Integrating technology for compliance

IRTENZ 19th International Conference 2025

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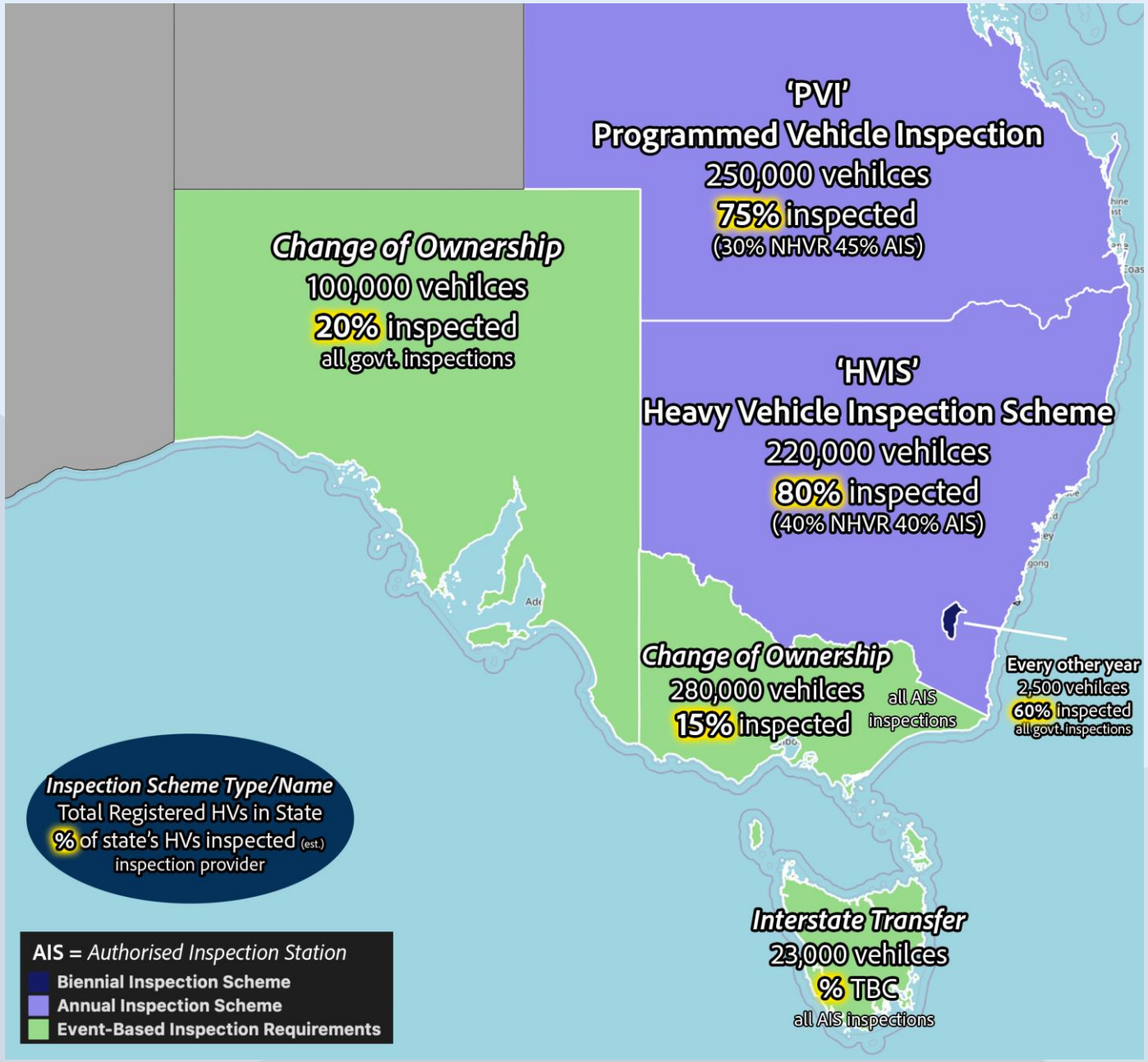
PRESENTATION AGENDA

- Current Inspection / Compliance Requirements in all states
- Challenges with PBS Combinations
- Regulatory telematics
- Future considerations

Current Inspection Requirements

Primary State-based HV Inspection Requirements



OVERVIEW — ALL UNITS (POWERED AND TRAILERS)

- 33% of units inspected nationally had at least one non-conformity.
- The majority of vehicles were inspected in their state of registration.

9,082
Vehicle inspections 2024
vs. 8,338 in 2021

7,973
Home state registered

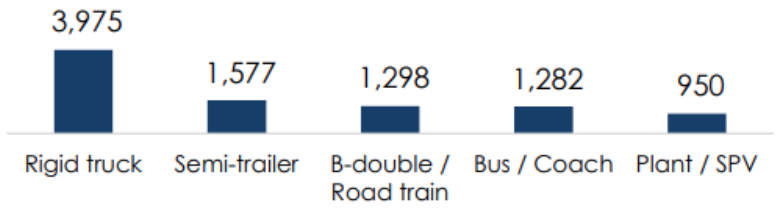
1,109
Interstate

14,362
Total units inspected 2024
vs. 13,325 in 2021

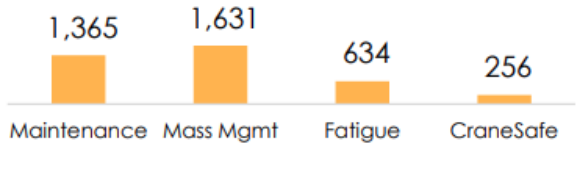
11,820
Home state registered

2,542
Interstate

VEHICLE TYPE

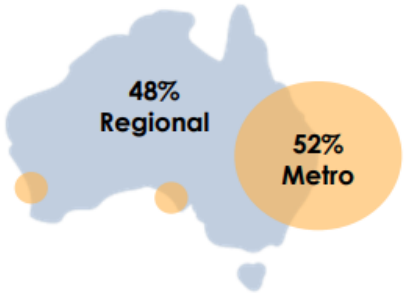


SCHEME

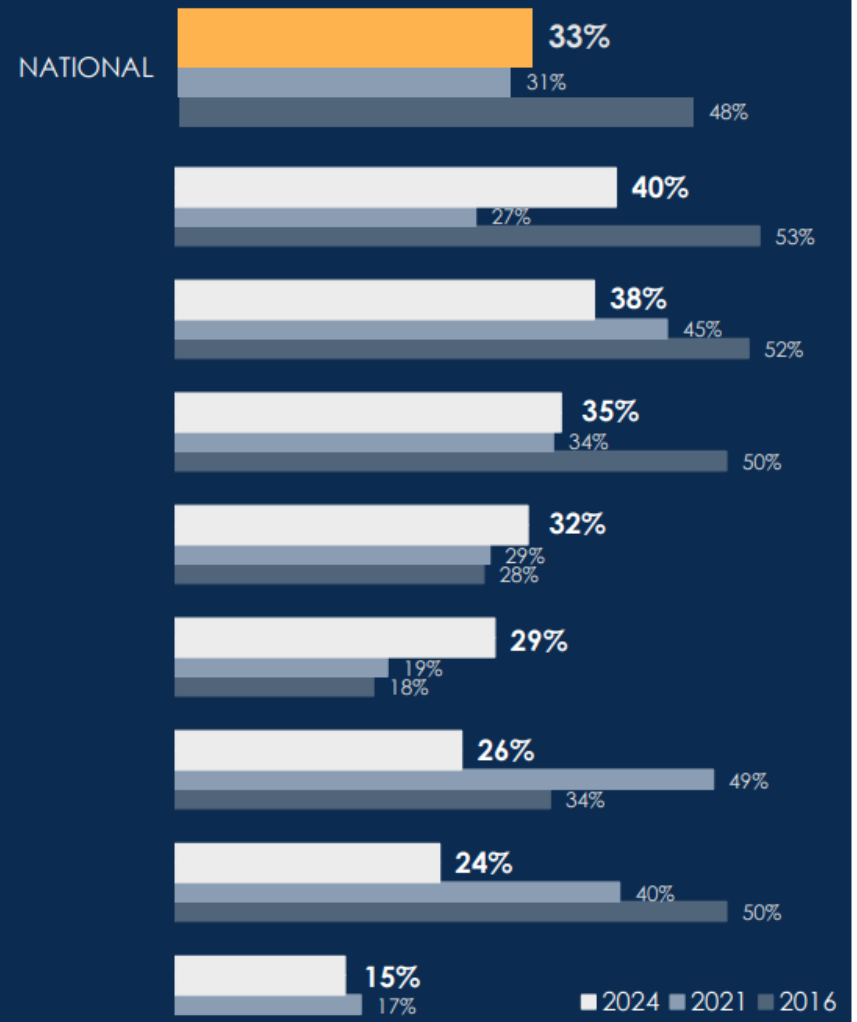


316,018km
Median mileage (of powered unit)

10.2 years
Average age of the fleet



NATIONAL RATES OF NON-CONFORMITY 2024



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AREAS OF NON-CONFORMITY — ALL UNITS (POWERED AND TRAILERS)

- The most common non-conformity across metro and regional Australia continues to be *brakes*, followed by *lights and reflectors*.
- Of the top 5 only *steering & suspension* has improved significantly since 2021 with fewer non-conformities across both metro and regional locations. All componentry non-conformance remains significantly below 2016 levels.

