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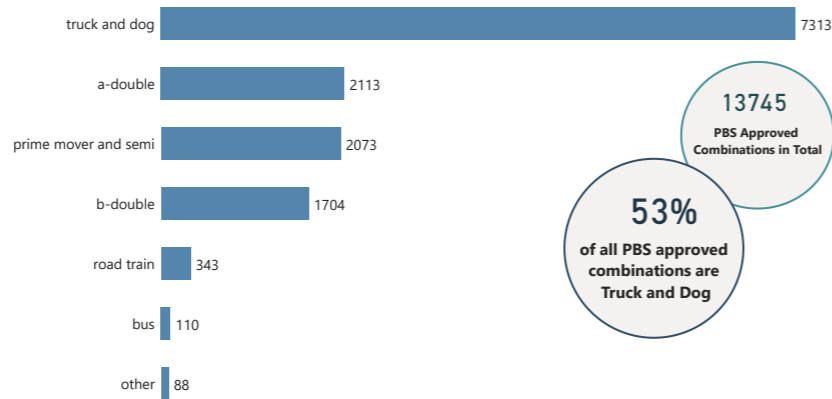
## Importance of the Performance-Based Standards scheme

for different vehicle types. At this time the standards were being developed and explained to industry and regulators. The technical standards document that exists on the NHVR website had its origins in July 2007. I was involved in the development of the PBS standard Directional Stability Under Braking. Like all PBS standards, a performance level is specified. This particular standard also has a 'deemed to comply' path because advanced braking technology can be assumed to deliver the performance level. The best technical standards have a performance standard to facilitate innovation and a deemed-to-comply path to simplify compliance. Over time, technologies or designs become known solutions and should be included into

regulations that can 'normalise' innovation. Figure 3 shows that tip-truck and tip-trailer combinations make up about 50 per cent of PBS approved vehicle types. Four- and five-axle dog trailer combinations can now travel under notice and have been taken out of PBS. Single semi-trailer combinations make up about 15 per cent of PBS applications. Most of these are 20 metres long. PBS can be a conduit for regulation reform because it provides regulators with comfort that the change will be safe. The Australian PBS scheme has four road-access levels: Level 1 – General Access; Level 2 – 26m B-double network; Level 3 – 36.5 Type I roadtrain network; and Level 4 – 53.5 Type II roadtrain network. Level 2 has a sublevel 2A that is for volume and not mass-limited loads.

The Performance-Based Standards Scheme (PBS for short) is having a noticeable influence on the development of the heavy vehicle fleet in Australia. ARTSA Data tracks the number and type of PBS vehicles. The bottom line is that about 18 per cent of new high productivity combinations (roatrains, truck + dog, B-doubles) are involved in PBS applications. The Performance-Based Standard Scheme was conceived by the National (Road) Transport Commission (NRTC, now the NTC) starting in the late-1990s and accepted by Australian transport ministers as a national project in 2007. It was integrated into the National Heavy-Vehicle Law in 2014. In the interim PBS vehicles operated under state permits. The idea was to find a path for innovative vehicle designs that had improved productivity and met important safety standards. Compliance with safety standards is critical because transport ministers wanted reassurance that these vehicles would be safe. The context was that heavy vehicles were not popular in metropolitan Australia. On the other hand, improved road transport productivity is an imperative to reduce costs, emissions and staff shortages. The development of the PBS safety standards took many years. In February 2002 the NRTC and the NZ Land Transport Safety Authority jointly hosted a seminar intended to develop the PBS technical standards. I remember attending the demonstration day held at Mangalore Airport, Victoria at which some lane-change tests were demonstrated

