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# **NATIONAL ROAD TRANSPORT REGULATORY REFORM DEVELOPMENTS PAST, PRESENT AND FUTURE**

*Barry Hendry  
Manager Technical Standards  
National Road Transport Commission*

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## **ABSTRACT**

The paper covers the development of uniform national road transport regulations under the guidance of the National Road Transport Commission and the future direction of the NRTC. The development of national uniform road transport regulations is one step in the road transport law reform process. However, the actual implementation of the reforms will produce the outcomes on the ground for operators, industry, the community and Australia. The NRTC is about to enter the second stage of its life by becoming more involved in the actual implementation of the reforms across Australia regarding vehicle standards, dimensions and mass limits. The development of a framework for the trialing of innovative vehicles and the determination of vehicle performance parameters and relevant values is one of the challenges facing the NRTC and other stakeholders in the road transport industry. The views expressed in the paper are those of the author.

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## **INTRODUCTION**

Australia is an island continent roughly the size of the United States located between the Pacific and Indian Oceans with flying times of four to five hours from east to west and three to four hours from north to south. The majority of our 18 million people live in the southern and eastern fertile parts of the country.

It was settled by the British commencing in 1788 leading to the progressive establishment of six individual State Governments. Accordingly, it is not hard to imagine the development over time of differing road transport laws throughout Australia[1].

The Federation of the States of Australia was achieved in 1901 with the formation of a Federal Government with a specific Constitution involving the States giving up some of their powers.

At the time of Federation, the drafters of the Australian Constitution decided that the law-making powers of the Commonwealth and State Parliaments should be shared in a particular way. They identified specific subjects on which the Commonwealth would have power to make laws and agreed to leave the rest to the States. In most of the areas where the Commonwealth had power, the States would also be able to legislate, but Commonwealth law would override State law in the event of a conflict.

The architects of the Australian Constitution did not envisage the role road transport would play in the development of the country as at that time, motor vehicles had barely been invented and the roads were the domain of horse-drawn carriages. Road transport between States did not exist in 1901 to any degree. Road transport was considered a local issue and, as there was no direct reference to it in the Constitution, it was left to the States to legislate.

This allowed disparate regulations to develop as road transport, both within and between States, increased. Protection of government railways played an important role in the growth of sometimes restrictive road transport legislation [2].

## **SETTING THE SCENE**

Road transport now carries 34 per cent of all Australian freight in tonne-kilometres. One of the most important trends is that over the past twenty years, in terms of tonne-kilometres, road freight transport has increased by over 250 per cent [3].

In Australia, transport accounts for approximately 20 per cent of the cost of every item sold or exported overseas. The National Transport Planning Taskforce found in 1994 that a 10 per cent increase in the productivity of road transport would increase Gross Domestic Product (GDP) by A\$6 billion.

Australia's population is clustered, which means that we have a heavy transport pattern by road and rail within urban areas, medium use between population centres, and light use in regional and rural areas [3].

The road system in Australia currently has 810,000 kilometres of roads of which 38 per cent are sealed. There are approximately 25,000 bridges in Australia, 50 per cent are older than forty years, 40 per cent are timber and 85 per cent have spans of less than 15 metres.

The start of the 1990s saw Australia struggling to fight its way out of a major recession and at the same time, moving to restructure its economy to improve its long term competitiveness. The micro-economic reform agendas of various governments were vital components of this process of dramatic economic change.

## **THE NEED FOR ROAD TRANSPORT REFORM**

There are nine separate jurisdictions responsible for road transport; 8 States, 2 Territories, and the Federal Government. In addition, there are more than 500 local government bodies which has led to road transport regulation, charging and funding being developed in a disparate manner.

At the start of the 1990s the Australian road transport sector was characterised by:

- a variety of road charging systems which bore little relationship to costs of providing and maintaining roads;
- nine differing sets of technical standards for vehicle design and construction with Australian Design Rules applying to new vehicles, and State and Territory regulations applying to others;
- eight differing sets of road rules;
- a variety of systems and requirements for dealing with large loads;
- varying restraints on vehicle operations;
- differing enforcement practices both within and between jurisdictions; and
- overlap in administrative and funding responsibilities for road infrastructure.

