engine trucks

Decibels (dB) measure sound intensity in such a way that a 10 dB increase in the intensity of sound is perceived by humans as being roughly twice as loud.

A-weighted decibels (dB(A)) take into account that human hearing is most sensitive to mid-range frequencies and less sensitive to very low or very high frequencies. A-weighting reduces low-frequency and very high-frequency contributions because we perceive them as quieter. Like unweighted decibels, a 10 dB(A) increase translates into a sound that is perceived as roughly twice as loud.

Example of relative sound levels of a HZEV and Internal Combustion Engine vehicle – MAN sound test

	MAN eTruck (HZEV)	MAN TGX 18.510 (Internal Combustion Engine vehicle)	Difference
Reverse (with/without warning tone)	47.8/45.7 dB(A)	60.9/60.1 dB(A)	**-13.1/14.4 dB(A)**
Accelerated pass by[a]	50.4 dB(A)	62.4 dB(A)	**-12 dB(A)**
Smooth ride (20 km/h)	48.9 dB(A)	54.7 dB(A)	**-5.8 dB(A)**
Smooth ride (30 km/h)	52 dB(A)	56 dB(A)	**-4 dB(A)**

The trucks used were tractor units with a gross weight of 40 tons. Calibrated hand-held sound level meters were set up on the right and left of the carriageway, each at a distance of 7.5 metres. **a.** This refers to a manoeuvre where a truck driver increases speed to overtake another vehicle.

Sources: Engineer Fix (2025); NoiseMeters Inc. (nd); Truckpages (2023); US National Institute on Deafness and Other Communication Disorders (2025).

Other truck manufacturers have performed comparable studies, yielding similar results. For example, Volvo's electric trucks sound roughly half as loud as a traditional truck (the electric trucks reach a drive-by noise level of 69 dB(A) compared to 79 dB(A) for a traditional truck) (The Driven 2022).

HZEVs may still generate noise from loading and unloading and from sources such as reversing warning systems (Local Government Association of South Australia, sub. 14, p. 8). These tend to occur when making deliveries and are therefore most relevant when assessing delivery curfews. Refrigeration unit noise for temperature-controlled vehicles is sometimes cited as another source of noise. However, the Electric Vehicle Council (sub. 18, p. 18) said that:

> Industry practice is for drivers to often 'idle' their engine while unloading, contributing to noise pollution. In particular, a refrigerated goods vehicle would typically power its auxiliary/refrigeration units from the diesel motor, leading to extended periods of idling and persistent low-level engine noise. In contrast, heavy EVs draw auxiliary power directly from the on-board batteries, silently.

To the extent that warning systems noise poses an issue, there may be technological solutions. For instance, beeping from standard tonal reversing alarms could be replaced by broadband alarms. These alarms produce a 'pssh-pssh-pssh' sound over a range of frequencies (WorkSafe Western Australia 2024) that is targeted more directly at those in the hazard zone and is less disruptive to others nearby. They may also be able to adjust their volume based on surrounding noise levels, so are only as loud as needed (Australian Warning Systems nd). Alternatively, sensors could be used to ensure safety – these detect objects or people behind the vehicle and alert the driver (and which may activate an alarm only when a person or obstacle is detected).

Vehicles that employ these alternatives could, for example, be treated more favourably with regard to curfews (under a performance-based standards approach – discussed below). However, any attempt to manage noise levels in this way may also require changes to the broader regulatory environment. For instance, some level of vehicle noise is currently mandated by a new Australian Design Rule, which requires new electric, hybrid and hydrogen fuel cell cars, trucks and buses to be fitted with an Acoustic Vehicle Altering System. This issues a safety alert or sound when an electric vehicle is travelling at low speeds in car parks, intersections and driveways to improve safety for pedestrians as there is little natural vehicle noise (Victorian Department of Treasury and Finance, sub. 28, p. 17). While such regulations serve a legitimate purpose, if the noise they require to be generated is deemed unacceptably loud for residential areas at night, alternative regulatory solutions could be employed (such as allowing less disruptive safety features like broadband alarms) that maintain safety while still allowing HZEVs to remain quiet enough to be exempted from curfews.

Safety concerns could be managed through other means

Community safety is sometimes cited as a justification for curfews on the basis that some streets are particularly unsafe to travel through at night due to poorer visibility. There is evidence to suggest that poor street lighting on local roads increases accident rates. For example, the US Department of Transportation (2009) found that installing street lighting reduced late-night and early-morning crashes at intersections by 35%.

However, when are all road types are considered, evidence suggests that night-time and day-time driving are similarly risky. The US National Surface Transportation Safety Center for Excellence (2020) found that heavy vehicle accident rates (per million driving hours) are roughly the same during the day (6am–6pm) as at night (6pm–6am). Within the broader night-time period, however, there is significant variation. For example, the 11pm–12am period was found to be substantially more dangerous (in the frequency of crashes and the proportion of crashes that were fatal).

In any case, it is unlikely that curfews are the most efficient way of addressing safety concerns.

- Where the motivation for a curfew is a particular local road being unsafe, this is likely to be better addressed in most cases by infrastructure improvements such as more effective street lighting, reflective road markings or barriers.
- To the extent that crash risks are elevated at night due to general factors such as driver fatigue, these are better addressed through broader regulations such fatigue management and Chain of Responsibility rules.

Finding 5.1
There is a strong case for reducing curfew burdens on heavy zero emission vehicles

Heavy vehicle curfews largely arise from two sources – local traffic controls that restrict truck traffic through particular streets and conditions imposed on local government planning permits that restrict delivery hours to and from businesses. Local traffic controls are almost exclusively found in Victoria, while planning restrictions appear more widespread.

Many curfews were designed for conventional diesel vehicles and do not recognise the quieter noise profile of heavy zero emission vehicles. As a result, some curfews are no longer fit for purpose, and there is a strong case for reducing curfew burdens on heavy zero emission vehicles.

5.3 Time-based restrictions should be better targeted at addressing noise

As HZEVs are significantly quieter than other vehicles, there is a strong case for ensuring curfews are adjusted to capture these benefits. With the growing importance of 'last mile' deliveries in the overall heavy vehicle freight task, curfew reform offers an opportunity to increase overall productivity in the sector.

There are a few broad approaches that could help to achieve this end (table 5.1).

Table 5.1 – Possible approaches to curfew relaxation

	Example	Advantages	Disadvantages
Differential treatment for 'zero emissions' vehicles	All heavy zero emission vehicles are exempt from planning restrictions.	Simple to understand and administer.	Blunt – some noisy vehicles may be allowed while some quiet ones are disallowed.
Performance-based standards	All vehicles that have been proven sufficiently quiet are exempt from delivery hour restrictions.	Allows more granular consideration of which vehicles are quieter.	Complex to administer.
Outcome-based measures	Current delivery restrictions in the planning system replaced with 'no noise above xx dB'.	Allows any activity that is sufficiently quiet.	May be difficult to monitor and enforce.

The first approach is to take the existing system of curfews as given, and exempt any vehicles deemed to be HZEVs from some or all types of curfews (or make these curfews less restrictive for HZEVs – such as by allowing longer delivery hours). This is the simplest – and bluntest – approach. There would be little administrative complexity, beyond the decision about where to set the threshold that defines a HZEV. However, any vehicle in a category will be treated the same as any other vehicle in that category, even though there may be variation in the noise they emit.

This inflexibility would produce some inefficiency. Some non-HZEVs may be subject to curfews when it would be desirable to exempt them (creating trips for which the efficiency benefits would exceed the costs of noise pollution). Conversely, there may be HZEVs exempted from curfews that should not be (creating trips for which the costs would exceed the benefits). Some participants in this study suggested pilots to test the costs and benefits of curfew relaxation (box 5.3).

Box 5.3 – Curfew relaxation pilots

If governments were inclined to gather more information on costs and benefits to different approaches to relaxing curfews for heavy zero emissions vehicles, they could consider running pilots. The Australian Industry Group (sub. 15, p. 9) proposed that local governments could lead pilots to inform a national framework that would enable councils to apply curfew exemptions consistently. The Australian Livestock and Rural Transporters Association (sub. 19, p. 32) made a similar point, though it suggested that pilots should be state- and territory-led, with Australian Government support. The Australian Rail Track Corporation (sub. 3, p. 4) proposed monitoring outcomes such as noise, crash and near-miss data, and collecting community feedback.

That said, even if HZEVs were exempted from curfews, it does not mean there would be no restrictions on delivery hours, as other environmental and noise regulation would still apply. These regulations are more outcome-based, discussed below.

The second approach is to treat vehicles differently based on performance-based criteria rather than emissions type. Under this approach, vehicles that have been demonstrated to be sufficiently quiet when undertaking certain activities could be exempted from curfews (or otherwise treated more favourably, such as by loosening the timing of the curfew they face). This was proposed by participants such as the Australian Livestock and Rural Transporters Association (ALRTA) (sub. 19), who argued that extended delivery windows should be linked to verified low-noise and low-emission performance. Beyond the characteristics of the vehicles themselves, ALRTA also argued that performance-based criteria should include adoption of best-practice quiet-delivery protocols (including refrigeration, loading and reversing alarms).

This approach has the benefit of being able to distinguish between the noise profiles of different vehicles for each use case. However, it comes at the cost of administrative burden and complexity. Each vehicle, and use case, would need to be considered separately.

Exempting certain types of vehicles (HZEVs or other sufficiently quiet vehicles) from curfews would require a practical means of distinguishing between them and other vehicles. The Australian Local Government Association (sub. 33, p. 12) raised several options, noting potential issues with each:

- visual identification, which may be difficult at night
- registration plate matching against vehicle databases, which would require real-time system access

- electronic vehicle identification systems, which may require expensive infrastructure investment.

The third approach is to de-emphasise curfews in favour of outcome-based measures. These could include noise restrictions, which directly regulate the level of noise created by a vehicle, rather than regulating the vehicle (or the type of activity it undertakes) per se. This approach has the advantage of allowing any sufficiently quiet activity, while placing the responsibility for the level of noise on the operator – incentivising better maintenance, careful driving and the adoption of quieter technologies.

This could involve shifting from time-based ('no truck deliveries at xx time') to noise-and-time-based ('no noise above xx dB at xx time') restrictions.

State and local governments already regulate noise in ways that could replace curfews. All jurisdictions have environmental protection laws that prohibit 'unreasonable', 'offensive' or 'nuisance' noise, regardless of the activity generating the noise. They generally make it clear that noise is more problematic at night.

State and territory governments should amend planning rules to shift away from time-of-day restrictions that do not consider outcomes. That is, planning approvals should not include time-of-day restrictions on deliveries for HZEVs. Exemptions could also be extended to other verified low-noise trucks. Local governments should still retain the right to manage local noise or other concerns, but any decisions should be evidence-based. This approach would continue to support and enable local government decision making, but with an increased focus on carefully assessing costs and benefits.

The Tasmanian and NSW governments supported moving away from curfews and towards more outcome-based regulation that covers the whole range of noise that could arise from deliveries.

> The lower noise profile of heavy zero emissions vehicles present opportunities to reconsider curfew arrangements if there are such restrictions applied through the planning approvals in Tasmania and other jurisdictions. It is likely however in many situations that such operational restrictions are a consequence of multiple factors, not just engine noise. This might include loading/unloading noise and light disruption.
>
> Outcome-based or performance-based approaches may provide greater flexibility while maintaining community amenity. (Tasmania Department of State Growth, sub. 60, p. 10)
>
> Removing curfews for HZEV deliveries 24/7 via legislation or regulation is essential to the broader uptake of HZEV vehicles as the technology will be best suited to the local delivery task. This should come with vehicle requirements such as a smart reversing alarm that adjusts alarm volume based on ambient noise. It may also need maximum noise limits placed on loading and unloading activities after hours for public amenity. (Transport for NSW, sub. 64, p. 26)

Recommendation 5.1
Exempt heavy zero emissions vehicles (HZEVs) from curfews

State, territory and local governments should exempt HZEVs from time-related restrictions on activity (i.e. deliveries), Governments should use existing outcomes-based regulations (like environmental or noise-management laws) to manage noise concerns.

Attachment 5.1

Table 5.2 – Curfews on through-traffic are primarily concentrated in Victoria

State/territory	Status of curfews on through-traffic
NSW	There is no evidence of any time-based restrictions on heavy vehicle through-traffic that are motivated by noise concerns.
VIC	The Victorian curfews displayed on the NHVR access map represent a comprehensive list of all known through-traffic curfews. Some of these were introduced by local councils decades ago, before councils were required to liaise with their local Victorian Department of Transport and Planning region before implementing a curfew. The Victorian Department of Transport and Planning coordinates with local councils in the implementation of curfews on non-arterial roads to ensure the curfew does not have significant downstream and upstream effects on the arterial road network.
QLD	Noise-based curfews on through-traffic are applied by local governments. The PC has found only one such curfew (Queensport Rd South in Brisbane), implemented by the Brisbane City Council.
WA	There are no noise-based curfews on through-traffic in Western Australia.
SA	The South Australian Department of Infrastructure and Transport does not impose any noise-based curfews on through-traffic on arterial roads, and is not aware of local governments imposing such restrictions on local roads.
Tas	Tasmania Department of State Growth (as manager of the state road network in Tasmania) does not impose any general curfews relating to noise for heavy vehicle travel on the state road network roads, and is not aware of any such restrictions made by their local government counterparts.
ACT	There are no curfews that restrict heavy vehicle access on the national heavy vehicle routes transiting the ACT.
NT	The NT does not currently enforce routine time-of-day curfews based on noise concerns for any heavy vehicles.

Source: Main Roads WA (pers. comm., 19 March 2026); NT Department of Logistics and Infrastructure (pers. comm., 5 January 2026); Queensland Department of Transport and Main Roads (pers. comm., 24 December 2025); Roads ACT (pers. comm., 6 March 2026); SA Department for Infrastructure and Transport (pers. comm., 11 March 2026); Tasmanian Department of State Growth (pers. comm., 27 February 2026); Victorian Department of Transport and Planning (pers. comm., 16 March 2026).

6. The National Heavy Vehicle Driver Competency Framework

Key points

- **Current heavy vehicle driver training and licensing arrangements are fragmented and inconsistent across jurisdictions.**
  - Although the National Heavy Vehicle Driver Competency Framework (NHVDCF) was agreed nationally in 2011, uptake has been uneven and the initial framework was insufficiently focused on risks and policy priorities. Jurisdictions still differ in licence eligibility criteria and training and assessment requirements.
- **Reforms to the NHVDCF are set to expand driver competency and training requirements, create new licensing pathways based on experience and supervision, and support best practice training and assessment.**
- **Implementation of the NHVDCF reforms is underway and most jurisdictions should complete their rollout by 2028.**
  - Some jurisdictions will implement reforms sooner than 2028. Others are being delayed by funding uncertainties, required systems upgrades and potentially duplicative regulatory processes.
  - Governments should maintain current deadlines for nationally coordinated implementation. Certainty about reform details and funding, expected around mid-2026, should progress decision making.
- **The main aim of the reforms is to improve safety. They are also expected to improve productivity by allowing faster progression to licence classes for higher productivity vehicles.**
  - The PC has estimated that the expected productivity increase from faster licensing pathways could boost long-run GDP by approximately 0.004% to 0.015% ($100 to $400 million based on 2024–25 GDP).
- **Other licensing issues warrant ongoing attention as further evidence builds, to support policy priorities such as the transition to net zero and workforce supply. These include:**
  - mass concessions for electric vehicles in heavy vehicle licence classes to support payload parity with diesel heavy vehicles
  - strengthening recognition of overseas heavy vehicle driver licences to ease driver shortages.

