



**Overcoming freight challenges with technology:**  
*The Australian Performance Based Standards (PBS) Scheme*

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# The National Heavy Vehicle Regulator



**877,651 km**  
of roads

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**275,021**  
registered operators



Our vision is to have a safe, efficient and productive heavy vehicle industry serving the needs of Australia.



**1,060,525**  
registered heavy vehicle units

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**536**  
road managers



**556,000+**  
FTEs employed in Australian road transport industry

# Australian road freight challenges



212

lives lost in 2023 from crashes involving heavy vehicles



38%

of total transport emissions are from heavy vehicles



242b tkm

of heavy vehicle travel across Australia's road network in FY23



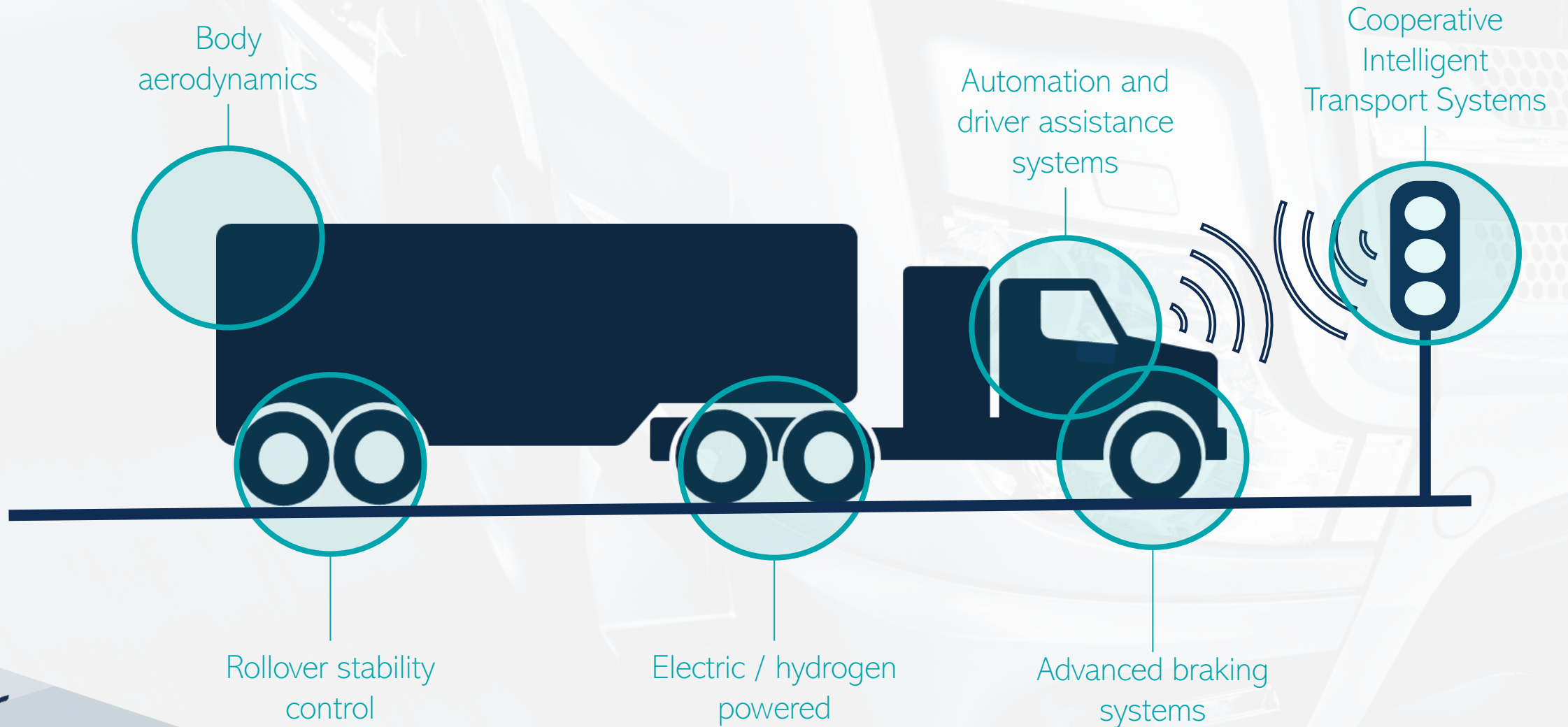
59

Natural disasters in 2023

## Freight task modeshare

				
2020	29.03%	56.41%	14.51%	0.04%
2050	40.92%	47.58%	11.44%	0.06%
Change	11.89%	-8.84%	-3.06%	0.02%