The effects of these different regimes and standards are costly. Shopping around for lowest charges and other factors lead to distortions. There was concern within the wider community over varying safety standards. In addition there was scope to improve the productivity currently achieved from Australia's road asset base [4].

The need for reform does not necessarily mean that everything done in the past is inefficient but that there is a need to take action to make our future transport processes and procedures more efficient and effective.

In the 1990s there were in excess of 100 pieces of legislation in the form of Acts and Regulations in force in Australia on the subject of road transport.

The complexity of the regulatory system was identified as a cause of inefficiency in Australian industries which reduced competitiveness in international markets at a time when Australia had to improve its export performance to help bring the economy out of recession.

The lack of uniformity existed despite the situation that for some forty years there had been a council of Commonwealth and State Ministers, the Australian Transport Advisory Council (ATAC), coordinating moves toward uniformity of legislation, standards and practice among the jurisdictions [5].

In 1985 the Federal Interstate Registration Scheme (FIRS) established uniform conditions for vehicles registered under the scheme operating exclusively for interstate trade. This mainly covered vehicles greater than 4.5 tonnes gross mass.

## **ORIGIN OF THE NATIONAL ROAD TRANSPORT COMMISSION**

The range and variety of regulatory frameworks under which Australia's road transport industry was required to operate was contrary to the very idea of competitiveness. This was recognised by the Special Premiers Conference in 1991 which led to the establishment of the National Road Transport Commission (NRTC). Initially, the Commission was set up with responsibility only for Heavy Vehicles (defined as greater than 4.5 tonnes Gross Vehicle Mass (GVM)). This responsibility was expanded in 1992 to also include Light Vehicles.

The principles behind the establishment of the Commission were that there should be improvements in road safety and transport efficiency and reductions in the costs of administration of road transport. The NRTC's broad guidelines were to make it safer, easier and cheaper to transport goods around Australia and ensure that the community in general benefits from the reform initiatives.

These principles necessitate uniform or consistent road transport legislation throughout Australia, developed through a cooperative scheme with the Federal, State and Territory Governments.

The Commission acts as an independent body and reports to a Ministerial Council comprising the Transport or Roads Ministers of each jurisdiction.

Initially, the Commission adopted an approach in the development of the national Road Transport Law which was based on the following principles:

- the incorporation of the best features of existing State, Territory and Commonwealth legislation into the national law;
- the recognition that there were some existing practices which may be legitimately unique to a particular jurisdiction;
- the provision of flexibility for future innovations to accommodate new methods and practices; and
- the thorough evaluation of proposals to ensure national law.

In developing its role, the Commission adopted a philosophy based on its beliefs that:

- road transport plays a major service role in the Australian economy;
- it is vital in the national interest to have an economically viable, safe and competitive road transport industry;
- all road users should pay their fair share of road costs;
- the road system should be financed at an adequate level from road user revenue; and
- roads should be built and maintained efficiently.

From this philosophy, the Commission determined its objectives to be:

- to support the development of a viable and competitive road transport industry;
- to develop a national system of road charges which achieves a balance between simplicity, efficiency and equity;
- to develop a national system of road regulations which promotes safety and efficiency;
- to raise the level of community awareness about road costs and revenues; and
- to widely disseminate information on its charter and activities.

The Commission also resolved that it would pursue these objectives in a cost effective manner and consult widely with industry, government and other interested bodies.

## **NATIONAL ROAD TRANSPORT LAW**

The definition of “Road Transport” in the Agreements signed by the Heads of Government in 1991 and 1992 scopes the tasks to be covered by the NRTC as follows:

- (a) design, construction and use of vehicles including operating requirements as to the drivers' records, driving hours, and other matters in relation to the drivers of vehicles;
- (b) registration of vehicles and matters relating thereto including the means by which any registration may be cancelled, suspended or its operation affected;
- (c) standards of driver licensing with respect to vehicles and matters relating thereto including the means by which any licence may be cancelled, suspended or its operation affected;
- (d) any provision of a traffic code, directed solely to the use of vehicles; and
- (e) nationally consistent charging principles and road charges,

but does not include economic regulation of the transport industry.