Reforming heavy vehicle driver training and licensing offers an opportunity to improve both safety and productivity across Australia. Current licensing arrangements are inconsistent across jurisdictions and do not sufficiently focus on driver competency. Reforms to the National Heavy Vehicle Driver Competency Framework (NHVDCF) (section 6.2) aim to shift the dial on these issues. The proposed

reforms aim to boost drivers' knowledge, skills and experience, which is expected to reduce crash rates (Frontier Economics 2023, pp. 19–22). Truck drivers are the most at-risk occupation group in Australia, with the highest rate of work-related injuries and fatalities over the last decade (Safe Work Australia 2025). The proposed reforms are also expected to improve productivity, partly by allowing faster progression through licence categories, and partly because fewer crashes mean fewer delays and less spent on maintenance.

The PC has been asked to provide analysis and modelling on the impact of accelerating the NHVDCF reforms. These reforms are progressing and have limited scope to accelerate further, with greater clarity around funding and timelines expected in 2026. We estimate that they will boost long-run GDP by approximately 0.004% to 0.015% by allowing faster progression through licence categories.

Future reforms to the NHVDCF should consider broader policy objectives, including supporting workforce supply. In addition, concessions to driver licence mass limits could help lower barriers to transitioning fleets to electric heavy vehicles in support of decarbonisation objectives (section 6.4).

6.1 Current arrangements differ across jurisdictions

The NHVDCF establishes minimum competency and assessment standards for heavy vehicle drivers. Although agreed to by the Standing Committee on Transport in 2011, only four jurisdictions adopted the NHVDCF (Austroads 2018, pp. 3, 49),[19] leaving considerable variation in licensing practices across jurisdictions.

Licence classes and time-based progression to higher licence classes are broadly similar across jurisdictions (box 6.1). Licensees in one state or territory can also drive heavy vehicles across all Australian jurisdictions. Like car licences, people who move to a new state or territory can drive using their interstate heavy vehicle driver licence for a limited period, typically three months, before needing to convert to their new home jurisdiction.[20] Interstate licence classes are recognised, and no re-testing is required.

Box 6.1 – Heavy vehicle licence classes

A car (C class) licence allows drivers to operate vehicles with a gross vehicle mass (GVM) up to 4.5 tonnes (Transport for NSW 2021b). A heavy vehicle licence is required for vehicles above 4.5 tonnes.

There are five heavy vehicle licence classes, differing by weight and type of vehicle. These are largely standardised across Australia, with some limited jurisdictional variations. For a driver to be eligible to apply for a higher licence class, they must typically hold a licence for a lighter vehicle class for at least one year (in addition to other jurisdictional requirements).

[19] New South Wales, Victoria, Tasmania and the Northern Territory.

[20] Drivers moving interstate must convert their interstate licence after three months in New South Wales, Queensland, South Australia, Western Australia and the Northern Territory (Government of South Australia 2025; Northern Territory Government 2025; Queensland Government 2025b; Service NSW 2025; WA DoT 2026) and six months in Victoria and Tasmania (Tasmanian Department of State Growth 2024; Transport Victoria nd).

Box 6.1 – Heavy vehicle licence classes

Each year around 20,000 people apply for a heavy vehicle licence in Australia (Frontier Economics 2023, p. 18). According to analysis by Austroads (sub. 31, p. 11), most heavy vehicle drivers begin at the Heavy Rigid classification, and a small subset progress to combination vehicles. Growth in the number of licence holders over the past decade has mostly been concentrated in the Heavy Rigid and Multi Combination classes, while the number of Heavy Combination class licence holders has declined.

Indicative licence classes

Licence class	Description	Current tenure requirement	Proportion (2025)	Growth (2015–2025)
Light rigid (LR)	Small trucks and buses with up to 8 tonnes GVM, and any towed trailer must not weigh more than 9 tonnes GVM.	Class C licence for at least 1 year	12%	11.9%
Medium Rigid (MR)	Trucks and buses with more than 8 tonnes GVM and 2 axles, and any towed trailer must not weigh more than 9 tonnes GVM.	Class C licence for at least 1 year	19%	4.5%
Heavy Rigid (HR)	Trucks and buses with more than 8 tonnes GVM and 3 or more axles, and any towed trailer up to 9 tonnes GVM.	Class C licence for at least 2 years	43.4%	12.6%
Heavy Combination (HC)	Articulated vehicles with 3 or more axles, heavy rigid vehicle trailer combinations including unladen dolly with 3 or more axles, and any towed trailer with more than 9 tonnes GVM.	MR or HR licence for at least 1 year	15.9%	-14.9%
Multi Combination (MC)	All larger articulated vehicles including B-doubles and road trains.	HR or HC licence for at least 1 year	9.6%	47.1%

Licence classes are broadly similar across jurisdictions. Most include the above tenure requirements with some additions, alongside other requirements such as medical assessment, training or experience.

Source: DITRDCSA (2025a, p. 116); Frontier Economics (2023, pp. 29–30); Transport for NSW (2021a).

However, jurisdictions differ in licence class eligibility, training and assessment requirements, even among those that have adopted the NHVDCF (Frontier Economics 2023, pp. 29–34, 97–101). For example, driver training is not mandatory before assessment and licensing in all jurisdictions. Prior to the proposed reforms, the NHVDCF did not have minimum training and assessment durations, nor a nationally agreed set of learning and assessment materials.

The NHVDCF regulatory impact statement found that current heavy vehicle licensing is not sufficiently focused on key risks and factors that improve the competency of heavy vehicle drivers (Frontier

Economics 2023, p. 18). Industry participants have noted that current arrangements do not guarantee competent and safe drivers, and that lengthy licence pathways can deter people from entering and staying in the occupation (Austroads 2018, pp. 4–7).

6.2 Reforms to the NHVDCF are progressing

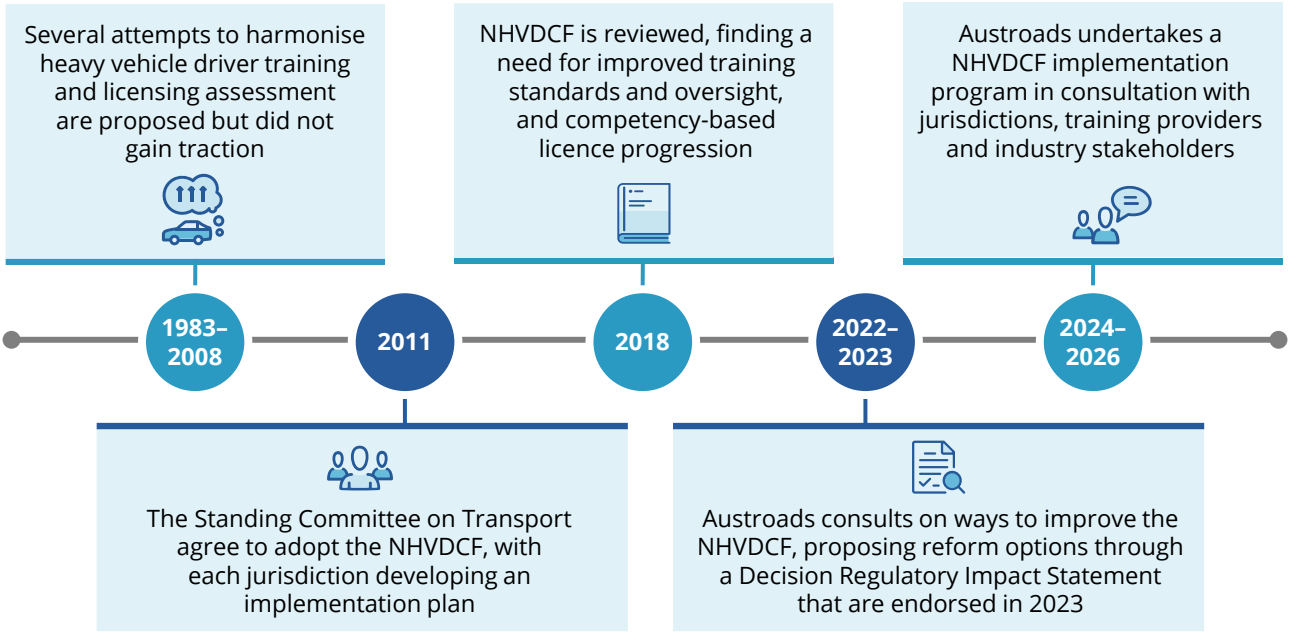
Reforms to strengthen the NHVDCF (table 6.1) were endorsed in 2023 by the Infrastructure and Transport Ministers Meeting (Austroads 2023), which includes representatives from Australian, state and territory governments. This followed a process of review, consultation and regulatory impact assessment starting in 2018. The current reform efforts follow a long history of attempts to establish nationally consistent and high-quality driver training, assessment and licensing which has had limited success (figure 6.1).

Table 6.1 – Summary of NHVDCF reforms

Reform area	Existing arrangement	Planned change
Improving safety with expanded competencies and training minimums	Drivers are assessed against 15 competencies to obtain a heavy vehicle licence.	Expand to include over 150 elements for different licence classes, including a unit focused on drivers' attitudes and approach.
	Not all jurisdictions require drivers to complete training (beyond assessment against the 15 competencies).	Mandate minimum online training hours, class-based learning hours and behind-the-wheel hours varying by licence class.
New pathways based on experience to progress to higher licence classes	Drivers must hold a given licence for at least 12 months to progress to the next heavy vehicle class.	Add 2 new pathways for progression based on hours of driving experience and hours of supervised driving.
	Most states and territories allow drivers to apply for Multi Combination licences while holding a Heavy Rigid licence, effectively skipping the Heavy Combination licence class.	Require drivers to progress through the Heavy Combination licence class before applying for Multi Combination licences.
Supporting best-practice national training and assessment	The practices and standards for approving heavy vehicle trainers and assessors vary between jurisdictions. Alongside commercial pressures for trainers and assessors, this has led to varying levels of compliance and training quality.	Implement best-practice standards and training material across all jurisdictions.
	Some but not all states and territories require drivers to complete training, which is usually one of two nationally recognised VET qualifications.	Develop online modules to be used by all states and territories to deliver foundational knowledge and a detailed training and assessment guide for face-to-face training providers.

Source: Austroads (2025d, 2025a, 2025b, 2025c); Frontier Economics (2023, pp. 102–112).

Figure 6.1 – A timeline of the development and reform of the NHVDCF



Source: Austroads (2018; sub. 31, pp. 7–11); Frontier Economics (2022, 2023).

The reforms primarily aim to improve road safety outcomes while also giving consideration to uplifting the quality of driver training and assessment, increasing the use of high-productivity vehicles and reducing the time required to progress through licence classes (Frontier Economics 2023, p. 9). In their submission to this inquiry, Australia Post raised concerns over the treatment of already qualified drivers and the potential costs associated with re-training (sub. 61, p. 7). However, the expanded competency and training requirements under these reforms will only apply prospectively to newly licensed or upgrading drivers and will not require existing licence holders to be retrained (Austroads, personal communication, 28 May 2026).

Summary of reform progress so far

In December 2025, the Australian, state and territory governments signed the National Competition Policy Federal Funding Agreement, which included accelerating the implementation of the NHVDCF reforms (Commonwealth of Australia 2025). Milestones include having the policy framework and systems upgrades in place to implement the reforms. Implementation and planning work for the NHVDCF reforms is underway with several parties playing roles (table 6.2).

Table 6.2 – Different parties' responsibilities in progressing the NHVDCF reforms

Who	Role	Progress
Austroads	Leading the national aspects of NHVDCF implementation such as developing: • training and assessment materials • a learning management system • heavy vehicle hazard perception test clips • a standard and compliance framework for training providers • a post-implementation evaluation.	Austroads has committed to delivering core national work packages in 2026, with substantial progress already made in developing training and assessment materials.

Who	Role	Progress
State and territory governments	Implementing reforms which may require regulation change, system reconfiguration, scheme governance and communications.	Most states and territories are expected to implement the NHVDCF from 2026–2028 with leading jurisdictions on track to begin implementation in the second half of 2026. Some jurisdictions have indicated to the PC that implementation will not be feasible within this timeframe and that some elements of the reform are yet to be agreed upon.
Training providers	Updating training and assessment in line with the revised NHVDCF.	Following state and territory implementation.
Industry	Integrating competency expectations into employment practices and participating in driver experience or supervision licensing pathways.	Following state and territory implementation.

Source: Austroads (sub. 31, pp. 12–13); Victorian DTF (sub. 28, pp. 13–14); Tasmanian Department of State Growth (sub. 34, p. 5); Transport for NSW (sub. 38, p. 18); NHVR (sub. 4, p. 18).

Austroads has made substantial progress in developing training and assessment materials, including through trialling and testing activities (Austroads, sub. 31, pp. 9–10). Implementation by states and territories is expected to occur between 2026 and 2028, allowing more progressed jurisdictions to proceed sooner without having to wait for others (Austroads, sub. 31, p. 13). While the NHVDCF seeks to set minimum consistent standards, each jurisdiction will be able to make its own additions provided they do not conflict with the competencies approved by the Infrastructure and Transport Ministers Meeting in the decision regulatory impact statement (Austroads, personal communication, 17 March 2026).

Regulatory work to prepare for implementation has begun across some jurisdictions (Victorian DTF, sub. 28, p. 13; Tasmanian Department of State Growth, sub. 34, pp. 4–5; Transport for NSW, sub. 38, p. 18), but not all. Some other jurisdictions are yet to agree to the full suite of reforms and have indicated that the 2026 to 2028 timeline may not be feasible.

Risks and challenges in implementation

The implementation task is sizeable, with some uncertainty remaining regarding reform details and funding. These challenges create some risks to the implementation timeline that must be managed. Reform acceleration will mostly come from further progressed jurisdictions implementing earlier rather than all jurisdictions moving forward their timelines.

Implementing the NHVDCF reforms will require regulatory reform, policy work and systems updates. The complexity and time needed to undertake these tasks will vary across jurisdictions. For example, Transport for NSW noted their legacy IT systems would take substantial time and resources to update (sub. 38, p. 18), whereas the Queensland Department of Transport and Main Roads emphasised the policy work as a key risk to meeting implementation timelines (sub. 30, p. 12).