National - 2024
National - 2021
National - 2016

TOP 5 — TOTAL

1	**Brakes** 14% non-conforming Stable with 14% in 2021	14%	14%	25%
2	**Lights & reflectors** 10% non-conforming Increase from 9% in 2021	10% ↑	9%	14%
3	**Structure & body** 8% non-conforming Increase from 6% in 2021	8% ↑	6%	10%
4	**Engine driveline & exhaust** 7% non-conforming Increase from 6% in 2021	7% ↑	6%	10%
5	**Steering & suspension** 6% non-conforming Decrease from 7% in 2021	6% ↓	7%	16%

TOP 5 — METRO

1	**Brakes** 11% non-conforming Decrease from 13% in 2021	11% ↓	13%	24%
2	**Lights & reflectors** 11% non-conforming Stable with 11% in 2021	11%	11%	15%
3	**Structure & body** 9% non-conforming Increase from 7% in 2021	9% ↑	7%	13%
4	**Engine driveline & exhaust** 9% non-conforming Increase from 6% in 2021	9% ↑	6%	11%
5	**Steering & suspension** 6% non-conforming Decrease from 7% in 2021	6% ↓	7%	18%

TOP 5 — REGIONAL

1	**Brakes** 16% non-conforming Stable with 15% in 2021	16%	15%	26%
2	**Lights & reflectors** 9% non-conforming Increase from 8% in 2016	9% ↑	8%	13%
3	**Structure & body** 7% non-conforming Increase from 5% in 2016	7% ↑	5%	9%
4	**Engine driveline & exhaust** 6% non-conforming Stable with 6% in 2021	6%	6%	10%
5	**Steering & suspension** 6% non-conforming Decrease from 7% in 2016	6% ↓	7%	15%

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Compliance Operations

Operation Falcon (PBS) April – May 2025 (NSW)

- **PBS compliance rate 89% (n-367)**
  - Non-compliance - Oil leaks, marker plates, Windscreens etc.

Operation Sapphire (Construction and waste) May –June 2025 (National)

- **Compliance rate 68% (n-4,532)**
- Defect notice faults -3,074
  - Lights and reflectors - 21.5%
  - Structure and body- 19.2%
  - Brakes – 16.8%
  -

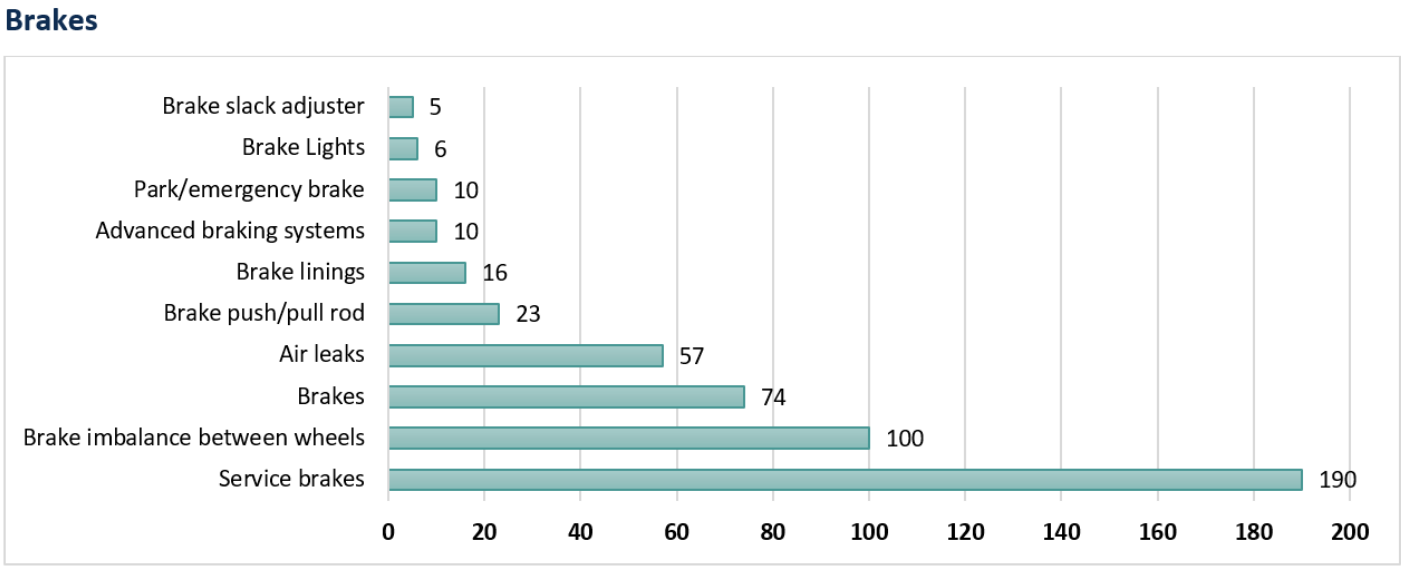
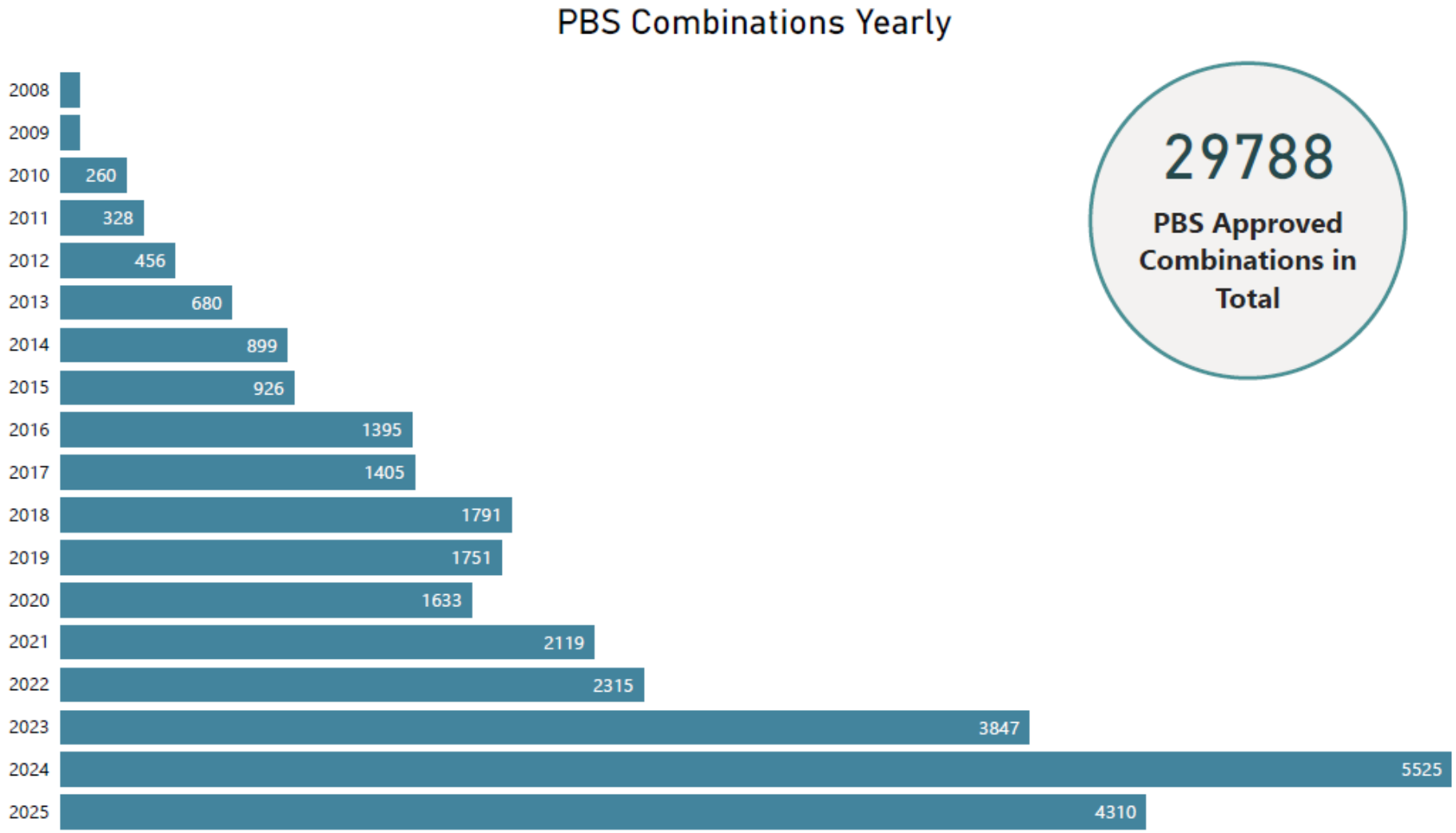