Originally it was envisaged that all of the national law for road transport could be covered by a single piece of national legislation and developed in a relatively short timeframe.

However, it soon became clear that the timeframe could not be met and that producing a single piece of legislation to cover road transport as defined by the Agreements was a huge task. The complexities involved in reforming a system which had only been tinkered with at the edges over the last 40 years or more made the task slow and difficult. Also, there were difficulties in reconciling individual State and Territory interests.

Therefore, the Ministerial Council for Road Transport agreed in October 1992 with the Commission's proposal to divide the task up into the following six modules.

- Heavy Vehicle Charges;
- Vehicle Operations;
- Dangerous Goods (Road Transport only);

- Vehicle Registration;
- Driver Licensing; and
- Compliance and Enforcement

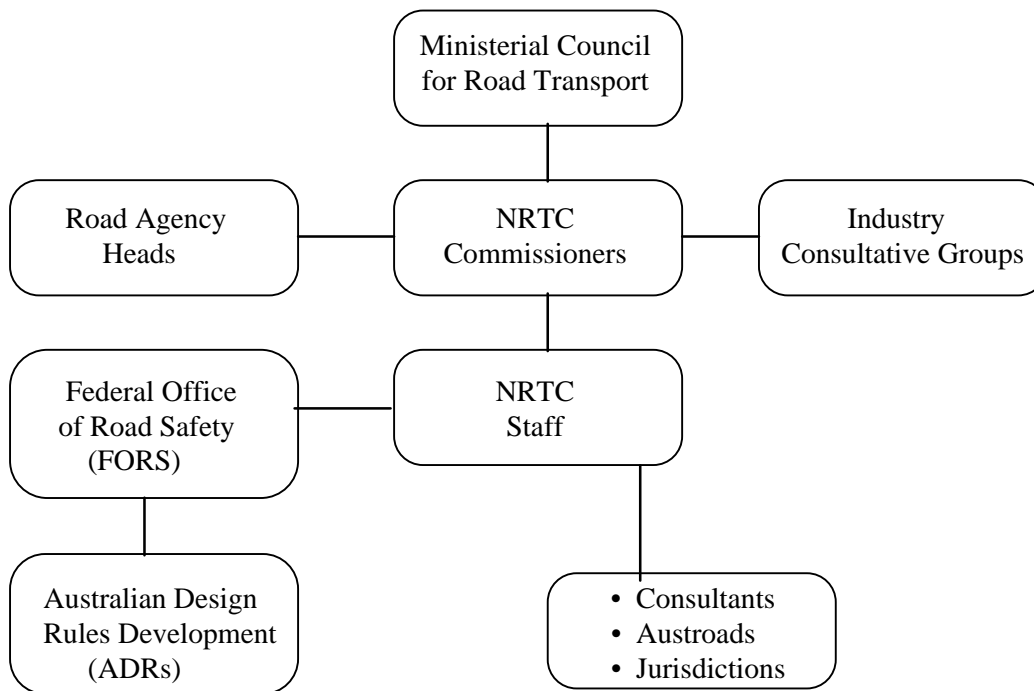
## TRANSPORT LAW REFORM PROCESS

Regulatory Impact Statements are required for all legislative proposals recommended by the Commission; they are one method of ensuring that the three principles in relation to road safety, transport efficiency and reduction of administration costs are met.

The Commission operates by making recommendations on road transport policy and legislation to a Ministerial Council for Road Transport. The Council comprises nine Transport or Roads Ministers, one from each of the Commonwealth, State and Territory governments in Australia.

The recommendations are put to a vote by Ministers, and if a majority agrees, all jurisdictions are required to adopt the recommendations. The procedure was devised in an attempt to achieve more uniformity than had occurred with the consensus approach previously adopted by Ministers. Decisions are not based on consensus but the vote of the majority.

### *NRTC Consultative Arrangements*



The initial implementation of the legislation and the day-to-day administration of the legislation are the responsibility of the States, Territories and the Commonwealth.

Consultation with industry, government and other interested bodies has been extensive to date. Acceptable and saleable recommendations will only occur if those affected are seen to have, and actually do have, a genuine role in their development. Steps in the process are shown below.