Implementation timelines are subject to further planning work and detail on cost recovery (Queensland Department of Transport and Main Roads, sub. 30, p. 12; Tasmanian Department of State Growth, sub. 34, p. 4). Some uncertainties may be resolved as training materials are completed and funding agreements are finalised in mid-2026. Austroads is working with jurisdictions on implementation

approaches and funding timelines (Austroads, personal communication, 22 May 2026). Earlier clarity on cost recovery could prevent further delays from jurisdictions (provided cost recovery is sufficient for implementation). For example, Tasmania's Department of State Growth noted their reticence to commit to some elements of the reforms, such as implementation of the Learning Management System, without transparency over cost recovery (sub. 34, p. 5). Based on early analysis from Austroads that applies government cost recovery guidelines, it is unlikely that state and territory governments will be required to cover the costs of NHVDCF training and assessment delivery. It is more likely that the non-government sector – that is, the users and beneficiaries of the system – will bear some or all of the efficient costs of delivery (Austroads, personal communication, 22 May 2026).

Finally, the order of NHVDCF reform implementation matters, and efforts to accelerate adoption may pose risks to safety and competency outcomes (Queensland Department of Transport and Main Roads, sub. 30, p. 11). For example, if new experience- or supervision-based licensing pathways are established before competency and assessment standards have been fully uplifted, governments risk incentivising a surge in licensing demand under the current underperforming NHVDCF (Victorian DTF, sub. 28, p. 13).

Governments should maintain current deadlines for nationally coordinated implementation

In the immediate term, potentially duplicative processes risk delaying reforms. For example, while a decision regulatory impact statement was endorsed by the Infrastructure and Transport Ministers Meeting, some jurisdictions are conducting their own impact assessments. These processes may duplicate work which has already been undertaken at the national level, depending on how the assessments are scoped.[21] Other jurisdictions are still considering whether to implement the reforms in full. Meeting the 2026–2028 implementation timeframe will require all states and territories to accept the analysis of the decision regulatory impact statement and agree to implement the reforms without further delay.

There are already funding mechanisms in place through the National Competition Policy framework for the Australian Government to support state and territory governments to implement the reforms, with specific funding amounts to be determined. Implementation aimed towards the 2028 timeline should continue as planned and would be supported by confirming funding amounts to state and territories.

Other barriers could impact effective, widespread adoption

Following state and territory implementation, the extent of support for the NHVDCF reforms from the outsourced training and heavy vehicle sectors could affect the availability of trainers and assessors or the uptake of the new licensing progression pathways (Frontier Economics 2023, p. 93). Industry participants were generally supportive of the new licensing pathways (ALRTA, sub. 19, p. 17; ATA, sub. 22, p. 8; Australian Industry Group, sub. 15, p. 5; TGE, sub. 8 p. 1). However, depending on the extent to which variation currently exists in training and assessment practices, the modifications needed to staff training and accreditation, training materials, course structures and assessment procedures could be significant (Victorian DTF, sub. 28, p. 13). Some submissions from industry noted that smaller operators and those in regional or remote areas may face additional barriers to adopting the new training, assessment and licensing approaches due to a lack of resources, including a lack of trainers and assessment centres (ALRTA, sub. 19, p. 19; ALC, sub. 10, p. 3; BIC, sub. 21, p. 16). Participants in research by UNSW Canberra repeatedly highlighted 'a significant shortage of

[21] Victoria is currently drafting a regulatory impact statement that includes economic analysis (Victorian DTF, sub. 28, p. 14).

appropriately qualified trainers and assessors as a binding constraint on the quality and reach of heavy vehicle driver training' (sub. 52, p. 4).

Employers may also underinvest in new licence progression pathways if they do not capture sufficient benefits (for example, if a driver is poached by another operator following the completion of their supervision) or if they have perverse incentives to rush driver progression. UNSW Canberra noted that existing training practices can prioritise rapid throughput over genuine competency development (sub. 52, p. 3). The effect of reforms on driver supply and competency may then be limited by industry's willingness and ability to implement the changes. Compliance measures, such as formal audits or separating trainers from assessors (i.e. the person who trains the driver is not the same as the person who assesses their competency), could improve the credibility of the framework (UNSW Canberra, sub. 52, p. 4).

Finding 6.1
Driver competency reforms are progressing

Reforms to the National Heavy Vehicle Driver Competency Framework appear on track to be implemented by most states and territories by 2028. Some state and territory governments may be able to deliver earlier under current arrangements. Others are not expecting to implement the reforms within the 2028 timeframe, with some still uncertain if they will be implemented in full. Support to implement changes, including to undertake regulatory reform, policy work and IT systems updates, may aid implementation.

6.3 Impact of the NHVDCF reforms

The reforms are expected to yield small productivity improvements

The NHVDCF reforms are expected to boost productivity through multiple channels, with some more difficult to quantify than others.

The most important channel impacting productivity appears to be faster licensing pathways – the new experience and supervision pathways allow drivers to progress to higher licence classes more quickly. This is expected to lead to greater utilisation of more productive vehicles (which require higher licence classes), which will allow freight to be moved at lower cost (Frontier Economics 2023, pp. 61–62, 76, 79).

The Bureau of Infrastructure and Transport Research Economics (BITRE) estimated present value net benefits of these pathways, which the PC has used as inputs to model economy-wide impacts (box 6.2). BITRE estimated the net benefits of faster licensing pathways to be between $1.02 and $3.06 billion over the 20 years starting 2025–26, boosting the productivity of the road freight industry by 0.11% to 0.32% (BITRE forthcoming). This productivity gain would yield broader economy-wide impacts. PC modelling indicates that the expected productivity increase from faster licensing pathways could boost long-run GDP by approximately 0.004% to 0.015% (see appendix B.3 for further details).

Box 6.2 – Whole-of-economy modelling of faster licensing pathways

The *Productivity Impact of Selected Heavy Vehicle-Related Measures* report (BITRE forthcoming) modelled three scenarios of the impacts of faster licensing pathways. These scenarios are based on an assumed percentage of the freight task switching from rigid trucks and single-trailer articulated trucks to multi-combination heavy vehicles (0.25%, 0.5% and 0.75% for scenarios 1, 2 and 3, respectively).

The results of these scenarios are presented below.

	Scenario 1 (0.25%)	Scenario 2 (0.5%)	Scenario 3 (0.75%)
	Present value, 20-years, 7% discount rate, $ million		
Benefits			
Vehicle operating cost savings	897.8	1,795.6	2,693.4
Safety benefits	17.4	34.8	52.2
Emissions benefits	22.6	45.2	67.8
Costs			
Additional road wear	–83.6	–167.3	–250.9
Total net benefits	1,021.4	2,042.9	3,064.3
	Annualised present value (%)		
Productivity impact by sector			
Road freight sector productivity impact	0.11	0.21	0.32

The PC used computable general equilibrium modelling to gauge the fuller economy-wide effect of faster licensing pathways in the long run, using BITRE's estimates as inputs. We used our in-house PC National model (appendix B).

PC National modelling	Scenario 1 (0.25%)	Scenario 2 (0.5%)	Scenario 3 (0.75%)
GDP (% change)	0.004		0.015

PC National is a static model that produces steady-state estimates and has been calibrated such that these steady-state estimates can be interpreted as estimates of long-run effects. The estimates also use more conservative assumptions for scenario 1 and less conservative assumptions for scenario 3 to reflect additional uncertainty. See appendix B for more information.

The PC also sought to quantify potential productivity gains from better safety outcomes that lead to fewer crashes, lower repair costs and fewer supply chain disruptions. Reductions in repair costs would boost productivity in the road freight sector as freight output could be maintained with fewer crash repair inputs. However, these gains are too small and uncertain to include in the economy-wide modelling. PC analysis found that the annual repair cost savings from fewer crashes associated with the NHVDCF reforms would be around 10% of the annual productivity gains from faster pathways modelled by BITRE. That said, these indirect productivity gains to industry from improving safety are

implicitly included in the estimates of road safety benefits in the decision regulatory impact statement, alongside the more direct benefits of lives saved (Frontier Economics 2023, appendix F).

The NHVDCF reforms would also yield economic costs and benefits that have not been quantified, including:

- increased cost of training from expanding competencies and behind-the-wheel requirements, potentially discouraging applicants from entering the industry (Frontier Economics 2023, pp. 65–66)
- impacts on driver supply from requiring licence holders to progress through the heavy combination licence class before applying for a multi combination licence
- gains associated with nationally consistent training and assessment, such as economies of scale for training providers, wider use of best-practice reforms, and improved driver mobility (Austroads, sub. 31, p. 12; ALC, sub. 10, p. 4)
- gains associated with improved skills matching by screening out prospective drivers who would be unsuited to the job
- gains from drivers being more job-ready and competent when they begin working (requiring less on-the-job training).

Improvements in productivity arising from the NHVDCF reforms may flow through to consumers in the form of lower prices for deliveries of goods. Where an uplift in driver competency reduces supply chain disruptions, consumers may also benefit from greater service reliability.

The NHVDCF reforms will improve safety outcomes

The NHVDCF reforms are intended to improve road safety outcomes by better considering risk factors in licensing, such as driver experience, past driving behaviour and offences, and other knowledge, skills and attitudes (Frontier Economics 2023, pp. 8–9). Such changes are estimated to lead to road safety benefits of $818 million[22] over the 20 years following the anticipated full implementation of the reforms in 2028–29 (Austroads, personal communication, 25 May 2026).[23] The decision regulatory impact statement did not quantify safety benefits from the addition of experience- and supervision-based licensing pathways, but suggested that drivers with more experience will be less likely to crash (Frontier Economics 2023, pp. 75–76).

Wage benefits for heavy vehicle drivers may be unevenly spread

Some heavy vehicle drivers will benefit from higher wages. Supervision- and experience-based licence progression pathways present an opportunity for drivers on lower licence classes to move to higher licence classes more quickly. Wages for drivers in Australia increase with the type and mass of the vehicle driven. For example, the annual salary range is around $75,000–$85,000 for truck drivers and

[22] Road safety benefits were estimated based on an assumed reduction in heavy vehicle crashes combined with analysis of the cost of road crashes (ATAP 2024). These net benefits are lower than the productivity benefits modelled by BITRE. However, it is difficult to know with certainty which channel offers greater net benefits due to different modelling approaches that rest on different assumptions. Several model choices by Frontier Economics would mechanically result in lower net benefits, such as assuming the benefits start after implementation in 2028–29 (instead of 2025–26, in the BITRE modelling). If the BITRE modelling assumed that the benefits started in 2028–29, the benefits go from being 2.5 times larger than these safety benefits to 2.16 times larger.

[23] The NHVDCF regulatory impact statement reported an estimate of $261 million in safety benefits from the competency refresh and $357 million from the eligibility changes (Frontier Economics 2023, pp. 12–13). The estimate of safety benefits presented here is higher due to methodological updates.

$95,000–$115,000 for heavy combination drivers (SEEK Australia 2026b, 2026a). Given the wage benefits largely result from earlier career progression opportunities, these benefits are likely to fall mostly to younger, incoming drivers (TGE, sub. 8, p. 5).

Only 6% of truck drivers are female (JSA 2025), which means wage benefits are more likely to flow to male workers. Safety concerns, limited access to suitable rest facilities and entrenched workplace cultures are cited as factors contributing to the underrepresentation of women in the transport sector (iMOVE 2022, pp. 21–30). Women entering heavy vehicle driving are more likely to be new entrants without employer support, working in lower-paid and more casualised segments of the industry, and face additional out-of-pocket costs with accessing training (UNSW Canberra, sub. 52, p. 5). Some targeted initiatives have been implemented to support the recruitment and retention of female heavy vehicle drivers (iMOVE 2022, pp. 50–69; NHVR 2025a).

Drivers in urban and metropolitan areas may benefit more from the NHVDCF reforms. Those in regional and remote areas may have greater difficulty accessing online training due to poor internet connectivity (Frontier Economics 2023, p. 66), and face greater travel distances to training providers and assessment facilities (UNSW Canberra, sub. 52, p. 5). The Bus Industry Confederation further noted that regional operators may face higher training and compliance costs (sub. 21, p. 16), which could reduce their willingness to invest in training and new licensing pathways. With truck driving representing a key area of employment for Aboriginal and Torres Strait Islander people (JSA 2023, p. 16), reforms that are designed and implemented to work effectively in regional and remote settings could strengthen wage outcomes for Aboriginal and Torres Strait Islander people. Uneven take-up and implementation across locations risks limiting these benefits.

Distributing wage benefits more broadly would likely require targeted efforts to encourage entry into the heavy vehicle driving occupation and ensure those in regional and remote locations are able to take full advantage of the reforms. Submissions provided examples of where such efforts are already underway, such as the Heavy Vehicle Driving Operations Skills Set (Western Roads Federation, sub. 1, p. 3) and Victoria's Heavy Vehicle Training Program (ALRTA, sub. 19, pp. 18–19).

Industry and licence applicants will bear most of the costs

Governments will face both upfront implementation costs and some ongoing costs associated with administering the new licensing system. Industry and licence applicants will bear the ongoing cost of greater training and assessment requirements. The NHVDCF reforms have been estimated to cost governments (mostly the Australian Government) around $51 million and industry and licence applicants $335 million (Austroads, personal communication, 22 May 2026).[24] These costs are estimated over the period 2025–26 to 2047–48 (now until 20 years after the reforms are fully implemented).

[24] Estimates of costs presented here are different from those reported in the regulatory impact statement (Frontier Economics 2023, pp. 78, 84) due to changes in methodology.

6.4 Future reform directions

While the NHVDCF reforms aim to improve many issues with heavy vehicle licensing in Australia, other licensing issues could be explored in more detail going forward.

If a targeted electric vehicle mass concession is introduced, it should be designed to manage risks

Battery weight can reduce payload capacity for electric vehicles

Australia's C and light rigid (LR) licence classes have gross vehicle mass (GVM) limits (4.5 tonnes for C class and 8 tonnes for LR). Manufacturers are incentivised to stay within the GVM limits of licence classes to ensure more people can drive their vehicles. However, this can come at the expense of payload. Given electric vehicles have heavy battery systems, they have less weight left over to carry goods (discussed in chapter 2).[25] Ikea (sub. 37, pp. 4–5) noted that, for vehicles around 4.5 tonnes, battery weight can reduce payload by around 20% for electric vehicles compared to diesel vehicles. Foton (sub. 54, p. 2) argued that 'one of the most significant barriers to wider adoption of [electric vehicle] Light Duty trucks is the GVM weight threshold'.

Several inquiry participants support changes to licence GVM limits to enable payload parity between diesel and electric vehicles.[26] Providing a mass concession for electric vehicles would allow drivers within a licence class to drive heavier electric vehicles, incentivising greater uptake of electric vehicles to support the net zero transition.

While the mass concession would clearly bring environmental benefits, its safety impacts are unclear. Electric vehicles might be less safe for other drivers, cyclists and pedestrians than equivalent-payload-carrying (but lighter) diesel vehicles. This is because heavier vehicles typically lead to worse crash outcomes for other road users (Haghani and Ghaderi 2024; Naiek et al. 2025). But, as they are newer, electric vehicles usually feature more advanced safety technology (DCCEEW 2024), which may mitigate some of these risks. For drivers, safety differences are less clear still because batteries are typically placed low in the chassis of the vehicle, lowering its centre of gravity and improving stability and rollover resistance (AFDC nd; Previati et al. 2024).