Chart 7: Brake Defects

Challenges with PBS combinations

PBS Statistics



29788

PBS Approved Combinations in Total

Specific operating conditions might apply for PBS combinations

- **PBS operating conditions are introduced for several reasons:**
  - Achieving compliance with PBS standards
  - Infrastructure protection
  - Operational and traffic safety
- **National operating conditions** are set by NHVR
  - Mass limits
  - Dimensions
  - Design specific requirements
- These conditions are detailed in the **PBS Design Approval (DA)** and **Vehicle Approval (VA)**
- **Specific access conditions** could also be introduced by the **road managers**
- These conditions are part of the **PBS Access permits**

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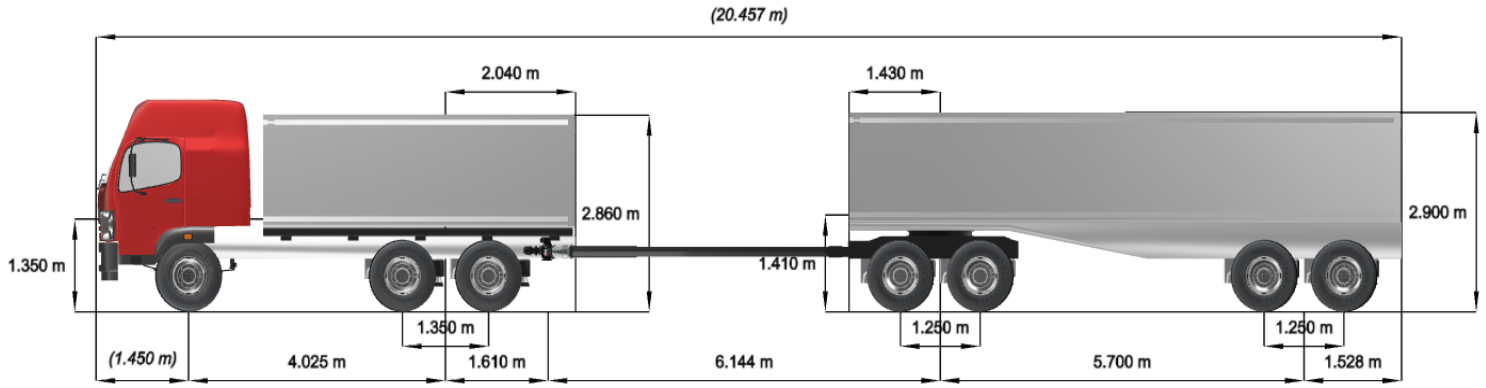
Compliance with the PBS specific mass limitations

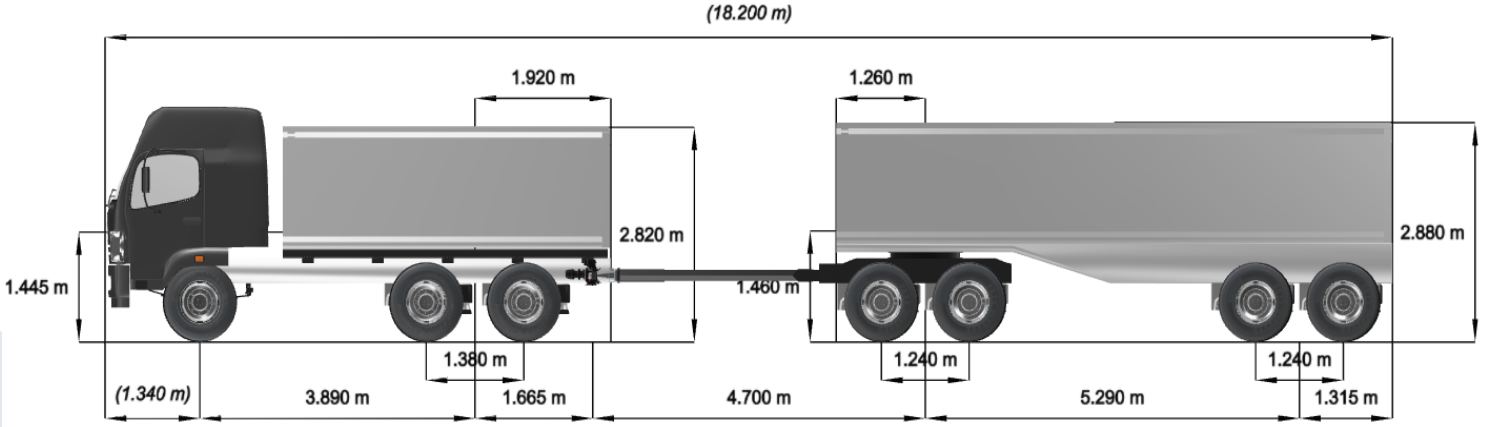
>20m truck and dog with full mass



Mass Limits	Level 2
GML (t)	56.0
CML (t)	57.5
HML (t)	57.5
Bridge Assessment	Tier 1

Axle Group Masses	Level 2		
	GML	CML	HML
Steer (t)	6.5	6.5	6.5
Drive (t)	16.5	17.0	17.0
Trailer Front (t)	16.5	17.0	17.0
Trailer Rear (t)	16.5	17.0	17.0

<19m truck and dog with mass reductions



Mass Limits	Level 2
GML (t)	54.2
CML (t)	55.2
HML (t)	55.7
Bridge Assessment	Tier 1

Axle Group Masses	Level 2		
	GML	CML	HML
Steer (t)	6.5	6.5	6.5
Drive (t)	16.5	17.0	17.0
Trailer Front (t)	16.5	17.0	17.0
Trailer Rear (t)	16.5	17.0	17.0
The mass across axle groups is limited to -			
Axle Groups	GML	CML	HML
2 to 4	47.70	48.70	49.20
3 to 4	31.20	32.20	32.20

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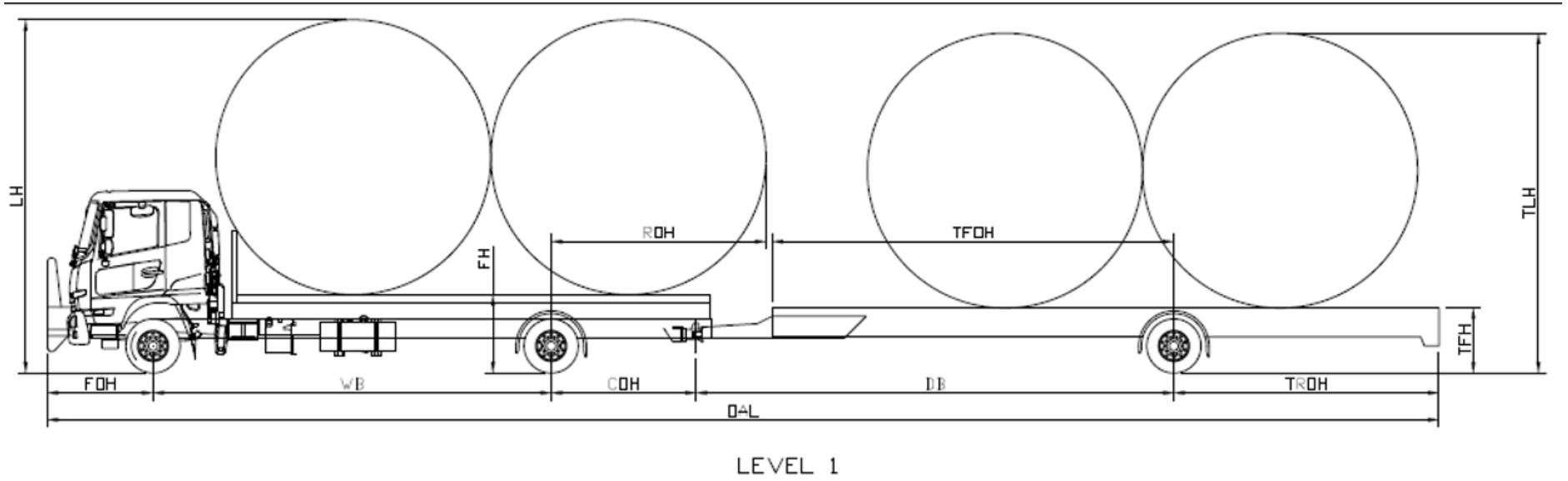
PBS vehicle assessed together with its load