### ***The Road Transport Reform Task***

Inputs	Process	Outcomes
<ul style="list-style-type: none"> <li>• Research</li> <li>• Planning</li> <li>• Resources</li> <li>• Identify Projects</li> <li>• Analysis</li> <li>• Proposals</li> </ul>	<ul style="list-style-type: none"> <li>• Consultation</li> <li>• Policy Development</li> <li>• Legislation Prepared</li> <li>• Approval</li> </ul>	<ul style="list-style-type: none"> <li>• Enhanced Safety</li> <li>• Enhanced Efficiency</li> <li>• Reduced Costs of Administration</li> <li>• Environmentally Friendly</li> </ul>
<p>(Principal carriage by NRTC, assisted by jurisdictions and users)</p>	<p>(NRTC, assisted by jurisdictions)</p>	<p>(NRTC to monitor)</p>

A number of national reforms developed by the NRTC are now in place to improve the efficiency and safety of transport.

Some of these are:

- uniform national mass limits up to 42.5 tonnes for six axle prime mover and semi-trailer combinations without permits;
- changes in dimension limits to 19 metre semi-trailers, 25 metre B-doubles and road trains to 53.5 metres;
- national heavy vehicle registration charges;
- national heavy vehicle standards;
- a streamlined Australian Design Rule development and approval process;
- a strong focus on fatigue management in driving;
- national medical standards for commercial drivers;
- review and development of the Dangerous Goods Code and Regulations; and
- improved bus construction standards.

## **VEHICLE OPERATIONS REGULATIONS**

Vehicle Standards were required to cover a vast range of operating equipment including heavy and light vehicles, buses, cranes, low loaders and agricultural equipment.

The principles behind the standards are that they:

- incorporate best practice;
- are measurable where possible; and
- require continued compliance with the Australian Design Rules (ADRs) to which the vehicle was built.

Significant effort was made to ensure unnecessary standards were eliminated.

Four main sets of regulations that cover heavy vehicle operations have been approved by the Ministerial Council:

- The **Heavy Vehicle Standards Regulations** contain the design and construction standards (by picking up the new vehicle standards or Australian Design Rules) and the in-service standards for vehicles over 4.5 tonnes GVM. They include general safety requirements, vehicle marking, vehicle configuration and dimensions, lighting and light signalling devices, braking, fuel systems, noise and emissions, maximum road speed limiting and mechanical connections between vehicles. The Heavy Vehicle Standards Regulations contains an obligation to maintain a vehicle in a safe and fit condition throughout its life.
- A set of **Heavy Vehicle Roadworthiness Guidelines** has also been prepared to provide guidance to vehicle operators and enforcement officers on whether the regulatory obligation has been met.
- The **Mass and Loading Regulations** detail the standards applying to vehicle mass and the loading of vehicles. They include mass limits associated with vehicle design capabilities, maximum axle mass limits, mass limits based on axle spacings, gross vehicle mass limits, load size, load projection, and placing and securing loads. To support the Regulations, a **Load Restraint Guide** was produced and approved by the Ministerial Council. The Guide contains a performance-based loading standard and provides information on safe and practical methods to secure different types of loads.
- The **Oversize and Overmass Vehicles Regulations** include a range of standards for the operation of oversize and overmass vehicles such as cranes and low loaders (mass and dimension limits, operating requirements, fitting of warning devices, requirements for pilot/escort vehicles and route assessment). More important, the regulations give regulatory authorities power to issue:
  - notices to allow oversize and overmass vehicles to travel in specified areas under certain conditions without the need to obtain permission (a permit) for the specific trip; and
  - permits for oversize and overmass vehicles that do not comply with the requirements for operation under notice.

Few specific requirements (except for pilot/escort vehicles) are required for oversize and overmass vehicles which do not meet the notice conditions because of the variety of vehicles and operations involved. To ensure some consistency in permit conditions, a set of **Recommended Conditions for Permit Travel** has been prepared for use by regulatory authorities.
- The **Restricted Access Vehicles Regulations** which were approved in September 1995 cover the operation of other large vehicles, mainly B-doubles and road trains, and include a power to grant exemptions (with some constraints) from the Mass and Loading Regulations. Guidelines for granting exemptions have also been produced to ensure consistency in the application of the national road transport regulations.