Other countries have adopted licence mass concessions for electric vehicles

Drivers in Europe and the United Kingdom (UK) with a category B licence (comparable to a class C licence in Australia) can drive zero emissions vehicles weighing up to 4.25 tonnes compared to 3.5 tonnes for diesel vehicles, which roughly compensates for the additional battery weight (Directorate-General for Mobility and Transport 2025; Office for Zero Emission Vehicles 2025b). Adopters of the concession in the UK, which has been in place since 2018, have stated that their incident rates have not increased compared to equivalent petrol and diesel vehicles (Office for Zero Emission Vehicles 2025a, p. 3). However, this data is held by operators and is not publicly available. The UK Government has

[25] However, future technology improvement resulting in lighter battery systems would reduce and potentially remove the payload penalty (Basma et al. 2021, p. 13).

[26] ARENA, sub. 25, p. 6; Australia Post, sub. 61, p. 7; EVC, sub. 56, p. 15; Foton, sub. 54, p. 2; Ikea, sub. 37, p. 5; Smart Energy Council, sub. 65, p. 9.

committed to monitoring collision data and flagged a potential post-implementation review for 2030 (Office for Zero Emission Vehicles 2025a, p. 10).

Similarly, drivers in New Zealand with a full class 1 licence (comparable to class C licence in Australia) have been able to drive electric trucks weighing up to 7.5 tonnes since 2025, provided they are electric variants of a diesel truck weighing up to 6 tonnes. The electric trucks must not exceed the dimensions of their diesel equivalent, meet several safety requirements (such as regenerative braking and lane departure warning systems), and need the battery to be placed as low as possible to improve stability (NZ Transport Agency 2025). The current concession expires in 2028, but a permanent concession is currently being considered. To date, the New Zealand Government has claimed that the exemption 'poses minimal elevated safety risk' but has not published supporting analysis (NZ Transport Agency 2025, 2026, pp. 11–12).

A mass concession in Australia would have somewhat different impacts owing to differences in licensing arrangements. Australia has a higher GVM limit for its C class licence than Europe or the United Kingdom, but a lower GVM limit than New Zealand. The vehicles affected by the European and United Kingdom concession can already be driven under Australia's C class licence, while the vehicles affected by the New Zealand concession require an LR licence. The benefits and costs of mass concessions depend on how many vehicles are falling just over the GVM limit and how much the limit is impacting vehicle supplier decisions (for example, a manufacturer may choose a smaller, less powerful battery to be just within a limit).

If a mass concession is adopted, it should apply to C class licences and require eligible vehicles to have safety features

The PC has not found sufficient evidence on the expected safety impacts and emissions reduction effects of an electric vehicle mass concession to recommend for or against adopting one in Australia. Moreover, we do not expect significant additional evidence on the concessions overseas to emerge in the near term – there is no further review of the New Zealand scheme scheduled, and no further review of the UK concession scheduled until at least 2030. The Australian Government could consider further consultation with relevant government agencies, regulators, industry bodies and other experts to help decision-making.

Should government wish to proceed with a mass concession, we have considered which features would make it more impactful as well as how the concession should be evaluated.

Design features

A C class licence mass concession would likely be more impactful than an LR class licence concession for 2 reasons:

- There are more requirements to transition from a C to an LR class licence than there are to transition from an LR to a medium rigid (MR) class licence, with most heavy vehicle drivers already beginning at the heavy rigid (HR) classification (Austroads, sub. 31, p. 11).[27]
- There are more trucks at or below the GVM threshold for the C class licence than there are for the LR class licence, suggesting more trucks might be affected by a change in the C class licence threshold. In January 2025, 39.5% of rigid trucks had a GVM between 3.5 and 4.5 tonnes – just below the C class

[27] Several requirements for LR and MR licences, such as needing to have held a C class licence or equivalent for 1 year or more, are the same or very similar (Transport for NSW 2021a). Only 12% of heavy vehicle licence holders have a LR licence, compared to 19% for MR and 43% for HR (box 6.1).

threshold of 4.5 tonnes (BITRE 2025b, p. 19). But only 11% of rigid trucks had a GVM between 4.5 and 8 tonnes – below the LR class threshold of 8 tonnes (BITRE 2025b, p. 19).

Governments could reduce the potential negative safety impacts of the concession by requiring vehicles to have advanced safety features, as is the case with New Zealand's scheme.

The size of the mass concession should accommodate for the size of the payload penalty. Payload penalties can vary substantially by vehicle type and size. For medium-range electric vehicles, batteries are typically between 360 and 480 kilograms, while larger vehicles can have batteries over 600 kilograms (Cope 2025). Ikea's submission to this inquiry outlined a payload penalty of 200 kilograms (sub. 37, pp. 4–5), while Basma et al. (2021) found a penalty of 11% of the total vehicle weight. Further consultation could help the Australian Government determine the appropriate size of the payload penalty for vehicles around 4.5 tonnes.

Evaluation approach

Given the substantial uncertainties, if governments were to implement a mass concession they should plan for and commit to a rigorous evaluation after several years to examine whether the scheme is yielding net benefits and how it could be improved. The evaluation should particularly focus on measuring:

- the safety of the electric vehicles eligible for the scheme relative to that of the lighter vehicles they replaced
- the extent to which eligible vehicles 'replaced' lighter internal combustion engine vehicles versus lighter electric vehicles in the counterfactual of no mass concession existing – this could indicate the emissions reduced per eligible vehicle adopted.

If such an evaluation found no safety differences between heavier and lighter vehicles regardless of propulsion method, governments could consider increasing the mass limit for all vehicle types. This would be a more significant change to the licensing system.

Finding 6.2
There may be benefits from licence mass concessions for electric vehicles

Other countries, such as New Zealand and the United Kingdom, have adopted licence mass concessions for electric vehicles. A mass concession would bring environmental benefits but could have safety implications. Were governments to introduce a mass concession, the most promising design would target the C class licence, be based on reasonable payload penalties, and mandate safety features for eligible vehicles. Safety effects could be better understood via evaluations and continued monitoring of developments abroad.

Recognition of overseas heavy vehicle licences

While an increasing freight task is bolstering demand for heavy vehicle drivers, driver supply is not keeping pace. In 2024, 28,000 truck driving positions went unfilled, a shortage that is projected to grow to over 78,000 by 2029 (Clark 2025a). In submissions to this study, industry has pointed to ineffective and lengthy training, assessment and licensing pathways as a deterrent for new entrants (ALC, sub. 10, p. 4; Australian Industry Group, sub. 15, p. 5; HVIA, sub. 17, pp. 6–7).

There may be opportunities to safely improve the recognition of overseas heavy vehicle driver licences to help fill driver shortages. Current heavy vehicle licensing pathways do not offer recognition of overseas-acquired skills and experience, except in limited circumstances.[28]

Some participants submitted that the current requirements for overseas heavy vehicle licence holders to progress through Australian licensing pathways, regardless of overseas credentials, are appropriate (ATA, sub. 22, p. 8). Others argued for greater recognition of overseas-acquired competency and qualifications (AIG, sub. 15, pp. 5–6; ALC, sub. 10, p. 7), provided appropriate safety assessments, competency verification and training were in place (NHVR, sub. 63, attachment 1, p. 8; TGE, sub. 46, p. 7).

Recognising skills and experience gained overseas requires appropriate training and assessment processes. NatRoad recommended that skilled migrants should pass nationally consistent competency assessments and/or standard licensing protocols to work in the heavy vehicle industry (NatRoad, sub. 53, p. 4). UNSW Canberra raised concerns that current processes do not sufficiently ensure that learning and competency is properly assessed, supporting practical and theoretical competency assessments prior to converting overseas truck licences (UNSW, sub. 52, p. 4).

Austroads is currently examining the possibility of a national framework for recognising overseas heavy vehicle driver licences from a small number of comparable jurisdictions, training and assessment requirements for non-recognised overseas licence holders to obtain Australian heavy vehicle driver licences, and restrictions on the driving of heavy vehicles with an overseas licence (Austroads, personal communication, 25 February 2026). Consistent with its long-held view that prior skills and experience should be recognised where it is safe to do so, the PC supports further work in this area.

Further inclusions to the NHVDCF

Several participants in this inquiry noted further inclusions to the NHVDCF that could be explored. Given the low share of truck drivers who are women, there is the potential to increase the accessibility and diversity of the workforce, which could have subsequent impacts on shortage issues. UNSW Canberra recommended that the NHVDCF should include respectful workplace culture, and diversity and inclusion content as explicit competency requirements (sub. 52, p. 6). Separately, IEEFA recommended that the NHVDCF should be expanded to include eco-driving competencies (sub. 44, p. 1). Several studies have found that eco-driving[29] can save fuel (Jeffreys et al. 2018; THE PEP 2021), although it is possible that employers already have an incentive to provide this sort of training. Given the scope of this inquiry, the PC has not evaluated these recommendations.

[28] South Australia allows for conversion to a heavy combination licence for drivers with sufficient experience at that class (South Australian Department of Infrastructure and Transport 2026). Queensland makes some exemptions for New Zealand heavy vehicle licence holders (Queensland Government 2025a).

[29] Eco-driving involves a series of techniques that reduce fuel use. These include greater anticipation to avoid unnecessary acceleration and braking, maintaining steady speed at low revolutions per minute, and checking tyre pressures frequently (THE PEP 2021, pp. 6–7).

A. Public engagement

This appendix outlines the engagement process undertaken for this study and lists the organisations and individuals who participated.

The Productivity Commission received the Request for Advice for this study on 30 September 2025. The PC released a call for submissions on 14 November 2025 and its interim report on 13 April 2026.

In total, the PC received 67 submissions (table A.1) and 9 brief comments. The submissions and brief comments are available online at: www.pc.gov.au/inquiries-and-research/heavy-vehicle-reform/submissions

During the study, the PC consulted with participants to prepare this final report, including the National Transport Commission and the National Heavy Vehicle Regulator, Australian, state and territory, local governments, the freight industry and heavy vehicle manufacturers (table A.2).

The PC would like to thank everyone who participated in this study.

Table A.2 – Submissions

Participant	Submission no.
Australasian Railway Association (ARA)	39
Australia Post	40,61
Australian Food and Grocery Council (AFGC)	36
Australian Industry Group (AIG)	15
Australian Livestock and Rural Transporters Association (ALRTA)	19
Australian Local Government Association (ALGA)	33
Australian Logistics Council (ALC)	10
Australian Rail Track Corporation (ARTC)	3
Australian Renewable Energy Agency (ARENA)	25
Australian Retailers Association and National Retail Association (ARA and NRA)	29
Australian Small Business and Family Enterprise Ombudsman (ASBFEO)	32
Australian Trucking Association (ATA)	22,66
Austroads	31
AVantage Insight	51
Bus Industry Confederation (BIC)	21,55
Cement Concrete and Aggregates Australia (CCAA)	13,50
Centre for Connected and Automated Transport (CCAT)	67
Climateworks Centre	62

Participant	Submission no.
Cross Border Commissioners of South Australia and Victoria	26
Department of Local Government, Industry Regulation and Safety (LGIRS)	47
Department of State Growth (TAS Gov't)	34,60
Department of Transport and Main Roads (QLD)	30
Department of Treasury and Finance (VIC)	28
DUKA Tec	5,45
Electric Vehicle Council (EVC)	18,56
Energy Futures Foundation (EFF)	57
Energy Networks Australia (ENA)	42
Foton Mobility Distribution	54
GrainGrowers	11
Grain Trade Australia (GTA)	27
Heavy Vehicle Industry Australia (HVIA)	17,58
IKEA Australia (IKEA)	37
Institute for Energy Economics and Financial Analysis (IEEFA)	44
Jackie Wong	43
LGA South Australia	14
National Heavy Vehicle Regulator (NHVR)	4,63
National Road Transport Association (NatRoad)	41,53
New Energy Transport (NET)	6
NSW Farmers	16
Powering Australia	9
Smart Energy Council	65
South East Australian Transport Strategy (SEATS)	7
Team Global Express (TGE)	8,46
Tesla Motors Australia (Tesla)	20,59
The Australia Institute	24
The Crane Industry Council of Australia (CICA)	12,48
Transport for NSW	38,64
Truck Industry Council (TIC)	35
University of New South Wales Canberra (UNSW Canberra)	52
Volvo Group Australia (Volvo)	23,49
Western Roads Federation (WRF)	1
Xseed Solutions	2

Table A.2 – Consultations

Participant
AMPOL
ANC Delivers
Australasian Railway Association (ARA)
Australian Building Codes Board
Australian Energy Regulator
Australian Local Government Association (ALGA)
Australian Logistics Council
Australian Renewable Energy Agency (ARENA)
Australian Trucking Association (ATA)
Austroads
Brisbane City Council
Bureau of Infrastructure and Transport Research Economics (BITRE)
Centre for Connected and Automated Transport (CCAT)
Centre of Policy Studies (CoPS)
Clean Energy Finance Corporation
Coles Group
Commonwealth Scientific and Industrial Research Organisation (CSIRO)
Container Transport Association Australia (CTAA)
Department of Climate Change, Energy, the Environment and Water
Department of Economic Development (ACT)
Department of Infrastructure and Transport (NSW)
Department of Infrastructure and Transport (SA)
Department of Infrastructure, Transport, Regional Development, Communications, Sport and the Arts
Department of Logistics and Infrastructure (NT)
Department of Planning, Lands and Heritage (WA)
Department of State Growth (TAS)
Department of Transport (SA)
Department of Transport and Main Roads (QLD)
Department of Transport and Main Roads (WA)
Department of Transport and Planning (VIC)
Department of Treasury (ACT)
Department of Treasury (Aust)
Department of Treasury (QLD)

Participant
Department of Treasury and Finance (SA)
Department of Treasury and Finance (VIC)
Electric Vehicle Council
Energy Networks Australia
Engineers Australia
Frontier Economics
Heavy Vehicle Industry Australia (HVIA)
IKEA
Infrastructure Partnerships Australia
Infrastructure Victoria
Mov3ment
National Heavy Vehicle Regulator (NHVR)
National Road Transport Association (NatRoad)
National Transport Commission (NTC)
Precision Economics
Solarh2e Decarbonisation
Team Global Express
Transport Canberra and City Services Directorate (ACT)
Transport for NSW
Truck Industry Council
Wickham Freight Lines
Woolworths Group
Victoria University
Volvo
Zenobe

B. About the in-house economy-wide modelling

This appendix provides an overview of our approach to assess the economy-wide and revenue impacts of the proposed reforms, including the models used and the steps and assumptions taken.

B.1 Approach to assessing the economy-wide effects

The Productivity Commission was asked to assess 5 heavy vehicle reform areas to understand their economic and other benefits to the Australian community, as well as government revenue impacts.

We used computable general equilibrium (CGE) modelling to assess the potential economy-wide impacts of 3 of the reform areas – increasing access to Australia's road network for heavy vehicles, establishing a National Automated Access System (NAAS) and improving licensing pathways for heavy vehicle drivers.

CGE models are specifically designed to account for economy-wide effects (Burfisher 2021). They fit data from the officially published input-output tables for the Australian economy to a system of equations designed to capture the economic behaviour of firms, households and governments. In so doing, CGE models can simulate how agents respond to changes in specific policy settings. A strength of CGE models is that they explicitly account for economy-wide resource constraints (such as constraints on the national supply of labour), allowing the effects of any modelled policy changes to propagate differently throughout industries and the economy at large.