1. Total PBS fleet breakdown. Assumes all vehicles active. Source: NHVR  
PBS Fleet by Combination Type

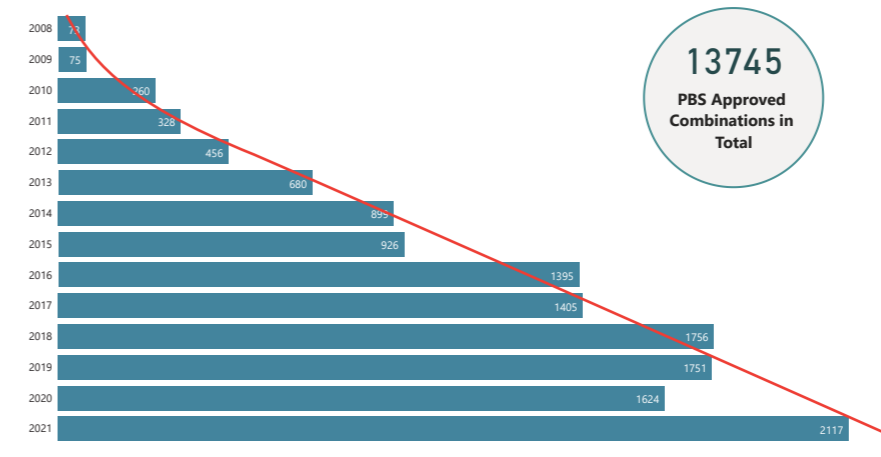


### 2. Qualifying Combinations for Pre-Advised Approvals

The following types of PBS combinations are eligible to access the pre-advised design approval process:

- Level 1, 3- or 4-axle truck and 3- or 4-axle dog combinations up to 20m long and 50.5t GCM.
- Level 2, 3- or 4-axle truck and 3- or 4-axle dog combinations up to 20m long and 62t GCM.
- Level 1, prime mover and tri- or quad-axle group semitrailer combinations up to 20m long and 50.5t GCM.
- Level 1, B-doubles fitted with tandem or tri-axle groups up to 20m long and 505.t GCM.
- Level 2, B-doubles fitted with tandem or tri-axle groups up to 26m long and 68.5t GCM.
- Level 2, A-doubles with single, tandem or tri-axle semitrailers and tandem or tri-axle dollies up to 30m long and 85t GCM.
- Level 3, A-doubles up to 36.5m long and 95.5t GCM.
- Level 2, 3- or 4-axle truck and 5- or 6-axle dog combinations to 26m long and 73t GCM.

3. Yearly approvals growth. Source: NHVR  
PBS Combinations Yearly



The great majority of the approvals are for Level 1 and Level 2 access, which is potentially applicable to the metropolitan main road network. See vehicle types at the various levels here: <https://www.nhvr.gov.au/files/201810-0923-pbs-vehicle-configurations.pdf> The assessment of route suitability for a PBS application is a substantial task. AustRoads and the Australian Road Research Board did important work to assist road owners to understand PBS and to make permit assessments. Most jurisdictions now have route-level maps on their websites. The Australian PBS scheme is of international significance. PBS schemes exist in Canada (where the idea started), Scandinavia, New Zealand and South Africa. There are long

combinations running between some countries in Europe that take account of PBS standards. Each of these schemes has developed safety standards and procedures according to local requirements. There is also a local PBS scheme in Western Australia, which does not operate within the NHVR framework. There are significant political challenges to deliver longer vehicles on shared roads in most countries. Notably, the USA has no scheme to liberalise its road-transport logistics sector. The Australian PBS scheme has delivered productivity and safety improvements (one transport company holds 291 vehicle combination approvals). It has also been a spur for local heavy-vehicle innovation and manufacture.

In 2018 the NTC conducted a review in the PBS scheme and suggested some streamlining. One outcome was a greater concentration on pre-approved designs that can be adopted with minimal new simulation required. In a significant reform, the vehicle combinations listed in Table 2 can be approved based on previous approvals, which avoids the need for simulations. Access permits are still required. The following graphs developed by ARTSA Data in conjunction with the NHVR PBS Administration give a snapshot of the achievements of the scheme up to the end of 2021. It does not include approvals in the WA PBS scheme. Figure 4 suggests that the growth in PBS approvals is following an approximate linear path with a growth of 150 pa. In 2021 this amounted to a growth rate of ~ 7 per cent. Figure 5 estimates that the PBS productivity improvements equate to a total of 2.74 billion kilometres not travelled by non-PBS vehicles. The productivity improvements have been achieved with an overall reduction in road crashes of PBS vehicles compared to the conventional fleet of about 60 per cent. The PBS scheme is a success, and it shows how regulatory reform can deliver a win-win for all stakeholders.

Dr Peter Hart, ARTSA-I Life Member

4. Estimated road kilometres saved. Source: NHVR