## VEHICLE CONSTRUCTION STANDARDS

Vehicle construction standards are covered by the Australian Design Rules and the formulation of new or amended ADRs for vehicle construction is a joint responsibility of the Federal Office of Road Safety (FORS) and the NRTC. Under a Memorandum of Understanding signed in May 1992 the two organisations cooperate in the development of standards. The Memorandum clearly defines the relationship between the two organisations and provides for joint work program and a revised and streamlined development process for new or amended design rules.

Central to this process is greater industry input into developing new or amended rules. Policies are circulated for comment via Vehicle Standards Proposals (VSPs) and Vehicle Standards Studies (VSS's). Single-issue working groups then translate agreed policies into standards.

A Technical Liaison Group (TLG) advises the Federal Office of Road Safety and the Commission on the work program and technical issues. This Group comprises senior technical representatives of States and Territories, industry organisations and other road user groups.

The longer term intention is for the ADRs to harmonise with UN/ECE Regulations.

## **MASS LIMITS REVIEW**

Over the last twenty years, worldwide studies, including two in Australia, have found significant economic benefits from increasing mass limits for heavy trucks and buses. The competitive nature of the road freight and passenger business means that reduced costs are passed onto customers.

As a result, the Commission commenced a review of Australia's heavy vehicle mass limits in 1993 establishing a Mass Limits Review Steering Committee to study and report on "the feasibility and net benefits of increasing mass limits for vehicles fitted with road friendly suspension systems". The Steering Committee comprised representatives from the NRTC, State road authorities, local government, truck and bus operators, motoring organisations and vehicle manufacturers. The Steering Committee examined:

- savings in vehicle operating costs;
- performance of heavy vehicle suspension systems;
- impacts on road and bridge infrastructure;
- environmental and road safety implications; and
- effects on the Australian economy.

The Steering Committee's report was released for public comment in August 1996. The report recommended a range of options for increased mass limits with the main recommendation to increase the 42.5 tonne limit for six axle prime mover and semi-trailer combinations to 45.5 tonnes. Direct savings in freight costs of \$250 million to \$300 million per annum are expected. Consumption of goods in the wider economy is expected to increase by more than \$500 million per annum [6].

The Mass Limits Review project team has been involved in aspects of the OECD DIVINE Project [7] and the outcomes of that project in relation to road friendly suspensions and the impacts on roads and bridges provided input into policy development issues.

However, there is considerable concern about the impact increased mass limits may have on existing bridges on the road network. Some bridges may not be capable of safely bearing increased loads, while the precise loading strength of others is unknown. To address these issues, the States and Territories are currently undertaking assessments of the existing bridge stock to determine the number of problem bridges and the likely costs of strengthening them.

Other issues to be addressed are certification systems and performance standards for road friendly suspensions and possible in-service tests to ensure that suspensions are maintained in effective working order and remain road friendly [6,8].

## **COMPLIANCE AND ENFORCEMENT**

One of the three principles guiding the Commission's work is the requirement to improve road safety. The safety record of the road transport industry is mainly a function of the behaviour of heavy vehicle operators on the road or their compliance with the law. Compliance and enforcement aspects were excluded from the early modules to enable the national standards to be developed more quickly. This module will cover those aspects for all other modules except dangerous goods, which is a stand-alone package.

It is the job of Governments to enable the provision of efficient road transport services while meeting the community's road safety objectives. Laws and regulations are created and enforcement authorities are given the task of ensuring compliance with them.

A strongly held view by regulatory and enforcement authorities is that existing enforcement is not sufficiently directed at the persons who actually bear responsibility. This issue is contentious in some quarters and the framing of legislation to achieve the desired outcome is not simple.

## **Chain of Responsibility**

The concept of 'Chain of Responsibility' is being developed in the Compliance and Enforcement proposals to ensure that not only will a driver be responsible for an offence but an owner or person responsible for loading a vehicle or consigning a load may also be held responsible for an offence. The underlying principle is that all those actually responsible for a breach of the law should be held accountable and the law should, as far as is practicable, define who in the transport chain should be held accountable for particular offences [8].