We used two CGE models for this study.

- We commissioned modelling from the Centre of Policy Studies at Victoria University on the reforms to increase heavy vehicle access and establish a NAAS using their VURMTAX CGE model. The modelling report is available on the PC's website: www.pc.gov.au/inquiries-and-research/heavy-vehicle-reform/report.
- We undertook further modelling in-house of the reforms to increase heavy vehicle access, establish a NAAS and improve licencing pathways, using our PC National CGE model. This is the main focus of this appendix. An earlier version of this appendix was reviewed by Precision Economics, and a copy of the referee review is available on the PC's website: www.pc.gov.au/inquiries-and-research/heavy-vehicle-reform/report.

PC National has been used, developed and documented in recent years as part of the National Competition Policy analysis (box B.1). It is a comparative-static and national model of the Australian economy.

Section B.2 discusses what the economy-wide modelling does and does not do, including the modelling environment and treatment of heavy vehicles, to inform the interpretation of the economy-wide results. Section B.3 details the steps and assumptions taken to translate each reform into a CGE model shock and discusses the simulation results.

Box B.1 – An overview of PC National

PC National is a CGE model that has been used previously by the PC to analyse the economic impacts of various policies on the Australian economy, including tariff removal, protectionist trade policies, and National Competition Policy reforms (PC 2017a, 2022, 2024, 2025c). The model has been used in this report because it provides detailed insights into the economic impacts of policy changes, including effects on output, prices, real wages and capital utilisation (PC 2024).

PC National differs fundamentally from regional CGE models (such as the VURMTAX model that was also used to undertake modelling for this study) in that Australia is treated as a single economy, rather than an aggregation of interacting state and territory economies. While state and territory effects can be derived, PC National operates as a model of a single national economy at its core.

PC National's database is based on the Australian input-output tables for the financial year 2018-19, capturing the structure of the Australian economy for that year. These input-output tables disaggregate and relate connections of production and consumption between 114 industrial categories that comprise Australia's economy. Producers and consumers in this model are households, government and industries themselves, and all are assumed to follow profit or utility maximising behaviour.

PC National has a highly stylised modelling of labour markets. When modelling long-run effects, wages adjust based on relative demand changes that occur in response to imposed shocks. The model does not include representations of labour supply or the labour-leisure trade-off, which would add complexity but could provide more detailed insights (PC 2017a).

PC National's core equations and mechanisms are outlined in its technical documentation (Zhang 2025). A detailed overview of the model's major recent changes is available in the PC's (2024) National Competition Policy report appendices. Many of these changes and further adjustments made in 2025 have been retained for this analysis, including:

- a module to calculate the implications of reforms on gross state product (GSP)
- a module to calculate more detailed implications for the 'cost of living' by identifying the impact of reforms on the components of the consumer price index (CPI)
- a module based on the ABS Government Finance Statistics to calculate the implications of reforms for government revenue and expenditure
- additional technical change terms
- additional reporting variables.

B.2 What economy-wide modelling does and does not do

CGE models are designed to assess the economy-wide effects of small policy changes. They start from input-output tables that account for the detailed linkages between sectors in the economy and their effects on private and public expenditures and investment. Most often, they are used to answer the question: 'How would the economy be different if the policy settings that are implied in the initial database were different?'

The economy-wide differences arising from a change in policy settings are estimated by applying a 'shock' to one of more of the model's many variables and equations. These shocks are calibrated

outside of the model, with their magnitude and targets based on estimates of the direct effects of the policy change being modelled. For example, a tariff reduction could be modelled as a negative shock to the ad valorem tariff variable for one or more commodities, whereas cost savings in a particular industry could be modelled as a positive shock to said industry's total factor productivity.

In response to a modelled shock, the economy-wide effects will depend on the following.

- **Scale:** the magnitude of the direct impacts of the modelled change (that is, the shock) and the size of the economic footprint being targeted by said shock. Larger direct effects and economic footprints lead to larger economy-wide impacts.
- **Linkages:** the extent to which the targeted sector has many upstream and downstream connections with the rest of the economy. The more and deeper the linkages, the more widespread the impacts and the larger the multiplier effects.
- **Constraints:** the effects on one sector are transmitted to the rest of the economy through economy-wide resource constraints and changes in prices, including on the use of capital and labour (depending on the modelling environment).

The results from CGE models are not predictions about the future. Instead, they represent the impact of the scenarios being modelled, given the model theory, parametrisation and database. All models are stylised representations of the economy and employ simplifying assumptions. The modelling presented here does not, for example, capture impacts that vary over time or the anticipation effects of proposed policies. Moreover, multiple, possibly inconsistent, data sources have been used to fill gaps in official economic data and to construct model databases and parameter values (such as the ease of substituting between labour and capital in production, or between domestic and imported goods).

The results presented in this report are indicative only. They should be considered in the context of their chosen modelling environment and the limitations of PC National's treatment of heavy vehicles, discussed below.

Modelling environment

The modelling environment determines how a CGE model responds to the policy changes being modelled.

CGE models often include more variables than equations, so they tend to be under-identified. The equations do not provide sufficient information to derive a unique equilibrium solution for all of the model variables (Burfisher 2021, p. 28). To overcome this, the model's 'closure' specifies some variables as exogenous, to be determined outside of the model. For a given simulation, exogenous variables can be held fixed (implying no change) or change by an amount specified by a shock to that variable, also calculated outside of the model.

The closure, or the choice of which variables are endogenous and which are exogenous, determine the economic environment assumed in the modelling and the nature and interpretation of the results produced. For example, wages are typically held fixed (exogenous) in a short-run modelling environment, with aggregate employment (and hence unemployment) allowed to adjust in response to simulated policy changes. A longer-run closure reverses this choice, such that aggregate employment (and hence unemployment) is held fixed, with wages allowed to adjust. The key distinction is that there are more rigidities in a short-run closure that prevent the economy from fully adjusting to the modelled policy shocks compared to a long-run simulation.

The PC used a long-run closure for this study, consistent with the assumption that the economy has adapted fully to the changes modelled – that is, that all quantities and prices have adjusted to the new policy settings. As PC National is a comparative-static model, it does not model this adjustment

dynamically. Instead, it estimates the final structure of the economy after all its agents have made different allocative decisions.

There are several key features of the model closure.

- **Fixed aggregate employment**. In this closure aggregate employment is held fixed, consistent with the assumption that aggregate employment is not affected by the changes under consideration. For example, when productivity improves across several industries, they seek to increase their outputs by bidding labour away from other industries. With fixed aggregate employment, wages rise across the economy.
- **Fixed rate of return to capital**. The rate of return to capital is held fixed. To accommodate this, foreign capital is allowed to adjust. For example, when productivity improves across several industries, they seek to increase their outputs by bidding capital away from other industries and increasing demand for foreign capital. The rental price of capital adjusts to maintain the rate of return to capital.
- **Fixed rate of tax**. Tax rates are held fixed, unless shocked as part of the proposed changes.
- **Fixed fiscal balance**. Fiscal balances in the model core are generally held fixed, consistent with assuming that budget deficits are a policy choice. The model maintains fiscal balance by assuming that nominal expenditures move with revenue. A non-distortionary transfer between the household and the government sector may maintain this balance.
- **Fixed savings rate**. The savings rate is assumed to be fixed.
- **Nominal exchange rate as numeraire**.[30] To report on cost-of-living implications, the nominal exchange rate is used as the model numeraire rather than the CPI as is often the case in CGE models. This enables changes in prices to be reported. Changes in the CPI are effectively measured relative to the world price of imports.

Heavy vehicles in PC National

An important consideration for interpreting our results is the treatment of heavy vehicles in the PC National database. Heavy vehicle activities are partially captured within the Road Transport industry in the ABS input-output tables, which forms the basis of the PC National database. The bulk of Australia's road freight task is performed by heavy vehicles (96.1%) (ABS 2020).

There are two key limitations associated with the Road Transport industry in PC National.

- **Overinclusion.** The Road Transport industry captures road vehicle activities beyond road freight transport, namely taxi and bus services, which would be unduly affected by shocks seeking to target heavy vehicle activities. For example, in 2018-19, the reference year for PC National, the share of taxi and bus services amounted to 12.4% of the Road Transport industry's total production (ABS 2021b). While these other activities constitute only a minority of the industry, they would also be affected by any shocks to Road Transport in ways that do not reflect the intention of the proposed heavy vehicle reforms. Nonetheless, the majority of the Road Transport industry in PC National *does* capture freight activities likely within scope of the proposed reforms, namely the road transport margin

[30] All prices in PC National (and most other CGE models) are set relative to a model price, which has to be specified and set exogenously. This is referred to as the model numeraire. The consumer price index is frequently used as the model numeraire in CGE modelling, but this prevents the modelling from reporting the cost-of-living implications (as the CPI would not change, because it would be held fixed). The CPI can be allowed to vary by specifying another price as the model numeraire (such as the nominal exchange rate or investment price index).

associated with the supply of products to intermediate and final use categories (64.3%). The industry also includes other road freight transport services (21.6%), including the hire of trucks with a driver, conducting different but related kinds of heavy vehicle activities (ABS 2021b). Given that these activities may be impacted to different extents by the proposed heavy vehicle reforms, they are included in some modelling scenarios but not others as a sensitivity analysis.

- **Incompleteness.** The Road Transport industry does not capture all heavy vehicles affected by the proposed reforms because it does not include in-house road freight activities. That is, when the vehicles and drivers involved are registered by a business in another industry, such as retail and construction, their activity is counted as part of that industry and not Road Transport (ABS 2023). The magnitude of the incompleteness problem is unclear, because there is no comprehensive data on heavy vehicle output.
  - Using a conservative estimate of road transport production (from the ABS's (2021a) Input-Output tables), about 80% of road transport production was undertaken by the Road Transport industry in 2018-19. This estimate aligns with the Bureau of Infrastructure and Transport Research Economics' (BITRE's) estimates that were used to calibrate the shocks for this modelling (section B.3), which are based on different data sources.[31]
  - Using a more expansive estimate of road transport production (from the ABS's (2023) Experimental Transport Satellite Account), only about 25% of road transport production was undertaken by the Road Transport industry in 2018-19. This estimate includes ancillary transport activity, such as a retail business using their own truck to deliver goods from a warehouse to their retail outlet.

Due to these limitations, the Road Transport industry in PC National is not perfectly suited to estimate the effects of reforms to improve the productivity of road freight activities. However, it can produce indicative estimates of the general magnitude and direction of the potential economy-wide effects of the proposed heavy vehicle reforms.

Reflecting the above uncertainty about our ability to target road freight activities in simulations using PC National, we designed a 'lower' and 'upper' scenario to estimate the impacts of each reform. These variants differ in the direct effect of the reforms as drawn from BITRE (forthcoming) and in the scaling assumptions used to apply the direct effect to PC National's Road Transport industry. For each 'lower' scenario, we assumed that the reforms cover activities recorded by the ABS as only the road freight transport margin (64.3% of Road Transport). For each 'upper' scenario, we assumed that the reforms also include road freight transport services (21.6% of Road Transport for a total scaling of 85.9%).[32]

[31] In 2023-24, road transport production from the ABS's Input-Output tables was 131% of BITRE's estimates of total road freight operator costs (ABS 2026; BITRE forthcoming). The ABS figure can be adjusted to put it on a closer-to-level basis with the BITRE figure for the purposes of comparison. Road transport production (sales) and operator costs differ mostly by profits, and road transport production can be scaled by 87% to account for estimated gross profits (using the Road Transport industry as a proxy and removing the gross operating surplus and mixed income share of total production (PC estimates based on ABS 2026)). The ABS's definition of road transport also includes activities beyond freight transport, and road transport production can be scaled by 89% to account for this (again using the Road Transport industry as a proxy, and removing production other than the road transport margin and other road freight transport services as a share of total production (PC estimates based on ABS 2026)).

[32] The 'road freight transport margin' product in the IO tables records the value of transporting purchased goods from purchasers to suppliers and is applied upon the sale of goods. Road transport services do not involve a sale or change of ownership and capture activities such as furniture removal and vehicle towing services.

B.3 Model simulations and results

The economy-wide modelling results presented in this appendix are derived from 3 scenarios with different shocks to PC National's Road Transport industry, each comprising a lower and upper estimate based on two different sets of assumptions.

The direct effects of each scenario – increasing heavy vehicle access, establishing a NAAS and improving licensing pathways – are drawn from 'road freight productivity' impacts estimated by the Bureau of Infrastructure and Transport Research Economics (BITRE) (forthcoming). These are based on estimates of the savings that road freight operators would incur if they were to produce the same industry output following implementation of the reforms. For example, BITRE's modelling suggests that increasing General Mass Limits could raise road freight productivity by between 1.0% and 3.2%, by reducing the number of vehicle trips required to move the same volume of freight.

For each scenario, the PC chose to apply these estimated direct effects as appropriately scaled total factor productivity shocks to the Road Transport industry. The logic is that each reform would allow more industry output to be produced with a bundle of labour, capital and intermediate inputs. The proposed reforms would allow heavy vehicle operators to complete their freight tasks using more efficient vehicles, in fewer trips or using fewer inputs such as fuel. For example:

- increasing heavy vehicle access (1L and 1U in table B.1) would allow vehicles that are currently constrained by existing mass limits to carry larger payloads
- introducing the NAAS (2L and 2U in table B.1) would save operators' time, both because the permit application process would be faster and there would be fewer delays with approvals
- improving licensing pathways (3L and 3U in table B.1) would allow drivers to progress through licence classes more swiftly, allowing them to drive vehicles that carry larger payloads.

The magnitudes of the shocks applied were calibrated by aligning the direct effect of the reforms with the corresponding footprint in PC National (which reflects the level of economic detail in the ABS input-output tables). This involved scaling the direct effect associated with the reform down to align with the more aggregated Road Transport industry structure in PC National, consistent with only part of the broader industry being affected.[33]

Table B.1 outlines the assumptions and steps involved in calibrating the shocks for each simulation.

[33] The lower and upper estimate for each scenario differ in the scaling assumptions applied. The upper estimates assume that a relatively larger proportion of the Road Transport industry is affected by the reforms, including those producing *road freight transport services*. These services relate primarily to transport for rent, such as furniture removal and truck rentals (ABS 2013), which may not be affected by the reforms to the same extent as other road freight activities.