LEVEL 1

PBS vehicles are assessed together with its load

Load ‘is part of vehicle’ for PBS assessment purposes

The vehicle is assessed as it is operated on the road

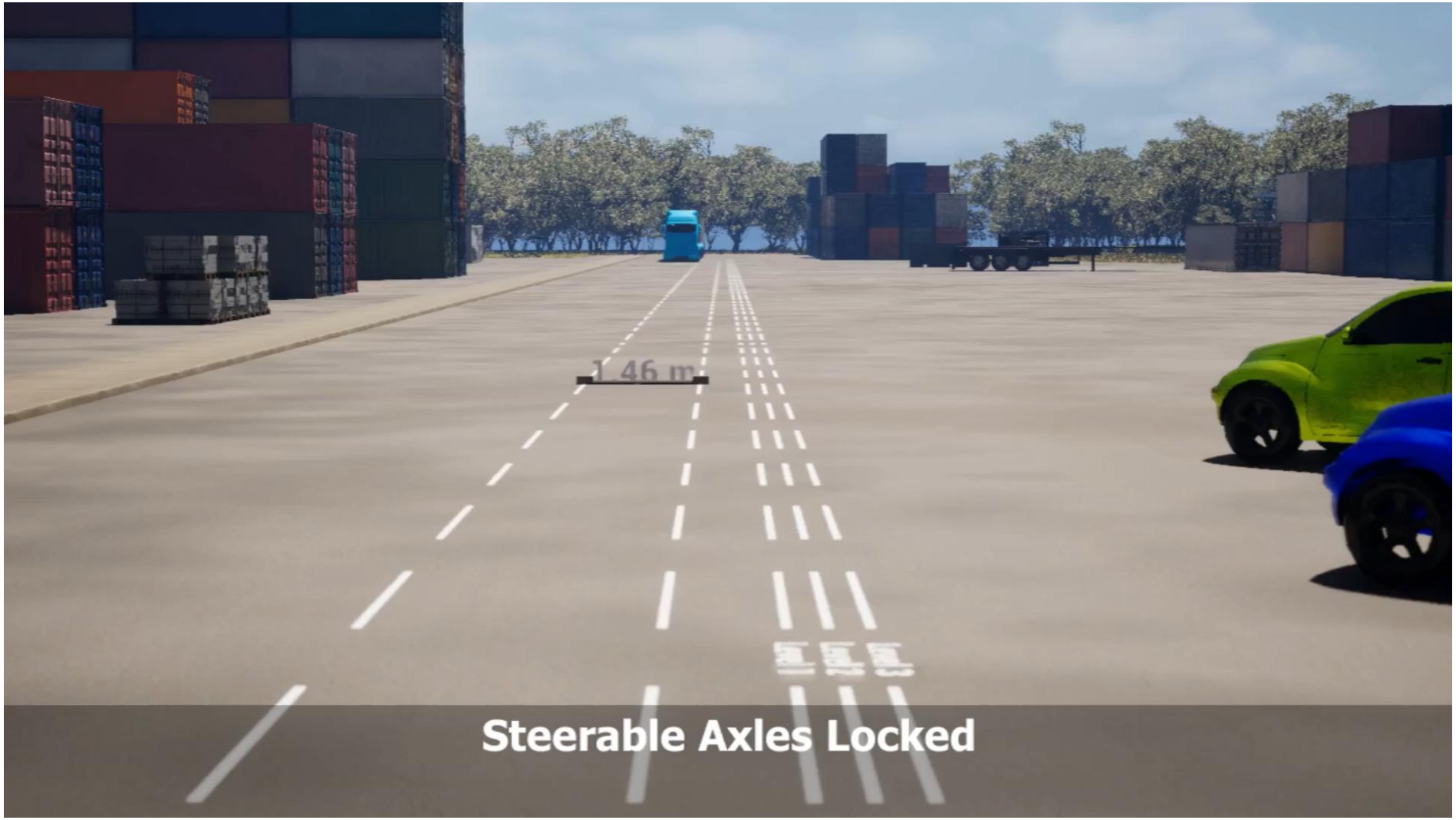
Special PBS operating conditions – loading

- 4-axle truck and 5-axle dog
- livestock transport
- 4.6m
- Compliance with PBS SRT conditions (loading limits on different decks)

Compliance with loading requirements

Compliance with PBS specifications – steerable axles

Compliance with approved PBS specifications



Regulatory telematics

Regulatory telematics

Telematics

Collect Data

A lot of data

View Data

+

Regulatory

Data reported to TCA

Minimum amount of data

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Source: VDAQ

Regulatory telematics

IAP Intelligent Access Program	Enforcement and compliance, identifiable data
TMA Telematics Monitoring Application	Road analytics and compliance, identifiable data
RIM Road Infrastructure Management	Road analytics, anonymous data

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Source: VDAQ

Regulatory On-Board mass

IAP + Interim OBM Intelligent Access Program	Enforcement and compliance, identifiable data
TMA + Smart OBM Telematics Monitoring Application	Road analytics and compliance, identifiable data

NHVR

Source: VDAQ

Regulatory telematics

Generally Reported

- Location & Time
- Identified/De-Identified

Sometimes Reported

- User Declared Combination
- User Declared Gross Mass
- Automated Axle & Gross Mass

Reported Weekly/Monthly

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Source: VDAQ

TMA and On-Board mass in practice

Axle load and Gross Combination Mass data is:

Generated → Collected → Reported

Source: VDAQ

Current requirements

NSW

- All Class 2 Higher Mass Limits (HML)
- All Class 2 Performance Bases Standards (PBS) combinations
- All Class 1 Special Purpose Vehicles
- Some Class 1 OSOMs
- Vehicles wanting extra access (Farm or Local LGA)
- >68.5t down Mt Ousley, Wollongong

VIC

- Class 2 Higher Mass Limits (HML) Road Trains
- Class 2 Performance Bases Standards (PBS) combinations
  - **>68.5t GCM**
  - **>26m**
  - **With quad/split-axle groups**
- Class 1 Special Purpose Vehicles
- Class 3 LZEHV

Source: VDAQ

NHVR

Current requirements

QLD

- Class 2 Higher Mass Limits (HML)
- Class 2 Performance Bases Standards (PBS) combinations
- Class 3 20m long 3-axle Truck & 4-axle Dog
- Class 1 Special Purpose Vehicles
- Class 1 OSOM (possible in future)