## **Alternative Compliance**

Alternative compliance schemes include voluntary schemes for accreditation, self-regulation and co-regulation. Their purpose is to enable efficiency improvements in road transport by allowing lower levels of on-road enforcement for operators who can demonstrate a high degree of compliance by other means. The term alternative compliance is used as schemes covered by it include voluntary alternatives to conventional methods of enforcement of road transport legislation.

Alternative compliance schemes have been proposed by both regulators and the regulated. Both see benefits in achieving compliance by other than on-road enforcement. The potential benefits of alternative compliance are:

- enhanced compliance with existing standards by operators included in the schemes;
- improved efficiency for these operators directly due to reduced incidence of on-road enforcement;
- increased compliance of operators outside the scheme through increased concentration of enforcement resources; and
- reductions in enforcement resources to achieve a given level of compliance.

There are three schemes being trialed: Mass Management, Maintenance Management and Fatigue Management. The Mass Management and Maintenance Management schemes have been approved by the Ministerial Council for Road Transport for further implementation whereas the evaluation and pilot trials for the Fatigue Management scheme will continue for a few more years.

## **FUTURE CONCEPTS/DIRECTIONS**

### **Performance Based Regulations/Standards**

Pressure to increase, even if marginally, the weight and dimension limits covered by present day prescriptive regulations will force regulators and road agencies to determine the appropriate performance standards to assess vehicles for access to the road network.

Performance standards offer a method of providing a closer match between a vehicle's performance and the road network. This approach should provide more freedom and lead to efficiencies and improvement in the road system. However, they may not cover every issue and will present difficulties from an on-road enforcement perspective. On-road inspection staff may not have the means of assessing whether or not a particular vehicle meets a particular performance standard.

Performance parameters and the methodology for conducting assessments will need to be developed. Vehicle dynamics, infrastructure access, interaction with other road users and traffic flows should be addressed in the assessment methodology of innovative or new concepts of vehicle configurations.

Operators, manufacturers and regulators will be able to assess the suitability of innovative vehicles and combinations using agreed performance parameters. Road authorities will be able to analyse the level and conditions of access to a network with the appropriate balance between safety, infrastructure protection, other road users and industry productivity.

Simulation provides a convenient means of quantifying the dynamic performance of innovative vehicle configurations and permits the effects of individual vehicle parameters to be investigated and vehicle configurations to be optimised for particular road environments [9].

Models used to simulate vehicle operations can be validated by in-field testing of actual vehicle configurations. Also, simulation techniques may possibly be used to develop ways to improve the performance of existing vehicles.

Major issues for consideration in any assessment are:

- Safety covering the dynamic performance characteristics of the combination, the impact on other traffic and environmental impacts.
- Infrastructure Protection road wear comparisons (Equivalent Standard Axle's per tonne freight carried), road side furniture/structures and bridge capabilities, axle spacing/bridge formulae.
- Productivity the cost per tonne of freight carried, fleet flexibility, maintenance costs and operating cost per tonne of freight.

Performance characteristics are intended to focus on desired outcomes (ie safety and the interaction with other traffic and the road system) and provide a rationale for assessing the implications of design modifications and vehicle innovations [10].

The following vehicle performance characteristics may possibly be selected by regulators in future to evaluate the actual on-road performance of a proposed vehicle or combination:

- Steady-State Rollover;
- Rearward Amplification;
- Load Transfer Ratio;
- High-Speed Offtracking;
- Low-Speed Offtracking;
- Trailing Fidelity; and
- Gradeability and Startability

Some of the above terms are defined at [Annex A](#).

The impact on other road users must also be assessed. Therefore, a number of other factors that should be considered include:

- Visibility restrictions for road users travelling behind the vehicle or combination;

- Passing and overtaking distances/timing for other traffic;
- Overtaking opportunities;
- Road alignment;
- Road gradients; and
- Traffic controls/intersections clearance times.

In some circumstances, operators and drivers may prefer prescriptive standards to performance standards. In these cases the performance standard may form the basis for revised prescriptive regimes. It is easier to regulate a specific dimension or mass limit than to legislate for the Swept Path of a particular vehicle configuration. Also, it is normally easier to enforce.