Table B.1 – Shock calibration for interim model simulations

Steps and assumptions taken to model each scenario

Scenario	Shock calibration from direct effects
1L	**Direct effect:** Access reforms lead to a 1% total factor productivity improvement for the heavy vehicle freight sector. **Shock estimation:** 96.1% of road freight task is performed by heavy vehicles affected by the reforms. Assumption – 64.3% of Road Transport industry (only the margin) represents freight. **Modelled shock:** A total factor productivity improvement shock of 0.62% (1% × 96.1% × 64.3%) to the Road Transport model industry.
1U	**Direct effect:** Access reforms lead to a 3.2% total factor productivity improvement for the heavy vehicle freight sector. **Shock estimation:** 96.1% of road freight task is performed by heavy vehicles affected by the reforms. Assumption – 85.6% of Road Transport industry (the margin + road freight transport services) represents freight. **Modelled shock:** A total factor productivity improvement shock of 2.64% (3.2% × 96.1% × 85.9%) to the Road Transport model industry.
2L	**Direct effect:** NAAS reforms lead to a 0.8% total factor productivity improvement for the heavy vehicle freight sector. This improvement is applied nationally, including Western Australia and the Northern Territory, unlike the modelling conducted using VURMTAX. **Shock estimation:** 96.1% of road freight task is performed by heavy vehicles affected by the reforms. Assumption – 64.3% of Road Transport industry (only the margin) represents freight. **Modelled shock:** A total factor productivity improvement shock of 0.49% (0.8% × 96.1% × 64.3%) to the Road Transport model industry.
2U	**Direct effect:** NAAS reforms lead to a 1.6% total factor productivity improvement for the heavy vehicle freight sector. This improvement is applied nationally, including Western Australia and the Northern Territory, unlike the modelling conducted using VURMTAX. **Shock estimation:** 96.1% of road freight task is performed by heavy vehicles affected by the reforms. Assumption – 85.9% of Road Transport industry (the margin + road freight transport services) represents freight. **Modelled shock:** A total factor productivity improvement shock of 1.32% (1.6% × 96.1% × 85.9%) to the Road Transport model industry.

Scenario	Shock calibration from direct effects
3L	**Direct effect:** Licensing reforms lead to a 0.11% total factor productivity improvement for the heavy vehicle freight sector. **Shock estimation:** 96.1% of road freight task is performed by heavy vehicles affected by the reforms. Assumption – 64.3% of Road Transport industry (only the margin) represents freight. **Modelled shock:** A total factor productivity improvement shock of 0.07% (0.11% × 96.1% × 64.3%) to the Road Transport model industry.
3U	**Direct effect:** Licensing reforms lead to a 0.32% total factor productivity improvement for the heavy vehicle freight sector. **Shock estimation:** 96.1% of road freight task is performed by heavy vehicles affected by the reforms. Assumption – 85.9% of Road Transport industry (the margin + road freight transport services) represents freight. **Modelled shock:** A total factor productivity improvement shock of 0.26% (0.32% × 96.1% × 85.9%) to the Road Transport model industry.

Source: ABS (2020, 2021b); BITRE (forthcoming).

Economy-wide results

The headline results for each simulation are presented in table B.2. They are not forecasts; rather, they are estimates of the impacts on the broader economy from the direct effects modelled, in isolation from any other influences. In particular, the results abstract from any underlying growth, developments in Australia's trade environment or any other influences that might affect the reported variables. They are best interpreted as how different the economy is relative to that represented in the model database, under the different operating or policy environments that result from the modelled shocks. The results do not account for dynamic effects nor implementation costs.

The following discussion presents the primary mechanisms underpinning the modelling results in a stylised manner to aid understanding, but it should be noted that these mechanisms, and more, occur simultaneously in the model. The headline results are the net of several competing factors throughout the economy. Moreover, as the modelled scenarios are similar in design – with each representing heavy vehicle reforms as differently sized improvements to multifactor productivity in Road Transport – the mechanisms at play are also similar and the following discussion applies broadly across the scenarios.

Table B.2 – Modelling results for reforms improving heavy vehicle road access

Percentage change from base

	1L	1U	2L	2U	3L	3U
Real gross domestic product (GDP)	0.035	0.148	0.027	0.074	0.004	0.015
Real household consumption	0.034	0.147	0.027	0.073	0.004	0.014
Real investment	0.035	0.148	0.027	0.074	0.004	0.015
Real government consumption	0.007	0.030	0.006	0.015	0.001	0.003
Export volumes	0.052	0.223	0.041	0.111	0.006	0.022
Import volumes	0.029	0.123	0.023	0.062	0.003	0.012
Real wages[a]	0.045	0.190	0.035	0.095	0.005	0.019
Rate of return[b]	0.000	0.000	0.000	0.000	0.000	0.000
Employment[b]	0.000	0.000	0.000	0.000	0.000	0.000
Capital stock	0.031	0.130	0.024	0.065	0.003	0.013
Exchange rate[c]	0.000	0.000	0.000	0.000	0.000	0.000
GDP deflator	0.005	0.022	0.004	0.011	0.001	0.002
Consumer price index	0.003	0.014	0.003	0.007	0.000	0.001
Export prices	-0.010	-0.045	-0.008	-0.022	-0.001	-0.004
Import prices	0.000	0.000	0.000	0.000	0.000	0.000
Terms of trade	-0.010	-0.045	-0.008	-0.022	-0.001	-0.004
Rental price of capital	0.002	0.007	0.001	0.003	0.000	0.001
Investment price index	0.002	0.007	0.001	0.003	0.000	0.001
Government price index	0.028	0.122	0.022	0.061	0.003	0.012

a. Real wage deflated by the consumer price index. **b.** The rate of return to capital and aggregate employment are held fixed in the modelling environment. **c.** As the model numeraire, the nominal exchange rate is held fixed. All prices are reported relative to the numeraire. Price results from simulations using different numeraires in PC National and VURMTAX are comparable using a first-order approximation: price results under VURMTAX's nominal exchange rate numeraire are roughly equivalent to price results under PC National's CPI numeraire minus the reported nominal exchange rate result.

Source: PC estimates.

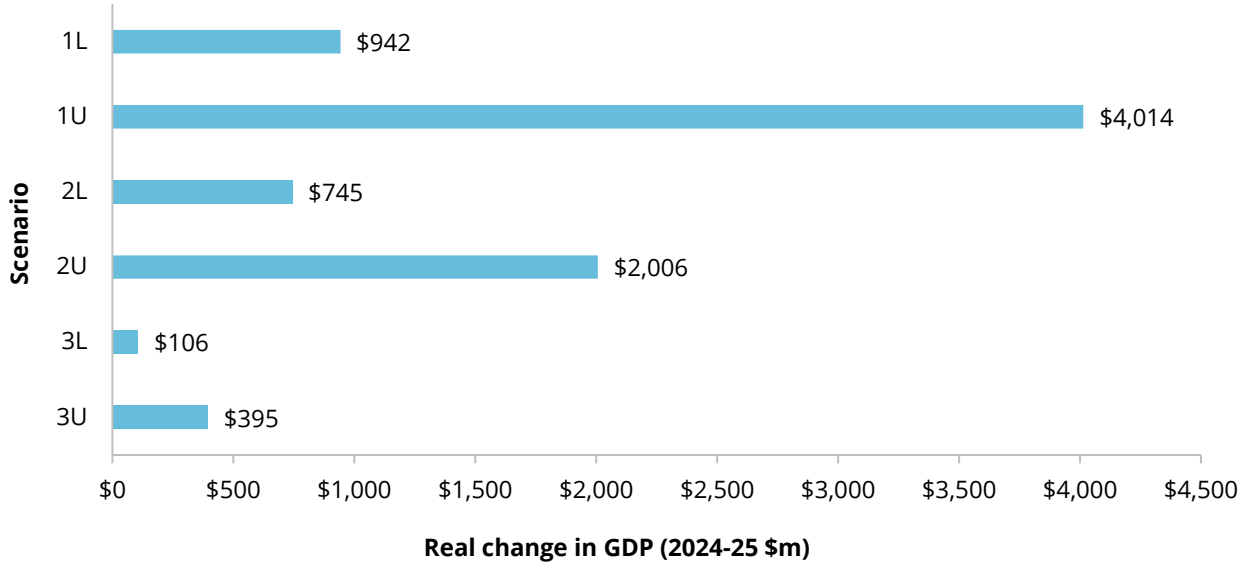
GDP and GSP

The simulation results indicate that reforms to increase heavy vehicle road access, automated access and licensing pathways, leading to higher productivity in road transport, could collectively increase Australian GDP by approximately 0.07% to 0.24% or by $1.8 to $6.4 billion (figure B.1).[34]

[34] Results are reported in 2024-25 dollars using the change in GDP since the Government Finance Statistics module reference year (2021-22) to scale values up. Simulation results are not technically additive as the scenarios were not modelled jointly.

Figure B.1 – Reforms to increase heavy vehicle road access could grow GDP by billions

Impacts on real GDP, 2024–25 million dollars



Refer to table B.1 for the details of each scenario.

Source: PC estimates.

Higher total factor productivity allows the Road Transport industry to produce the same level of domestic output with fewer production inputs (including capital, labour and intermediate commodities), lowering the industry's production costs and ultimately the prices it charges for its services. For example, in scenario 1U, the total factor productivity improvement allows the Road Transport to increase its domestic output while simultaneously reducing its demand for primary factors and the basic price of producing its services.

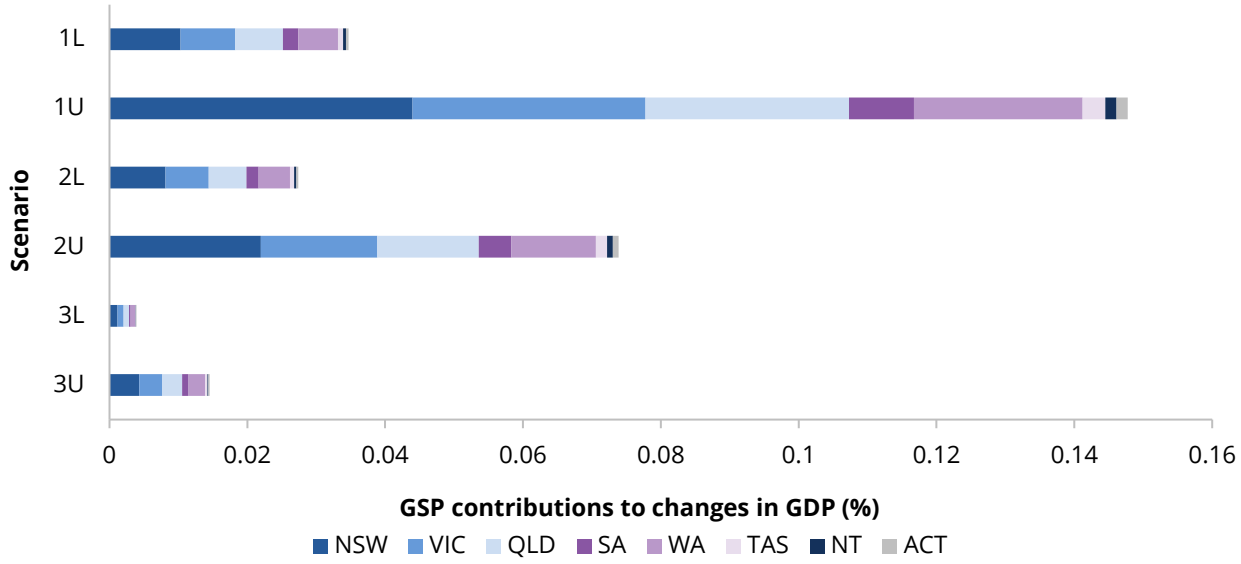
Lower prices for Road Transport induce additional demand for road transport and other goods and services, leading real GSP to increase for all states and territories and across all scenarios (figure B.2). The changes are largest in the 4 biggest state economies – New South Wales, Victoria, Queensland and Western Australia, with the relative magnitudes driven by the population and industrial composition of each state.[35]

Growth is led by households, who represent more than two-thirds of final demand for Road Transport in the starting database and further increase their consumption. The most populous states of New South Wales and Victoria see the largest household consumption responses, both in Road Transport directly and other goods and services due to the income effects of lower transport prices. Conversely, relatively lower household demand responses in Queensland and Western Australia are supplemented by higher levels of industrial demand for Road Transport, namely from their large coal and iron ore sectors.

[35] Since PC National is a national model, NAAS reforms under scenarios 2L and 2U are modelled as national productivity shocks but scaled down to adjust for Western Australia and the Northern Territory being out of scope of the reforms. Modelling conducted using VURMTAX does not share this limitation.

Figure B.2 – Changes in real GSPs relate to the size of regional economies and their industry structure

GSP contributions to percentage changes in GDP



Refer to table B.1 for the details of each scenario.

Source: PC estimates.

Industry

The total factor productivity improvement applied to Road Transport allows the industry to increase its output directly, constituting the single largest industry contribution to higher GDP. Other changes in industry output are driven by different cost structures and linkages with Road Transport.

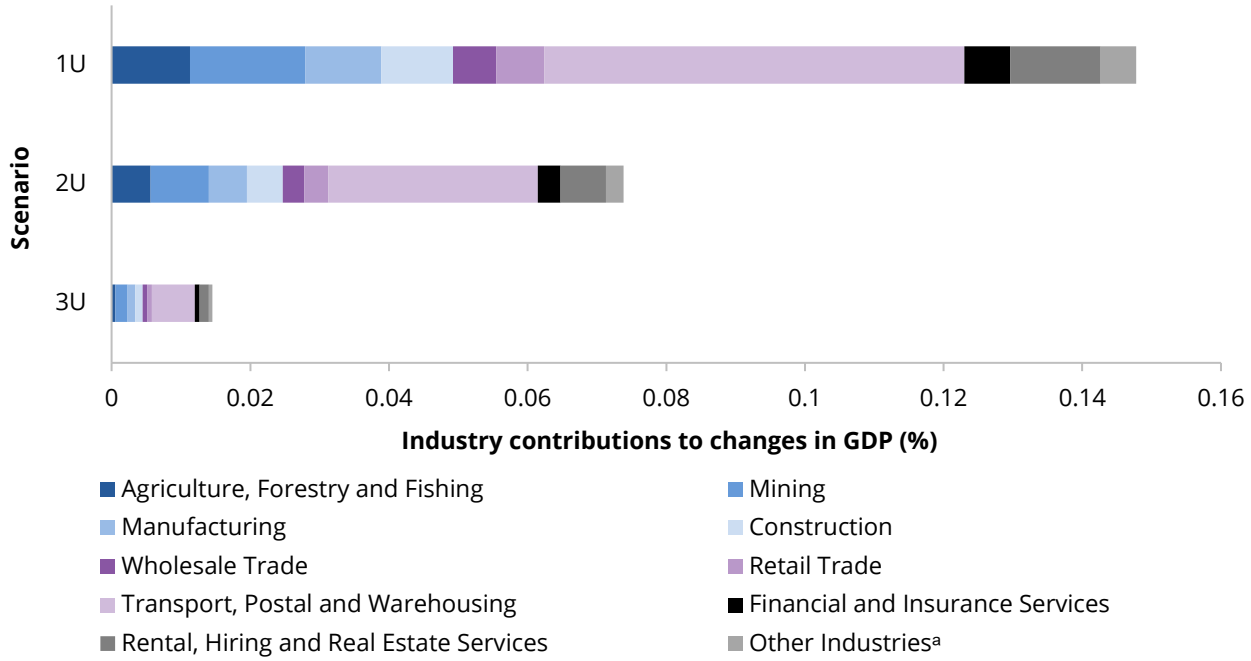
Lower prices for Road Transport generate cost savings for other industries that use at least some road transport services in producing their own products. These savings are particularly pronounced in downstream sectors for which road transport services form a significant input, such as parts of agriculture, mining, construction, and wholesale and retail trade. Cost savings free up comparatively more resources for these industries than others, allowing them to make larger contributions to the overall change in GDP (figure B.3).