TAS

- PBS > 26m
- All Special Purpose Vehicles

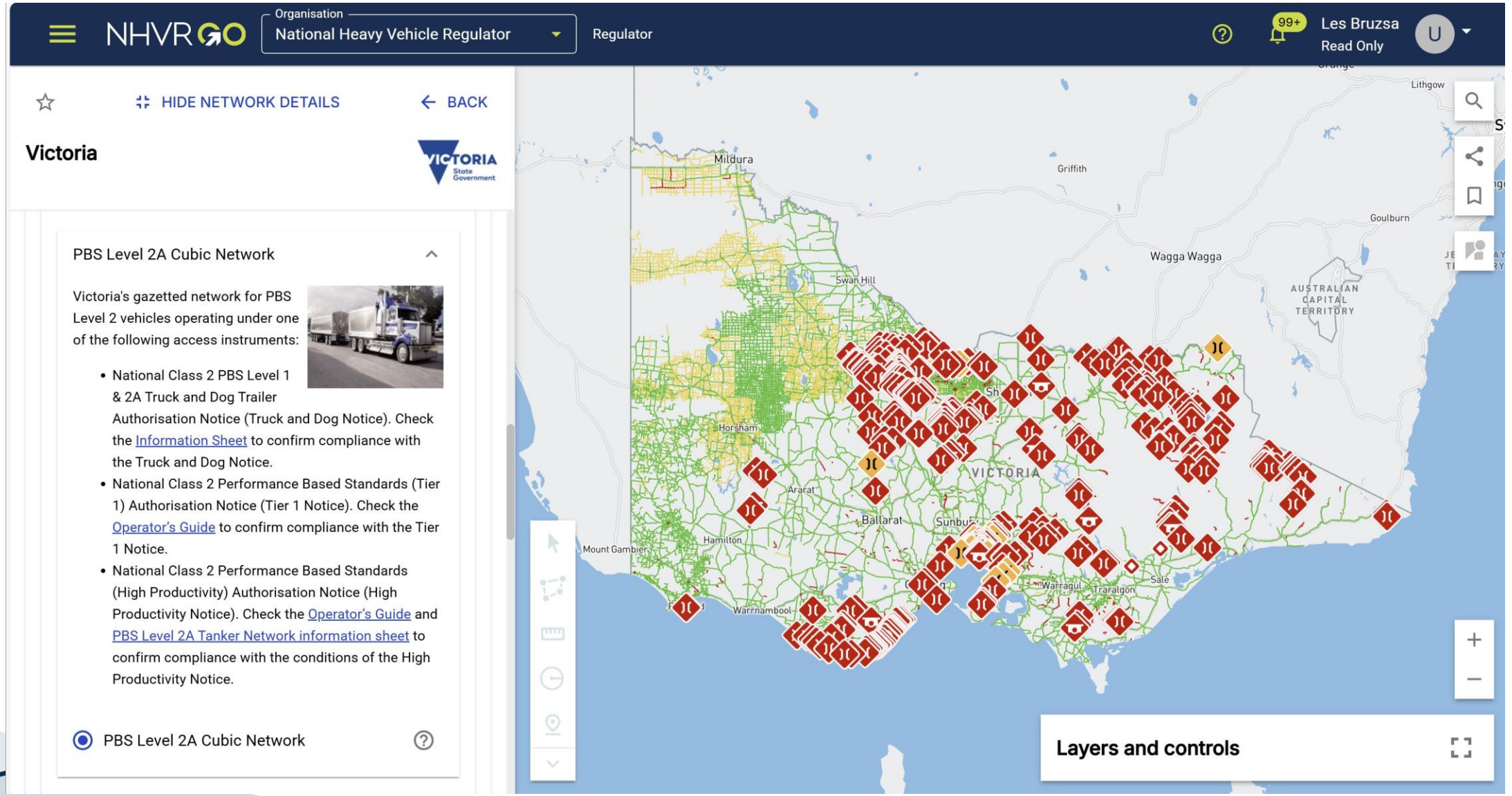
SA

- LZEHVs
- PBS (being introduced)

NHVR

Source: VDAQ

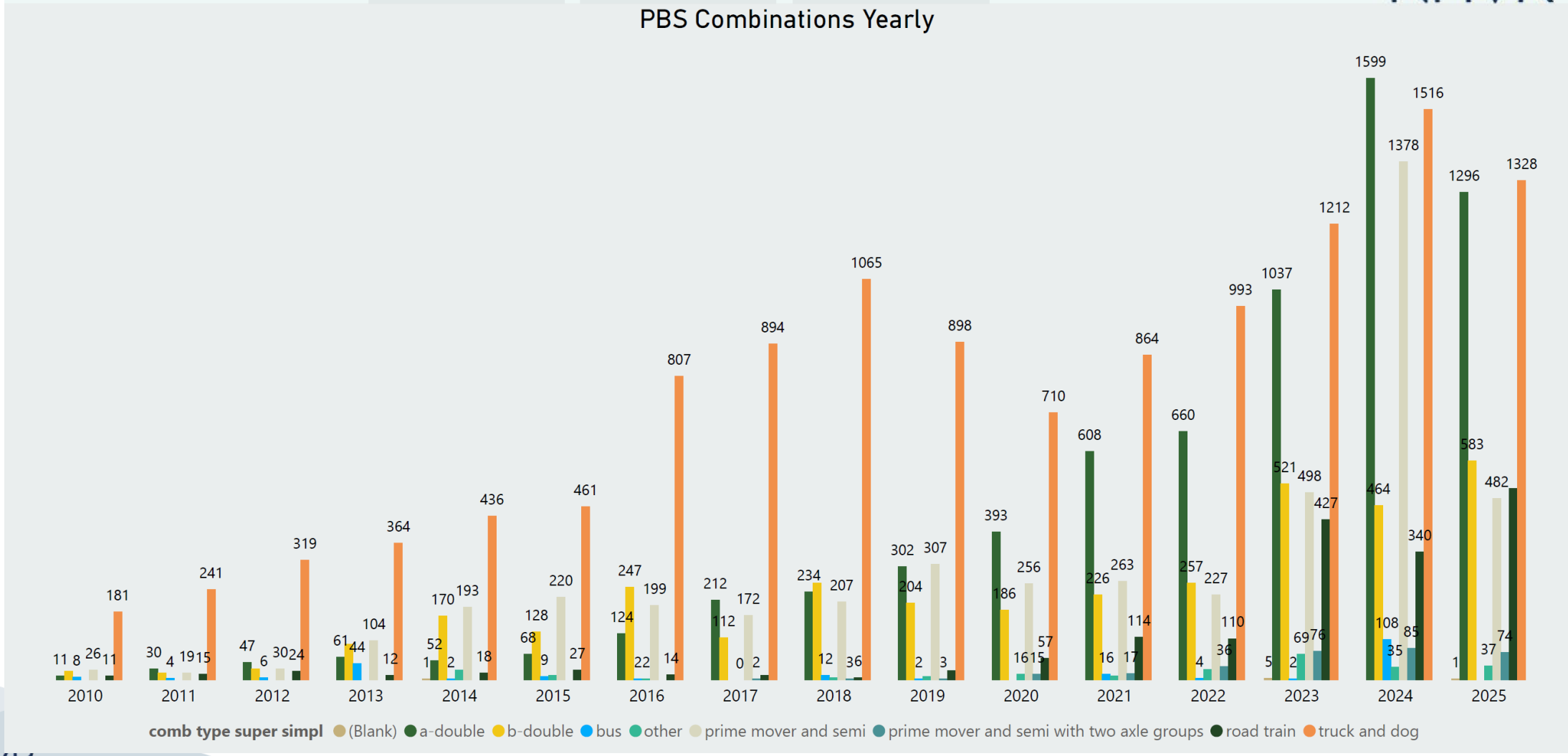
NHVRGo


NHVR GO
Organisation
National Heavy Vehicle Regulator
Regulator
99+
Les Bruzsa
Read Only
HIDE NETWORK DETAILS
BACK
Victoria
VICTORIA State Government
PBS Level 2A Cubic Network
Victoria's gazetted network for PBS Level 2 vehicles operating under one of the following access instruments:
• National Class 2 PBS Level 1 & 2A Truck and Dog Trailer Authorisation Notice (Truck and Dog Notice). Check the Information Sheet to confirm compliance with the Truck and Dog Notice.
• National Class 2 Performance Based Standards (Tier 1) Authorisation Notice (Tier 1 Notice). Check the Operator's Guide to confirm compliance with the Tier 1 Notice.
• National Class 2 Performance Based Standards (High Productivity) Authorisation Notice (High Productivity Notice). Check the Operator's Guide and PBS Level 2A Tanker Network information sheet to confirm compliance with the conditions of the High Productivity Notice.
PBS Level 2A Cubic Network
Mildura
Griffith
Lithgow
Goulburn
Wagga Wagga
Swan Hill
AUSTRALIAN CAPITAL TERRITORY
Horsham
VICTORIA
Ararat
Ballarat
Hamilton
Mount Gambier
Warrnambool
Warragul
Traralgon
Sale
Layers and controls