### **Innovative Vehicle Trials**

Trialing and early adoption of innovations can provide a competitive advantage but national co-ordination may facilitate broader application. A national framework might be useful in identifying benefits, assessment criteria and relevant trial conditions [11].

The responsibility for innovation is not restricted to the NRTC, all parties in the road transport reform process - governments, the industry and the NRTC must contribute to creating the climate in which innovation can occur.

The coming years will still see a fast pace of change and some companies will be the front runners with new vehicles and combinations and technologies. However, community opinion and local government involvement will need to be considered with any of these changes to ensure that the opportunities are taken up. Performance based requirements will probably play a more prominent role in future regulations in deciding whether or not a particular innovative vehicle or combination will be able to use the road network.

### **Intelligent Transport Systems**

Reform policies need to be flexible to provide for technological advances such as Intelligent Transport Systems (ITS). Policy development must be aware of new technological advancements such as ITS but should be needs-driven, rather than technology-driven [11].

ITS systems are being used in relation to human factors, safety improvements and information / communications covering vehicle operations. ITS is being developed in the following areas:

- Automated Vehicle Control Systems;
- Vehicle Warning Systems;
- Tracking and Navigation Systems-GPS;
- Height detection systems;
- Electronic Log Books for recording driving hours or hours of service;
- Fatigue detection and Lane intrusion /Drowsiness Warning;
- Passive Safety; and
- Road Based systems such as automatic tollways and advanced traffic management systems.

Appropriate strategies will be required to assess the need to regulate ITS systems to ensure that they do not interfere with other vehicle safety systems and driver attentiveness [12].

## **FUTURE ROLE OF THE NRTC**

A major review of the NRTC and its processes was undertaken in late 1996 by an independent Steering Committee with representatives from the road transport industry, road users and the public sector. This review was necessary to allow the Heads of Australian Governments to determine whether the NRTC and its processes should be continued, sunsetted or modified.

The Review examined the NRTC's reform process and focussed on how to maintain and build on the gains achieved to date. It also assessed the progress and impacts of the reforms.

The Steering Committee made three key findings covering the importance of ongoing reform in road transport, a continuation of the NRTC and the need to address some concerns with the process immediately.

The Review Committee also proposed that Heads of Government recommit to a clear purpose for the Commission as follows:

“The National Road Transport Commission's primary purpose is to advance and facilitate reform of the national road transport regulatory and operating environment. This will be achieved principally by developing and facilitating implementation of nationally uniform or consistent policies, practices and legislation.”

The Steering Committee outlined 14 principles as follows for the NRTC to fulfil its purpose:

- improve road transport industry efficiency and productivity;
- encourage and facilitate innovation in the industry and its regulation;
- encourage and facilitate technological advancements in the industry, eg ITS;
- encourage and facilitate continuous improvement in the road transport regulatory environment (eg monitoring and updating regulation as necessary);
- encourage continuous improvement in the performance of road and road transport authorities;
- facilitate international harmonisation of vehicle standards;
- ensure road transport reform facilitates effective intermodal linkages between road transport and other transport modes;
- have due regard to the impacts of road transport reform upon road infrastructure;
- have due regard to the impacts of road transport reform upon remote and rural areas;
- improve road safety;
- minimise the adverse environmental impacts of road transport;
- improve regulatory efficiency and reduce administrative costs;
- improve the effectiveness and efficiency of compliance arrangements; and
- pursue rigorous analysis of issues involved in road transport reform [11].

Greater attention will be paid to industry innovation, environmental and safety issues. More emphasis will be placed on implementing agreed reforms and the NRTC will play a more prominent role in coordinating the implementation of reforms.

Some of the reform issues planned for this year are:

- Truck Driving Hours Regulations
- Combined Vehicle Standards
- National Driver Licensing Scheme
- Australian Road Rules

Priority will be given to completing compliance and enforcement provisions of the national law.

Future activities outlined in the NRTC's Strategic Plan to 2000/01 include:

- developing guidelines for trialing innovations;
- increasing the extent of performance based regulations;
- increasing consideration of intermodal aspects;
- ensuring greater harmonisation with international standards for the Australian Design Rules; and
- developing and undertaking joint work programs with the National Environment Protection Council for vehicle related emissions.