The notable exceptions are in:

- major *upstream* industries from Road Transport that provide inputs to its production, such as Oil & Gas and Auto Repair. The total factor productivity improvement in Road Transport makes the industry's use of these inputs more efficient, generating cost savings for Road Transport at the expense of a small contraction in these sectors
- other transport industries (namely transport support services, postal services and water transport) as they become relatively less competitive and decrease their output.

Figure B.3 – Cost savings on road transport allow downstream user industries to increase their output

Industry contributions to percentage changes in GDP, upper scenarios

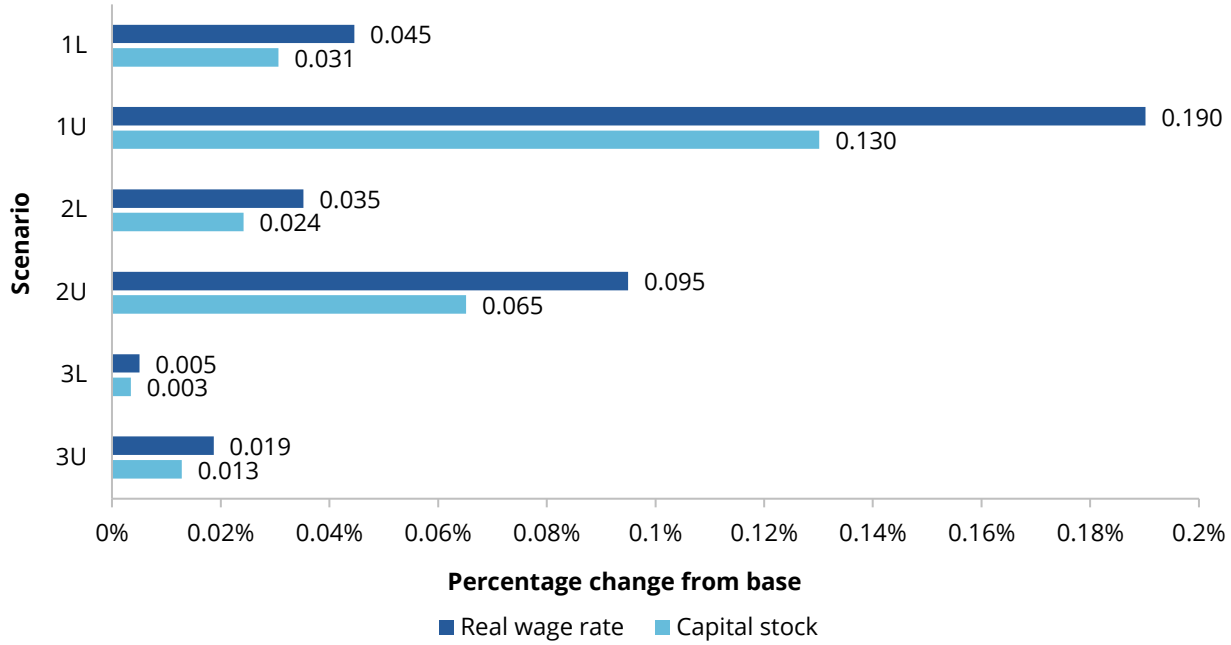


Refer to table B.1 for the details of each scenario. Upper scenarios selected for ease of visibility. ANZSIC industry contributions to changes in GDP are approximations based on their concordance to Input-Output Product Groups (IOPG). Negative contributions are not visible as ANZSIC industries are more aggregated than IOPG. **a.** Other industries include electricity, gas, water and waste services, accommodation and food services, information media and telecommunications, professional, scientific and technical services, administrative and support services, public administration and safety, education and training, health care and social assistance, arts and recreation services and other services.

Source: PC estimates.

Several industries seek to use cost savings to expand their output simultaneously, increasing domestic demand for primary factors (and intermediate inputs). These industries compete for the limited supply of labour in the economy by bidding up wages, attracting workers towards sectors that benefit most from the reforms such as those closely downstream from Road Transport. Conversely, as capital is internationally mobile, foreign investment flows into the economy to increase production and maintain a stable real rate of return on capital, which particularly benefits capital-intensive sectors. As a result, both the real wage rate and capital stock rise, supporting the household consumption effect of the modelled changes and indicating a shift toward a more capital-intensive economy (figure B.4).

Figure B.4 – The economy becomes more capital-intensive as real wages and the capital stock rise
Changes in the real wage rate and capital stock, percentage change from base



Refer to table B.1 for the details of each scenario.

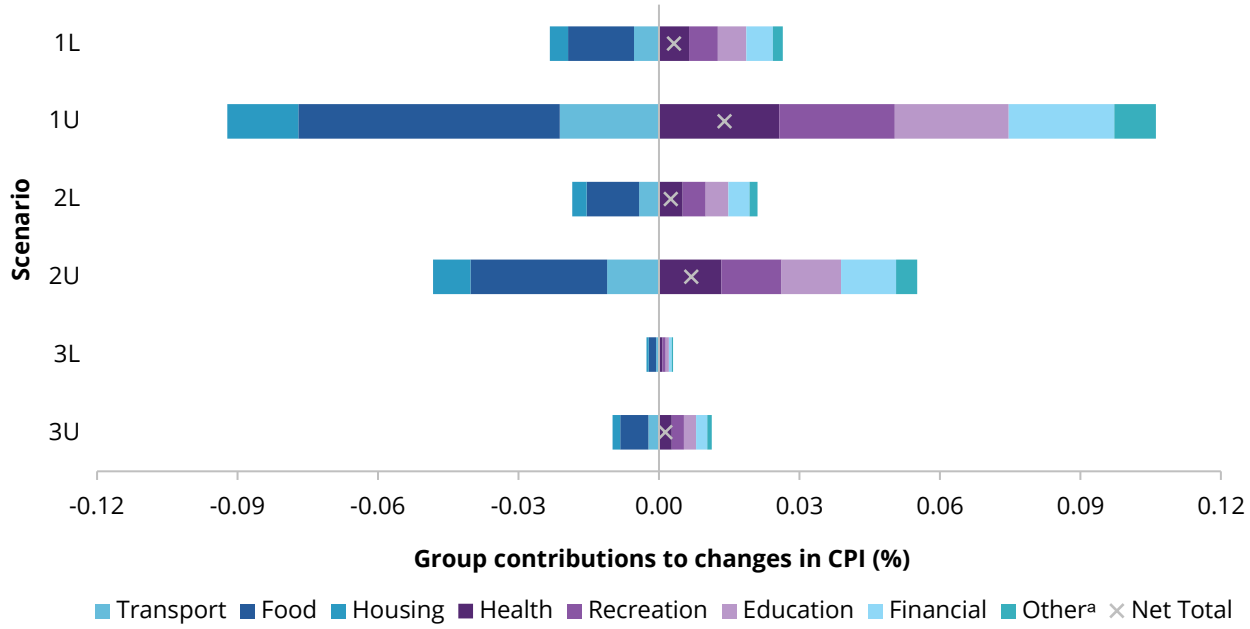
Source: PC estimates.

The above occurs with negligible impacts on the CPI due to opposing effects on its components (figure B.5). Falls in the food, transport and housing components of CPI are only just outweighed by increases in health, recreation, education and finance, resulting in minimal aggregate price impacts.

Differences in the components of the CPI are driven by the varying cost structures of different industries and the net effect of changes in labour, capital, transport and other intermediate input costs. Lower prices for food, transport and housing are driven by the direct effects of higher productivity in Road Transport as well as the inflow of foreign capital into these relatively capital-intensive sectors – which also drives the price increase for financial products, through overall higher demand for investment. Higher prices for health, recreation and education are driven by higher wage costs in these sectors, which are labour-intensive and do not benefit sufficiently from reduced transport costs to compensate.

Figure B.5 – The CPI remains stable due to competing effects on its components

Group contributions to changes in the CPI, percentage change from base



Refer to table B.1 for the details of each scenario. **a.** Other includes Alcohol, Clothing, Furnishings and Communication.

Source: PC estimates.

Government revenues

The revenue results reflect the changes in government income and expenditure associated with the modelled productivity improvements in Road Transport and their general equilibrium effects. They do not include any costs associated with the reforms, such as the maintenance costs of additional road wear or implementation costs.

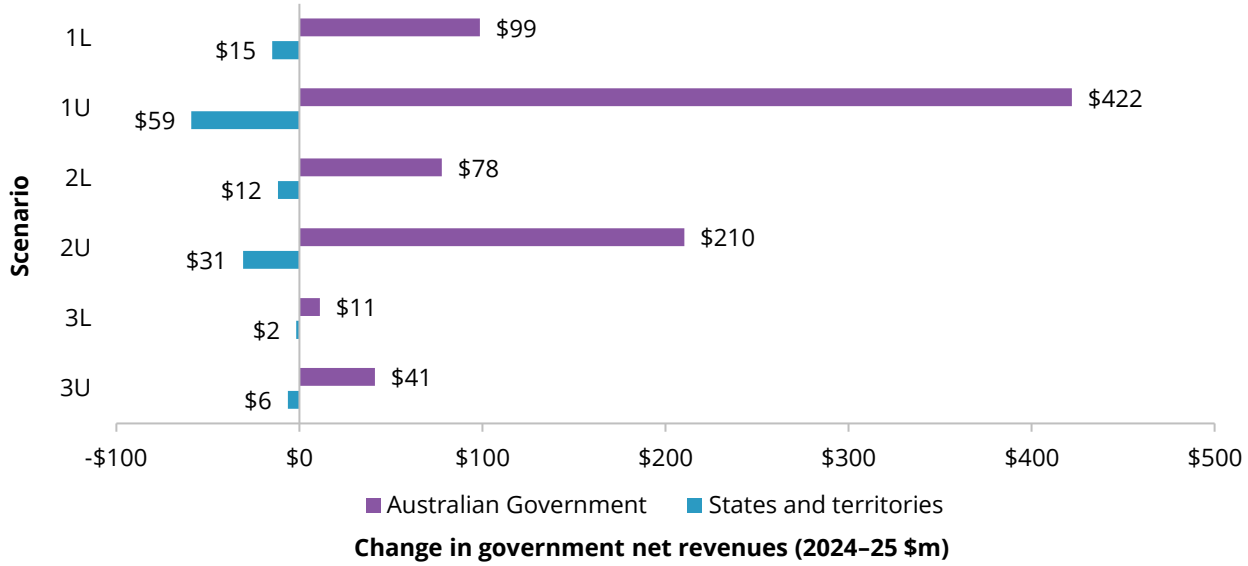
Changes in net revenues are driven by changes in both revenues and expenditures, with net revenue increasing for the Australian Government and decreasing for state, territory and local governments (figure B.6).[36] Different impacts across the levels of government are driven by differences in the structure of revenues and expenditures across jurisdictions and how these respond to other economy-wide changes in the model theory.

In short, both levels of government spend more and collect more in taxes as the economy grows due to the reforms. The additional tax receipts outweigh the additional spending for the Australian Government, while the opposite is true for states and territories.

[36] PC National's government finance module is based on the ABS' *Government Finance Statistics* and *Taxation Revenue Australia*, which include local government accounts in the relevant state or territory's account. The module calculates the change in each revenue and expense item by applying the percentage changes in a set of drivers from the model core to each revenue and expense item. For example, nominal labour and capital incomes drive income tax receipts. For a complete list of the drivers of government revenue and expenditure, see PC (2024).

Figure B.6 – Net revenues increase for the Australian Government and fall for the states and territories

Impacts on government net revenues, 2024–25 million dollars



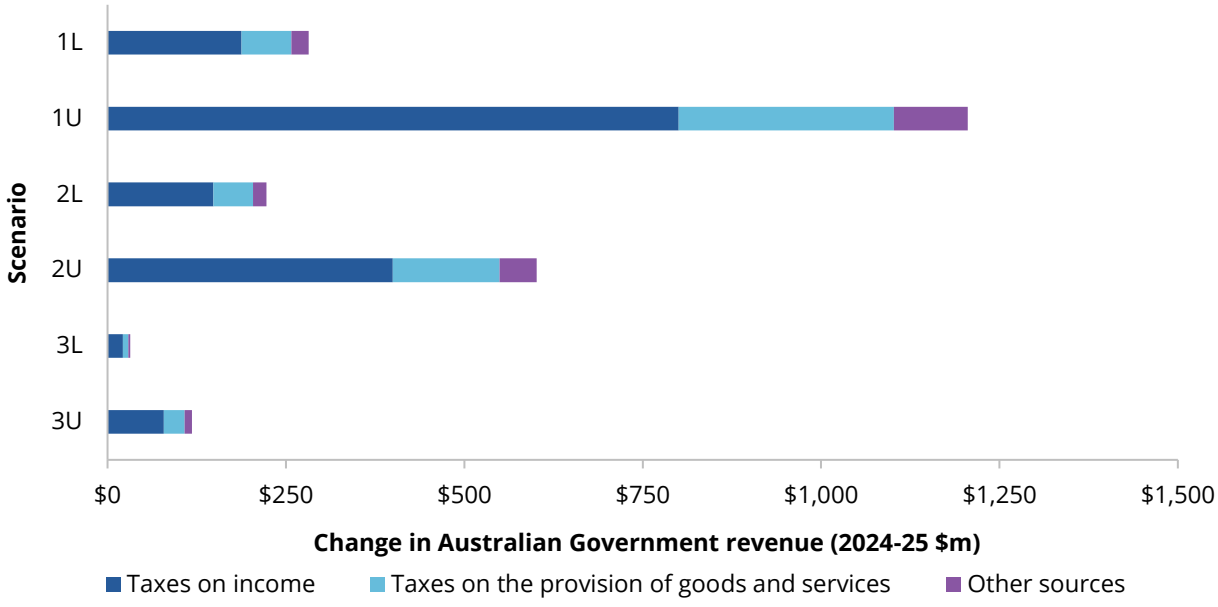
Refer to table B.1 for the details of each scenario.

Source: PC estimates.

Australian Government revenue increases, largely through personal and corporate income taxes (figure B.7). Higher real and nominal household income, a larger capital stock for businesses and the increase in GDP associated with the reforms drive an overall higher tax take from income.