PBS Statistics

PBS Fleet

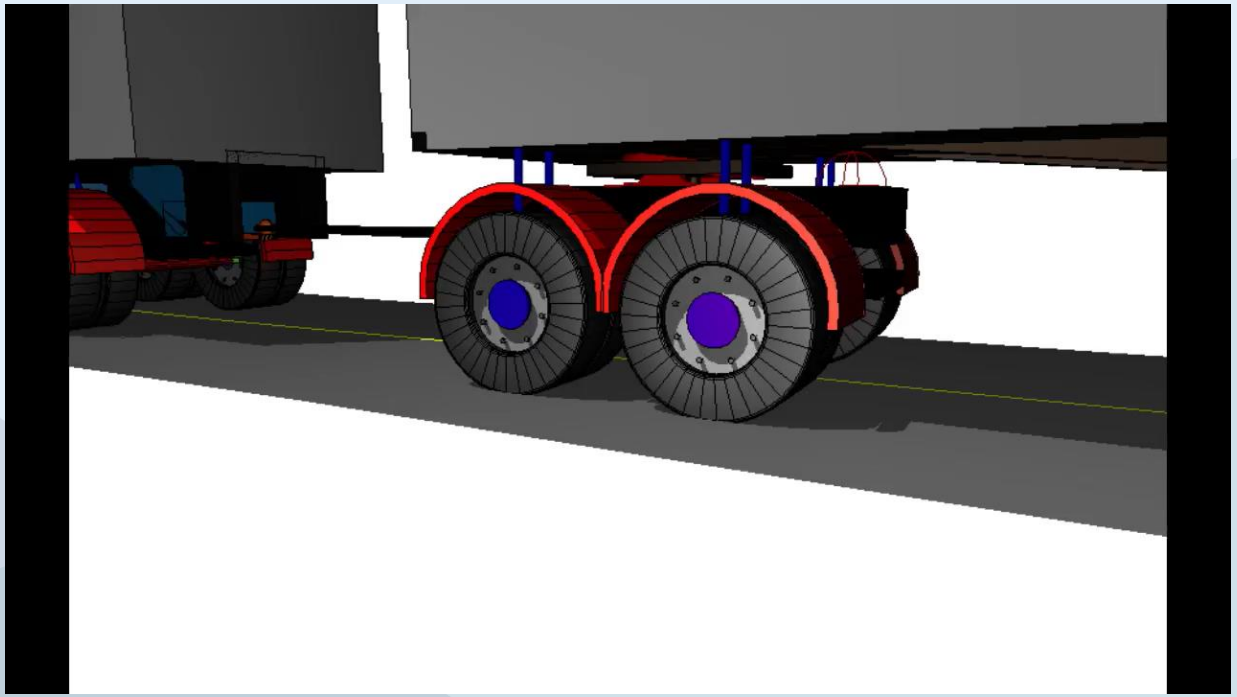
PBS Comb Count	Total VIN Count	Unique VIN Count
29788	155710	71517



Future considerations

Current projects

- Digitalisation of the PBS
- Moving towards single design and vehicle approvals
- Incorporating heavy vehicle technology into PBS
- How to achieve compliance with the technology requirements?
- Linking technology to telematics



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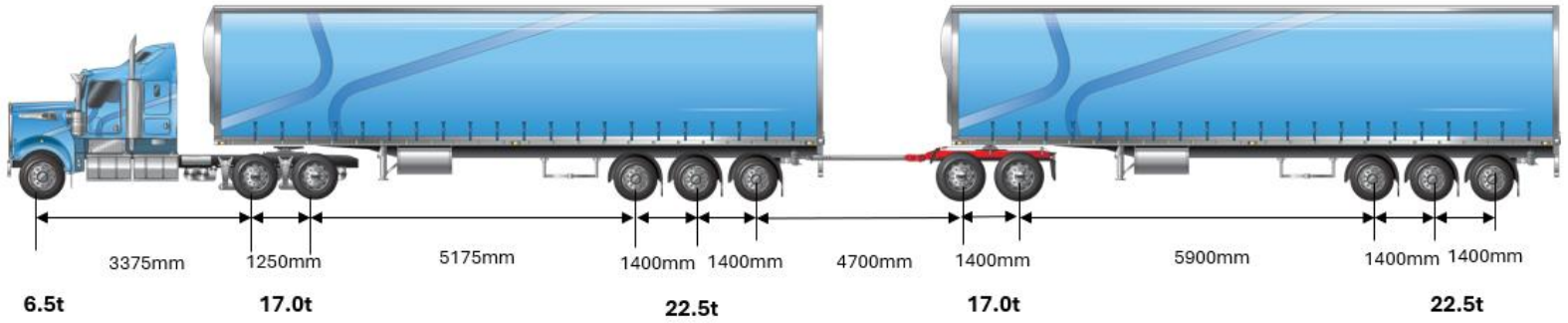
RSC on/off – Field Testing video

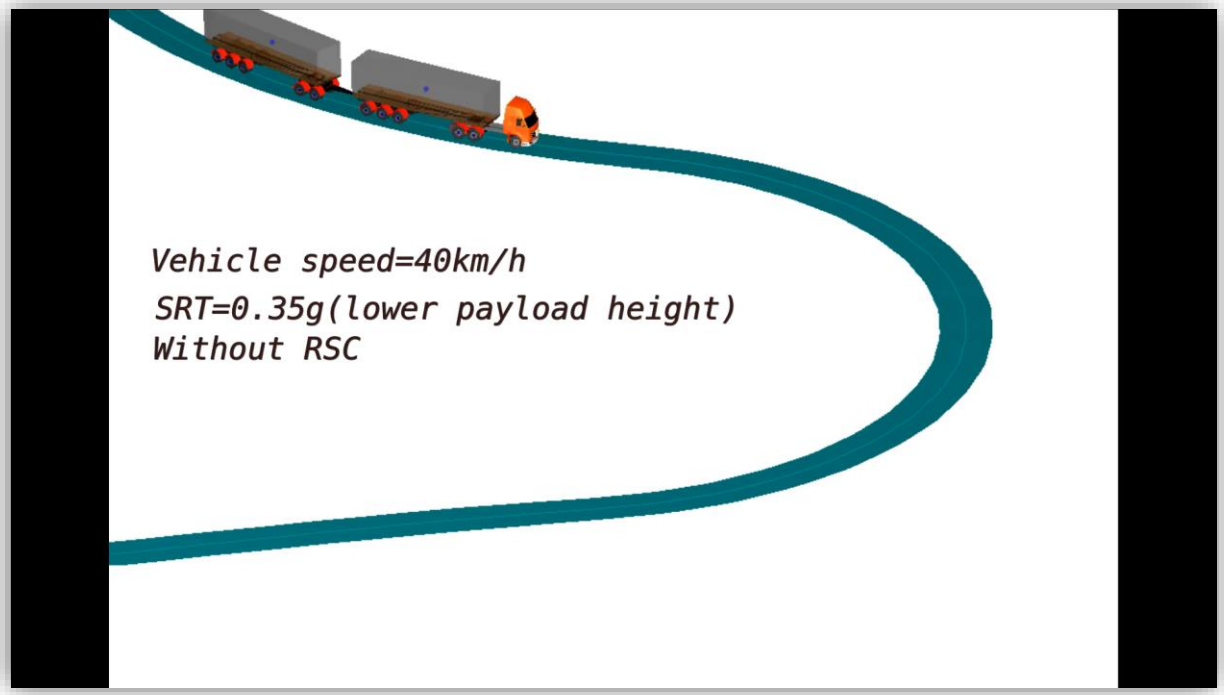
Typical 30m long PBS A-double



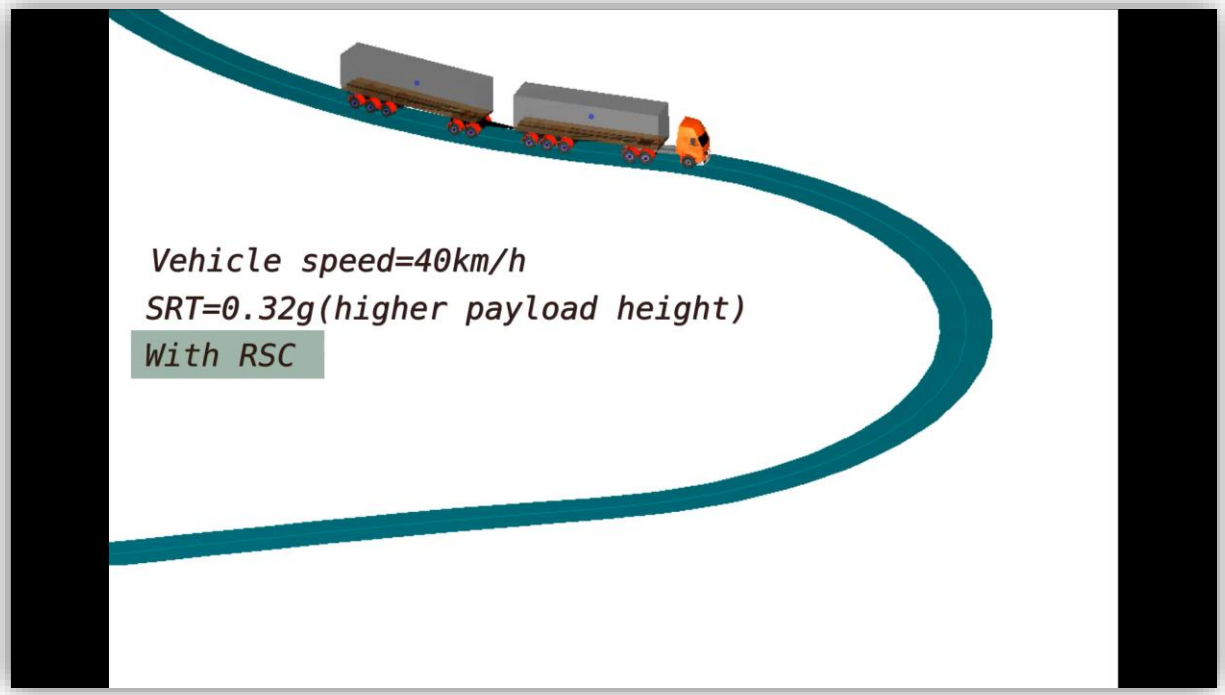
- **Scenario-1:** SRT=0.35 (PBS compliant) and without RSC
- **Scenario-2:** SRT=0.32 (PBS non-compliant) and with RSC