Future reforms are likely to be in the form of policies, administrative practices or guidelines, which could be implemented by States and Territories in various ways in their own legislation much quicker than if national legislation is developed and agreed. Some changes will also occur in the decision making processes to reflect the review recommendations.

The next few years will see the NRTC take a different approach to road transport reform and it is bound to come across some hurdles.

Encouragement of innovation could involve facilitating trials of different vehicle combinations and encouraging particular technology or equipment.

The major challenge facing Australian society today is to improve its economic, ecological and social sustainability in an increasingly competitive environment. The role of the road transport industry is to efficiently service economic and social needs, while operating in a safe and environmentally sensitive manner [11].

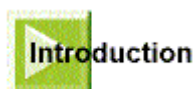
## CONCLUSION

There has been considerable change in the road transport regulatory framework in Australia over the last six years under the umbrella of the national road transport reform process managed by the NRTC. The development of these changes has been conducted in a consultative environment with road authorities, local government, industry, operators and the community at large.

The future holds similar prospects for change with more emphasis on the implementation of reforms following policy approval.

Assessment of a vehicle's dynamic performance, its interaction with the road and bridge infrastructure as well as the vehicle's interaction with other road users will become more common in future, especially to enable the operation of potentially more productive and innovative vehicles and combinations on the Australian road network. The assessment of innovative vehicles and combinations for access to the road network will require the development of appropriate regulations that cater for the use of vehicle dynamic performance parameters in the assessment methodology.

The NRTC and the reform process for road transport in Australia is to continue with the NRTC playing a more prominent role in coordinating and facilitating the implementation of nationally uniform or consistent policies, practices and legislation.



## AUTHOR BIOGRAPHIES

**Barry Hendry** is the Manager Technical Standards with the National Road Transport Commission (NRTC). Barry has been with the NRTC since March 1996 following career positions related to road transport in the Royal Australian Air Force and the State Electricity Commission of Victoria. He has also occupied maintenance management and project management positions with the Freight Services and Maintenance Divisions of the Victorian Railways. At ABBFANS, a manufacturer of heavy industrial and mining ventilation fans, he was responsible for TQM systems and Human Resources.



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## ANNEX A

### DEFINITION OF PERFORMANCE BASED MEASURES

#### Steady-State Rollover

Steady-state rollover performance is expressed in terms of the lateral acceleration required to produce rollover of the combination of the vehicle travelling at constant speed in a steady turn, and is expressed as a proportion of gravitational acceleration (g). The rollover limit is reached when the load on all wheels on the inside of the turn reduces to zero.

#### Rearward Amplification

Rearward amplification is a frequency-dependent measure, defined as the ratio of the peak value of lateral acceleration achieved at the centre of gravity of the rearmost unit to that developed at the hauling unit in a dynamic manoeuvre of a particular frequency. Rearward amplification expresses the tendency of the vehicle combination to develop higher lateral accelerations in the rear unit when undergoing avoidance manoeuvres.

#### Load Transfer Ratio

The load transfer ratio is defined as the ratio of the absolute value of difference between the sum of the right wheel loads and the sum of the left wheel loads, to the sum of all wheel loads - when the vehicle is in an evasive manoeuvre. When the load transfer ratio reaches a value of 1, rollover occurs.

#### High-Speed Offtracking

High-speed offtracking is defined as the degree to which the rear unit of a combination vehicle tracks outboard of the hauling unit in high-speed turns of moderate severity. The high-speed offtracking measure is obtained when the vehicle is operated in a shallow turn of radius 318 metres at a speed of 90 km/h, attaining a lateral acceleration level of 0.2g.

#### Low-Speed Offtracking

Low-speed offtracking is defined as offtracking of the rearmost axle with respect to the path of the steering axle. Low-speed offtracking is evaluated using a set of low-speed turning specifications produced by Austroads.

#### Trailing Fidelity

Trailing fidelity is the ability of the vehicle to control the lateral movement of the rear unit when the combination is travelling at highway speed. As such it is an important parameter in calculating how much road space the articulated vehicle requires for safe operation [10].