Figure B.7 – Australian Government revenue increases mostly through taxes on income

Changes in Australian Government revenue by source, 2024–25 million dollars



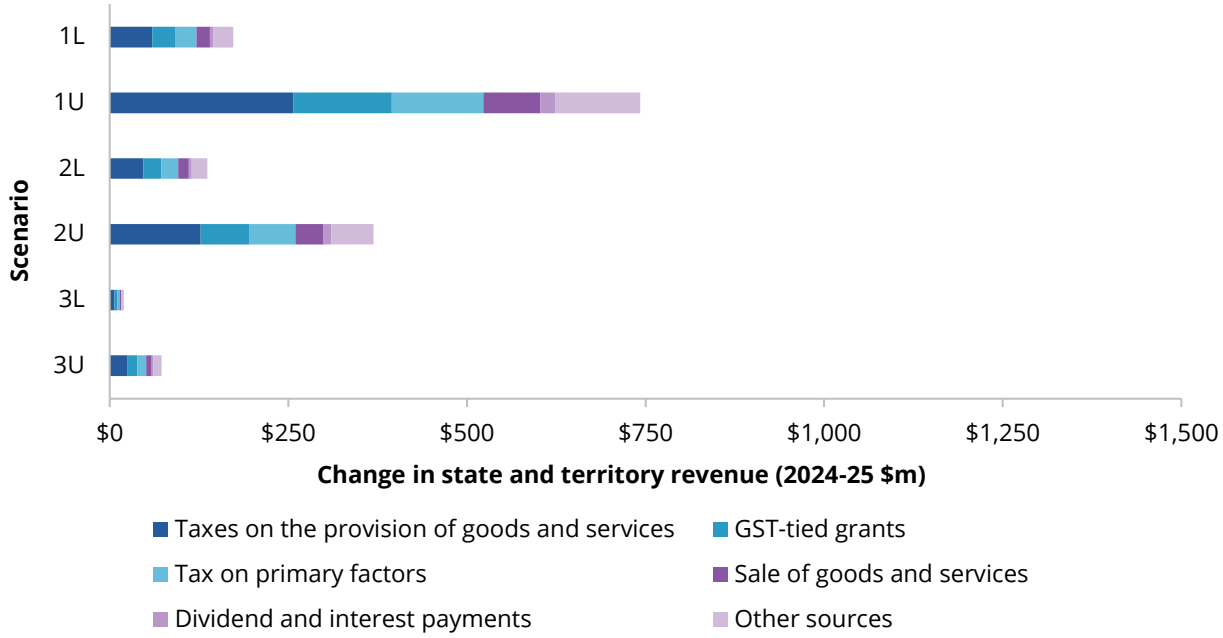
Refer to table B.1 for the details of each scenario.

Source: PC estimates.

State and territory revenues increase by relatively less than Australian Government revenue, and through a variety of sources (figure B.8). Taxes on the provision of goods and services are the largest single source of growth, encompassing sales taxes, excises, levies and other payments associated with higher real production and consumption. These are followed by payments from the Australian Government, overwhelmingly through GST-tied grants associated with higher GST collections.

Figure B.8 – State and territory revenues increase through a variety of sources

Changes in state and territory revenue by source, 2024-25 million dollars



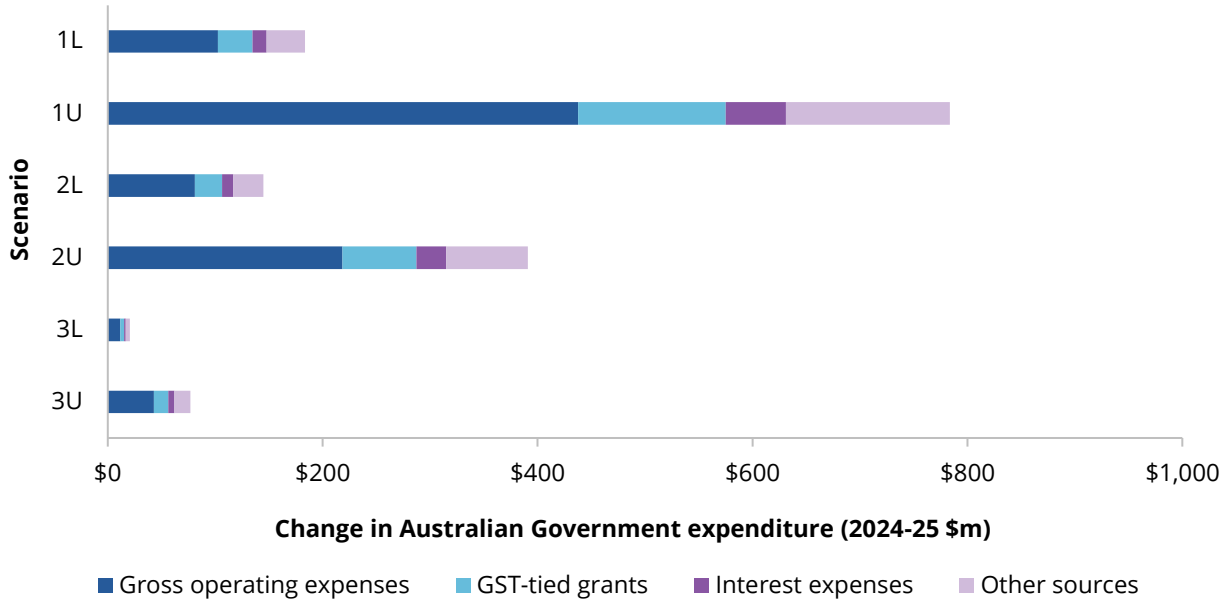
Refer to table B.1 for the details of each scenario.

Source: PC estimates.

Australian Government and state and territory expenditures also increase, both driven by gross operating expenses (figures B.9 and B.10). These expenses are composed of employee expenses (driven by wages), depreciation expenses (driven by capital use) and other gross operating expenses (driven by government consumption).

Figure B.9 – Australian Government expenditure increases mostly through gross operating expenses

Changes in Australian Government expenditure by source, 2024-25 million dollars

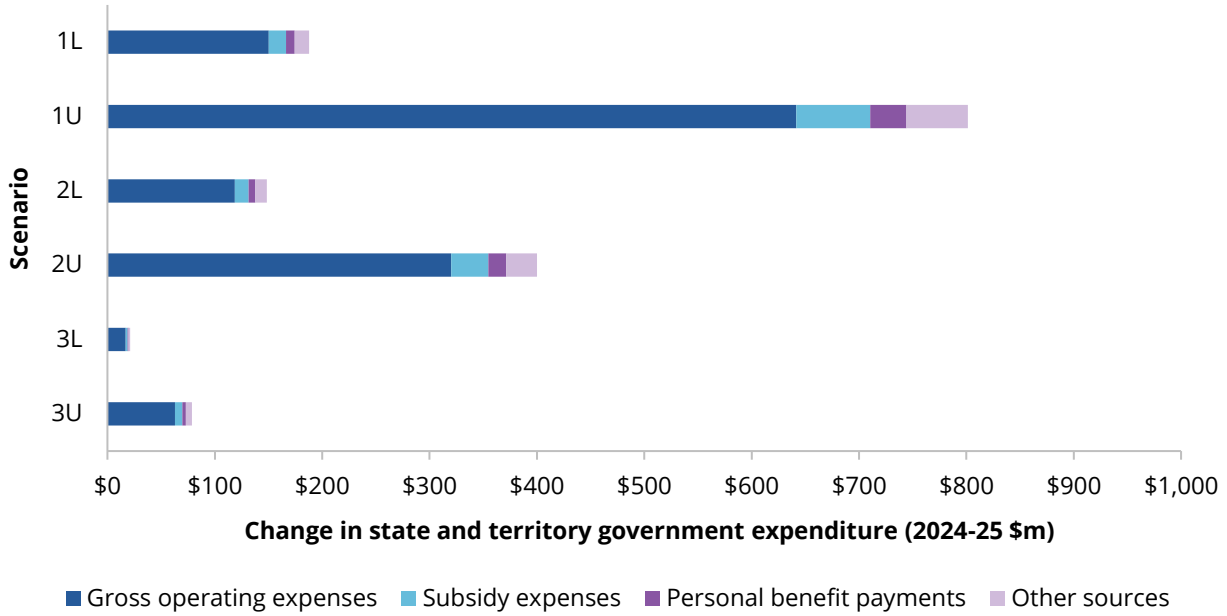


Refer to table B.1 for the details of each scenario.

Source: PC estimates.

Figure B.10 – State and territory expenditure increases almost entirely through gross operating expenses

Changes in state and territory expenditure by source, 2024-25 million dollars



Refer to table B.1 for the details of each scenario.

Source: PC estimates.

Annex: Products and industries in PC National

No.	Short name	Product/industry full name
1	ShpGranCattl	Sheep, grains, beef and dairy cattle
2	OthLivestock	Poultry and other livestock
3	OthAgricul	Other agriculture
4	Aquaculture	Aquaculture
5	Forestry	Forestry and logging
6	Fishing	Fishing, hunting and trapping
7	AgriServs	Agriculture, forestry and fishing support services
8	Coal	Coal mining
9	OilGas	Oil and gas extraction
10	IronOre	Iron ore mining
11	NFerMetOre	Non-ferrous metal ore mining
12	NMetMinerl	Non-metallic mineral mining
13	MingServs	Exploration and mining support services
14	MeatProds	Meat and meat product manufacturing
15	ProcSeafood	Processed seafood manufacturing
16	DairyProds	Dairy product manufacturing
17	FruitVege	Fruit and vegetable product manufacturing
18	OilsFats	Oils and fats manufacturing
19	Cereal	Grain mill and cereal product manufacturing
20	Bakery	Bakery product manufacturing
21	Sugar	Sugar and confectionery manufacturing
22	OthFood	Other food product manufacturing
23	SoftDrinks	Soft drinks, cordials and syrup manufacturing
24	Beer	Beer manufacturing
25	WineTobacco	Wine, spirits and tobacco
26	Textile	Textile manufacturing
27	Leather	Tanned leather, dressed fur and leather product manufacturing
28	TextileProds	Textile product manufacturing
29	KnittedPrds	Knitted product manufacturing
30	Clothing	Clothing manufacturing
31	Footwear	Footwear manufacturing
32	Sawmill	Sawmill product manufacturing
33	OthWood	Other wood product manufacturing
34	PulpPaper	Pulp, paper and paperboard manufacturing

No.	Short name	Product/industry full name
35	OthPaperPrds	Paper stationery and other converted paper product manufacturing
36	Printing	Printing (including the reproduction of recorded media)
37	PetrolCoalPr	Petroleum and coal product manufacturing
38	HumPharma	Human pharmaceutical and medicinal product manufacturing
39	VetPharma	Veterinary pharmaceutical and medicinal product manufacturing
40	BasicChem	Basic chemical manufacturing
41	CleangComp	Cleaning compounds and toiletry preparation manufacturing
42	PolyProds	Polymer product manufacturing
43	NatRubber	Natural rubber product manufacturing
44	Glass	Glass and glass product manufacturing
45	CeramicPrds	Ceramic product manufacturing
46	Cement	Cement, lime and ready-mixed concrete manufacturing
47	Plaster	Plaster and concrete product manufacturing
48	OthNMetPrds	Other non-metallic mineral product manufacturing
49	IronSteel	Iron and steel manufacturing
50	NFerMetal	Basic non-ferrous metal manufacturing
51	ForgIronStee	Forged iron and steel product manufacturing
52	StrucMetal	Structural metal product manufacturing
53	MetContainrs	Metal containers and other sheet metal product manufacturing
54	OthFabMetal	Other fabricated metal product manufacturing
55	MotorVParts	Motor vehicles and parts; other transport equipment manufacturing
56	ShipsBoat	Ships and boat manufacturing
57	RailwayRStk	Railway rolling stock manufacturing
58	Aircraft	Aircraft manufacturing
59	ElectronEqp	Professional, scientific, computer and electronic equipment manufacturing
60	ElectricEqp	Electrical equipment manufacturing
61	DomApplns	Domestic appliance manufacturing
62	OthMachine	Specialised and other machinery and equipment manufacturing
63	Furniture	Furniture manufacturing
64	OthManufs	Other manufactured products
65	ElecGenern	Electricity generation
66	ElecTrans	Electricity transmission, distribution, on selling and electricity market operation
67	GasSup	Gas supply
68	WaterSup	Water supply, sewerage and drainage services
69	WasteServs	Waste collection, treatment and disposal services

No.	Short name	Product/industry full name
70	ResidCons	Residential building construction
71	NResidCons	Non-residential building construction
72	CivilEngCons	Heavy and civil engineering construction
73	ConsServs	Construction services
74	Wholesale	Wholesale trade
75	Retail	Retail trade
76	Accommodn	Accommodation
77	FoodServs	Food and beverage services
78	RoadTrans	Road transport
79	RailTrans	Rail transport
80	WaterTrans	Water, pipeline and other transport
81	AirTrans	Air and space transport
82	PostServ	Postal and courier pick-up and delivery service
83	TransServs	Transport support services and storage
84	Publishing	Publishing (except internet and music publishing)
85	MPicSouRec	Motion picture and sound recording
86	Broadcasting	Broadcasting (except internet)
87	InternetServ	Internet service providers, internet publishing and broadcasting, websearch portals and data processing
88	Telecom	Telecommunication services
89	Library	Library and other information services
90	Finance	Finance
91	InsurSuper	Insurance and superannuation funds
92	AuxFinServs	Auxiliary finance and insurance services
93	HiringServs	Rental and hiring services (except real estate)
94	OwnerDwelgs	Ownership of dwellings
95	NResiPtyREst	Non-residential property operators and real estate services
96	SciTechServs	Professional, scientific and technical services
97	ComputerSer	Computer systems design and related services
98	EmpTravServs	Employment, travel agency and other administrative services
99	BldgCleanSrv	Building cleaning, pest control and other support services
100	PublicAdmin	Public administration and regulatory services
101	Defence	Defence
102	PublicSafety	Public order and safety
103	PrimSecEdu	Primary and secondary education services (including pre-schools and special schools)

No.	Short name	Product/industry full name
104	TechTerEdu	Technical, vocational and tertiary education services (including undergraduate and postgraduate)
105	ArtSprtEdu	Arts, sports, adult and other education services (including community education)
106	HealthCare	Health care services
107	ResidCare	Residential care and social assistance services
108	PerformArts	Heritage, creative and performing arts
109	SportsRectn	Sports and recreation
110	Gambling	Gambling
111	AutoRepair	Automotive repair and maintenance
112	OthRepair	Other repair and maintenance
113	PersonalSer	Personal services
114	OthServices	Other services

Abbreviations

Abbreviation	Definition
ABS	Australian Bureau of Statistics
ADR	Australian Design Rule
BITRE	Bureau of Infrastructure and Transport Research Economics
CGE	Computable General Equilibrium
CML	Concessional Mass Limits
CPI	Consumer Price Index
DCCEEW	Department of Climate Change, Energy, the Environment and Water
EV	Electric Vehicle
GDP	Gross Domestic Product
GML	General Mass Limits
GSP	Gross State Product
GST	Goods and Services Tax
GVM	Gross Vehicle Mass
HC	Heavy Combination
HR	Heavy Rigid
HVAMS	Heavy Vehicle Access Management System
HVNL	Heavy Vehicle National Law
HZEV	Heavy Zero Emissions Vehicle
ICE	Internal Combustion Engine
IT	Information Technology
LR	Light Rigid
MC	Multi Combination
MR	Medium Rigid
NAAS	National Automated Access System
NCP	National Competition Policy
NHVDCF	National Heavy Vehicle Driver Competency Framework
NHVR	National Heavy Vehicle Regulator
OECD	Organisation for Economic Co-operation and Development
PBS	Performance-Based Standards
PC	Productivity Commission
RAV	Restricted Access Vehicle
SLGAAP	Strategic Local Government Asset Assessment Project
VET	Vocational Education and Training

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