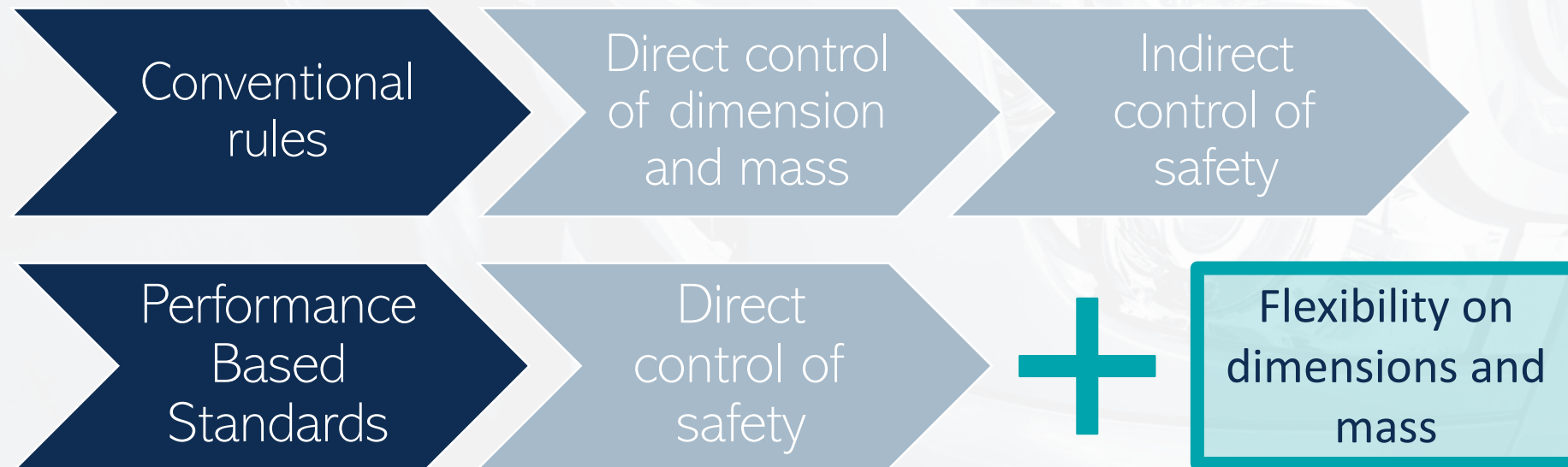
# A heavy vehicle is not just a platform for technology



A heavy vehicle is not just a platform for technology –  
it is technology



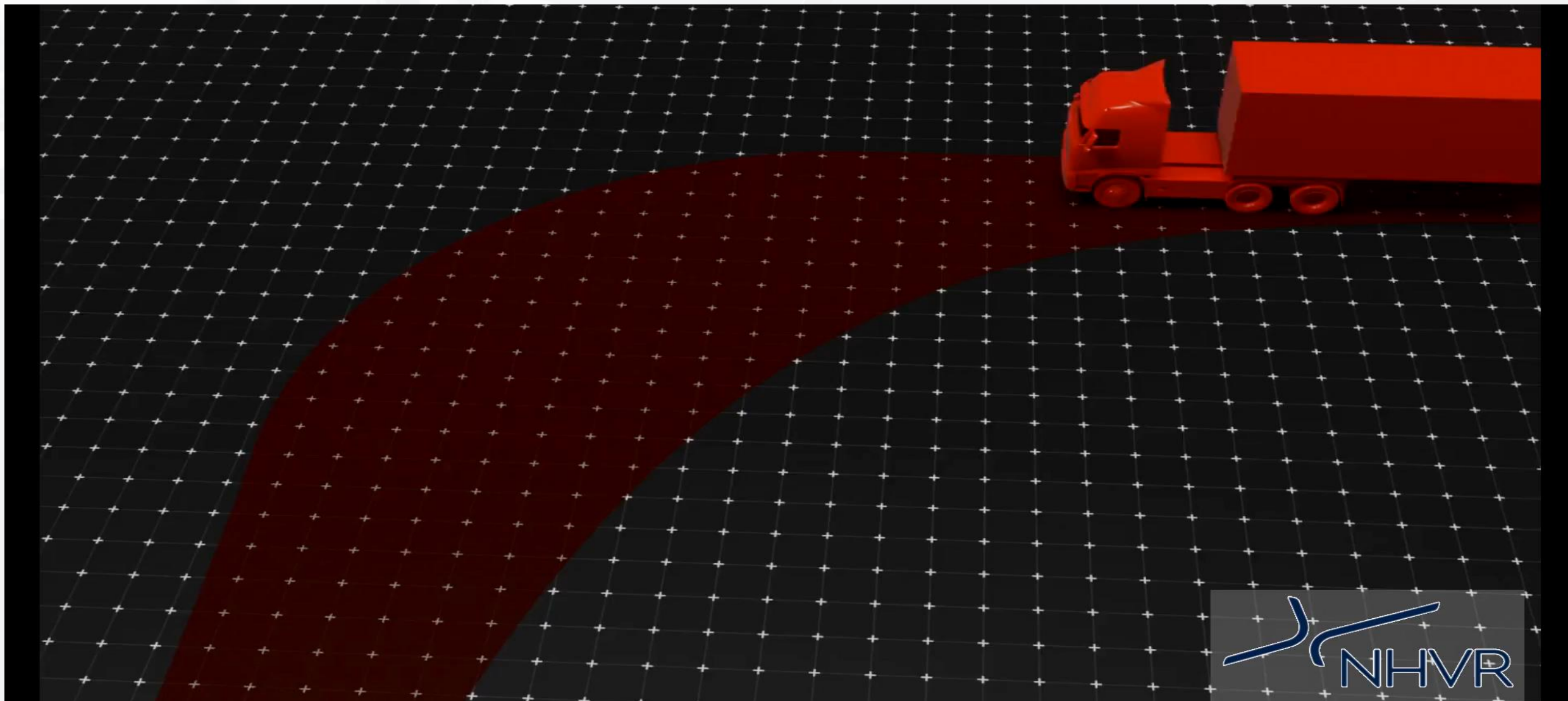
The Performance Based Standards (PBS) scheme optimises vehicle designs to boost productivity and safety, while minimising environmental and road infrastructure impacts