Development of an RSC model

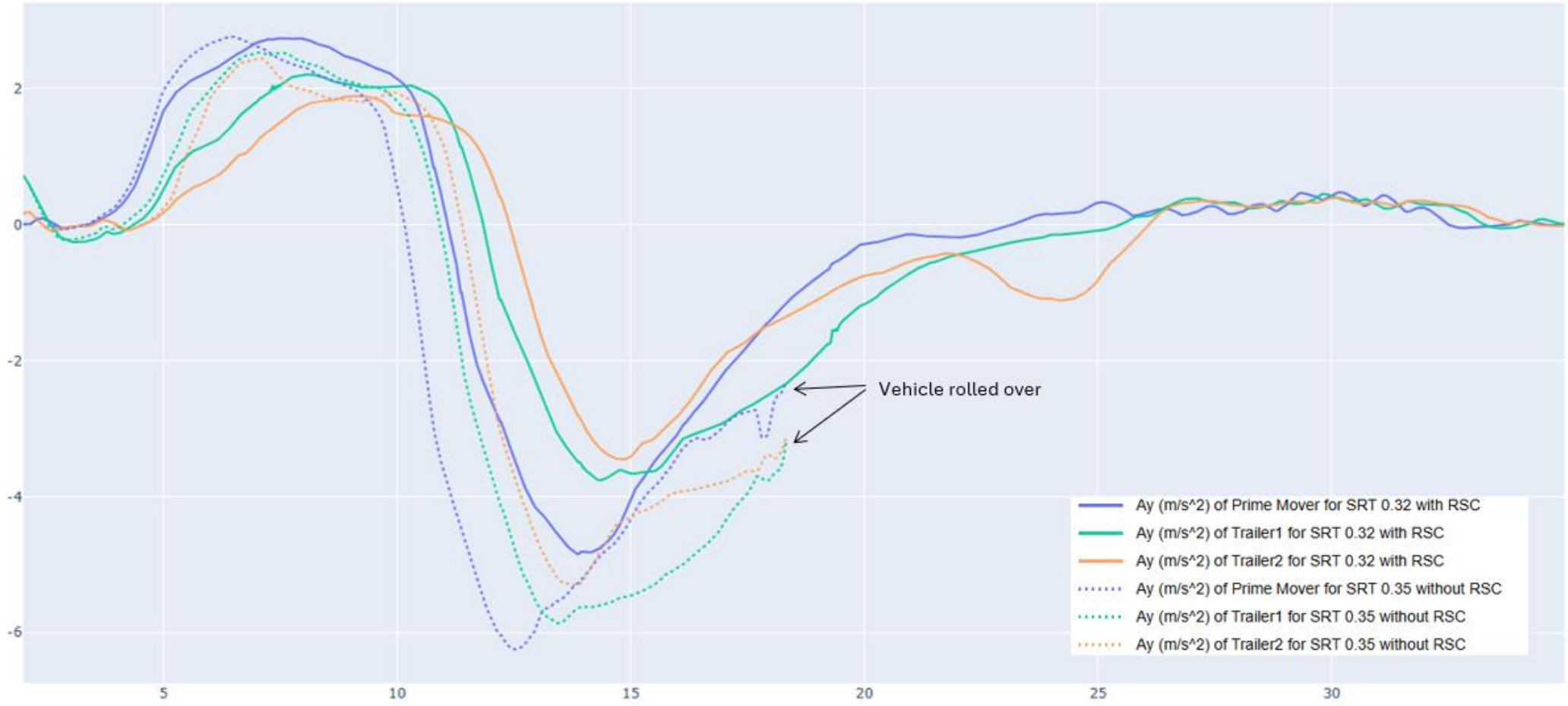
Scenario-1



Scenario-2



Lateral acceleration (g)



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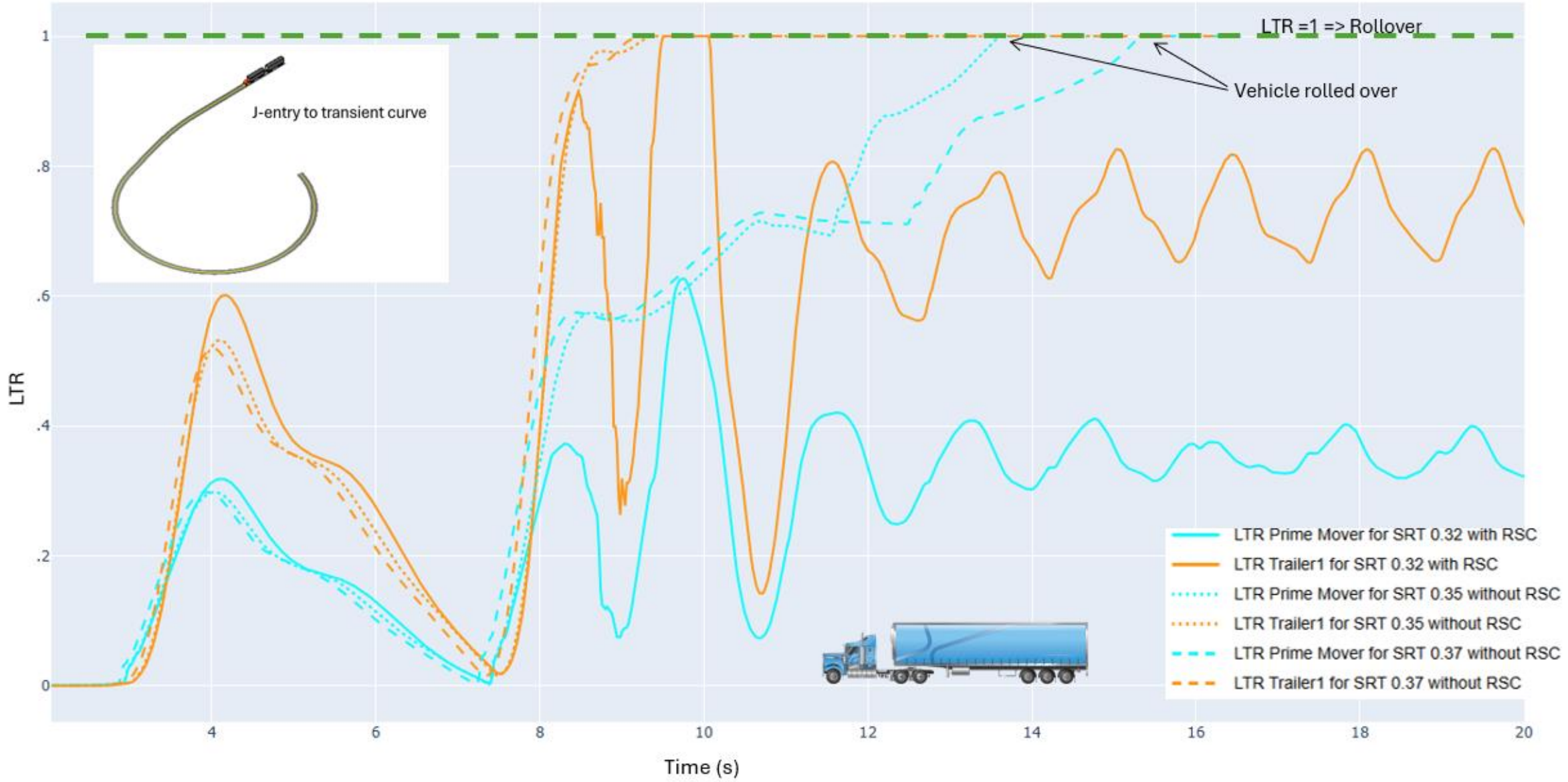
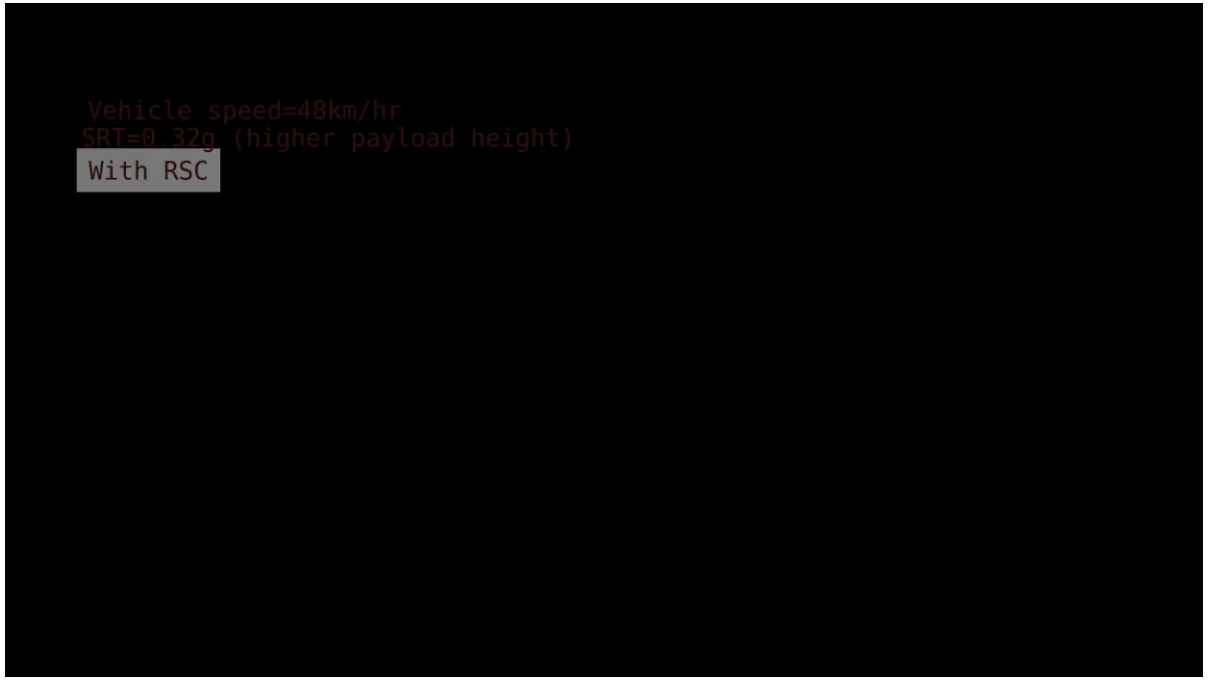
Test maneuvers are developed

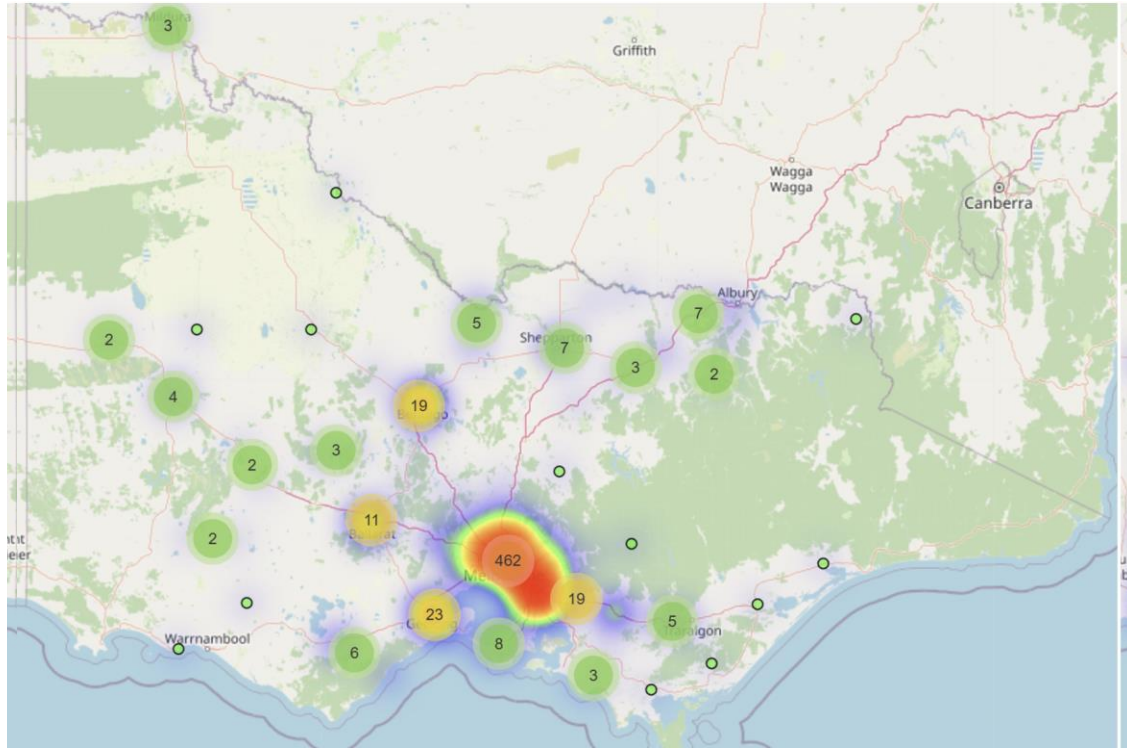


J-entry to transient curve

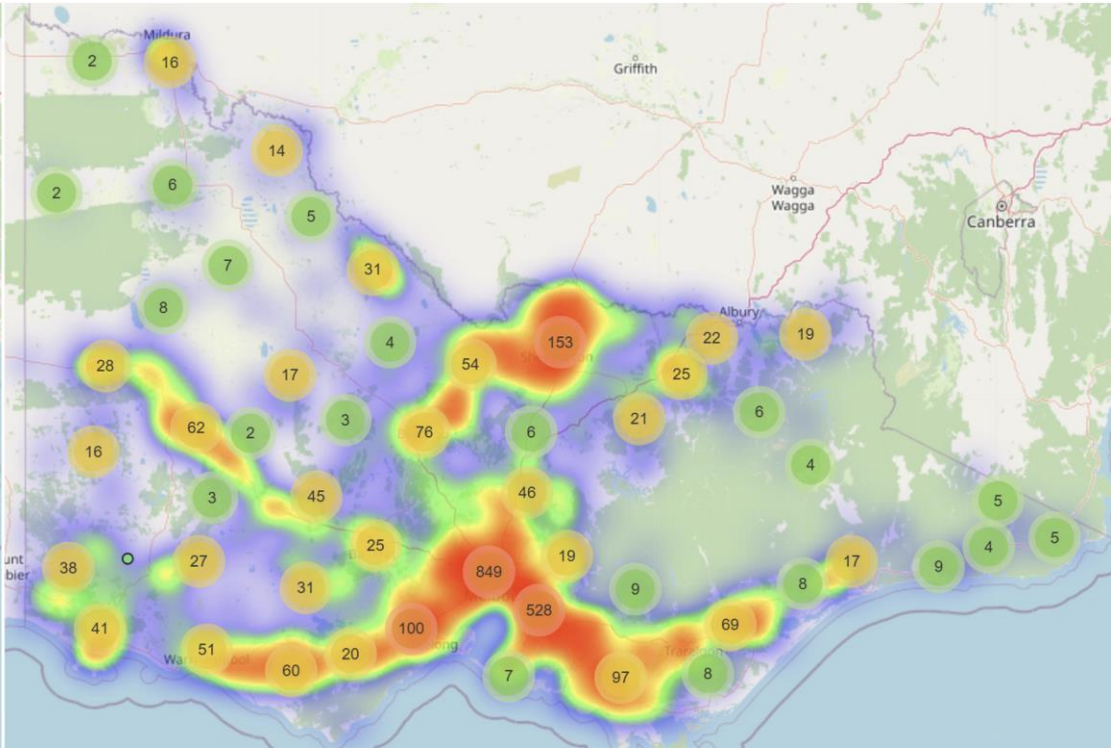


Using data more efficiently

Heavy vehicle rollover events recorded in Victoria from 2012-2025



50km/h speed zone



100km/h speed zone

THANK YOU