Source: Advantia Transport Consulting

# Standards to evaluate vehicle performance

Safety standards	Powertrain standards	→	Startability Gradeability (A, B) Acceleration capability
	Low-speed performance	→	Frontal swing, maxima of difference, difference of maximum Tail swing Low speed swept path Steer tyre friction demand
	Vehicle stability	→	Static rollover threshold Directional stability under braking
	High-speed performance	→	Rearward amplification High speed transient off tracking Tracking ability on a straight path Yaw damping coefficient
	Infrastructure standards	→	Pavement horizontal loading Pavement vertical loading Bridge loading (Tier 1, 2, 3) Tire contact pressure distribution



Low speed swept path demonstration  
The PBS Scheme changes how we view trucks  
– not by size or weight –  
but by their on-road performance



# PBS A-double benefits compared to a conventional B-double over a million-tonne kilometer freight task



**26m Conventional B-Double** (General Mass Limits)  
 62.5t Gross combination mass  
 37.28t Payload

**Vs**



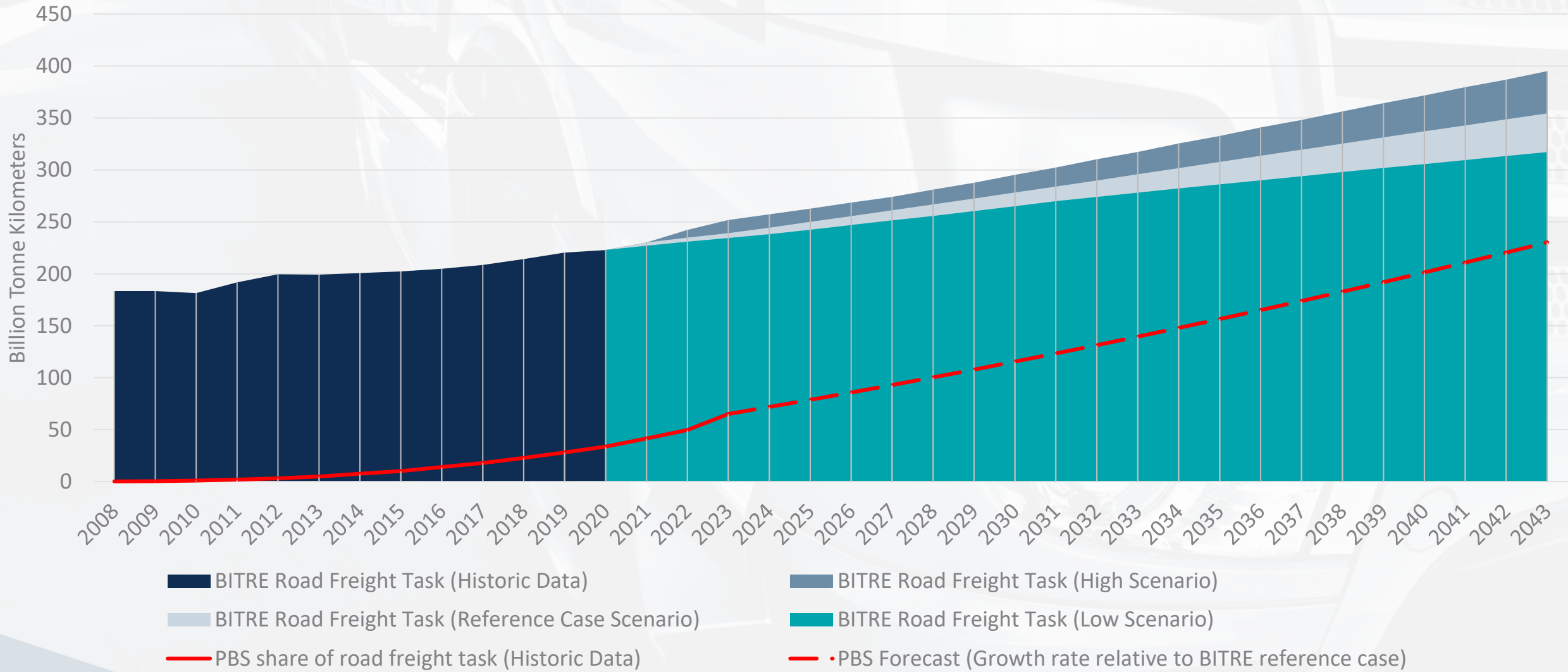
**30m PBS A-Double** (Higher Mass Limits)  
 85t Gross combination mass  
 55.07t Payload

Kilometers travelled	Road space occupancy	Likelihood of being involved in a fatal crash	Fuel consumption	CO2 emissions	Pavement damage for a single trip	Pavement damage for multiple trips
-32% 17,328km reduction	-22% 153km reduction	-79% fatal crash probability reduction	-23% 7,343L reduction	-23% 19.6t reduction	7% <i>More damaging</i>	38% <i>Less damaging</i>

NHVR's [Freight PASS](#) tool compares the relative impacts of different vehicle combinations across 14 productivity, safety, and sustainability measures

NHVR's [Pavement Impact Comparison Calculator](#) compares the pavement wear and cost impacts of different vehicle combinations and mass distributions

# PBS popularity in Australia's road freight task



PBS projected benefits: 2008 - 2043



**28,000 - 34,000**  
trucks displaced from roads



**45 - 49b km**  
Reduction in truck distance travelled



**53 - 57m t**  
Reduction in CO<sub>2</sub> emissions



**\$194 - \$195m**  
Saved in air and noise  
pollution costs



**1,800 - 1,900**  
Lives saved



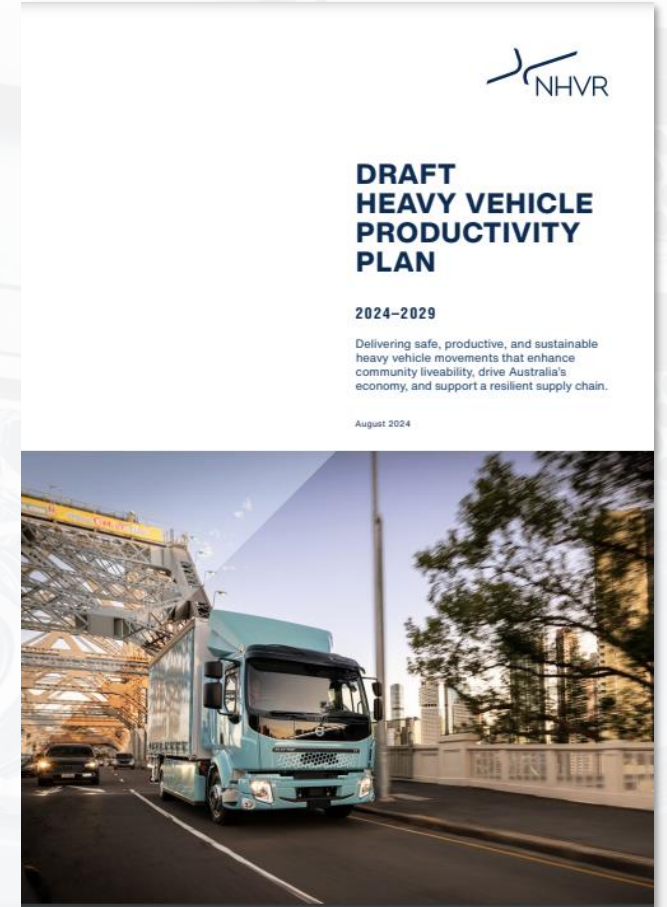
**19 - 21b L**  
Reduction in fuel  
consumption



**\$9 - \$10b**  
Economic costs avoided  
by preventing over  
11,700 crashes

## Where to from here?

- Advocating for law changes to allow for mature and proven PBS vehicles to transition into the everyday fleet
- Work with road managers to eliminate access permit requirements
- Administrative and operational process improvements
- Updating the performance standards
- Increase understanding and acceptance





# Thank you

**For more information:**

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