



NATIONAL ROAD TRANSPORT COMMISSION

**AUTOMATIC ANNUAL
ADJUSTMENT PROCEDURE FOR
HEAVY VEHICLE CHARGES**

Regulatory Impact Statement

September 2001

**Prepared by:
National Road Transport Commission
with the assistance of Sinclair Knight Merz Pty Ltd**

National Road Transport Commission

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Impact Statement - September 2001**

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FOREWORD

This Regulatory Impact Statement is designed to accompany the entire decision of the Australian Transport Council (ATC) to implement automatically an agreed procedure for the annual adjustment of heavy vehicle registration charges.

At the November 2000 meeting of the ATC, Ministers asked the National Road Transport Commission, in consultation with the Standing Committee on Transport, to prepare a formula for annual adjustment of heavy vehicle charges. That formula was the subject of the Annual Adjustment Procedure for Heavy Vehicle Charges: Regulatory Impact Statement (RIS) – May 2001.

At the following ATC meeting in May 2001, it was agreed that heavy vehicle registration charges would be adjusted annually by this formula, which is based on changes in road expenditure, modified to reflect changes in road use by heavy vehicles. It was further agreed that the initial application of the formula would take place as close as possible to 1 October 2001, and that this would include a ceiling of underlying inflation (Consumer Price Index adjusted to remove the impact of changes to the tax system). The initial adjustment was made through the *Road Transport Charges (Australian Capital Territory) Amendment Regulations 2001*. Application of the adjustment is the subject of the Annual Adjustment Procedure for Heavy Vehicle Charges – Initial Adjustment: Regulatory Impact Statement - July 2001.

As stated above, the subject of this Regulatory Impact Statement is legislation to put in place the automatic adjustment procedure for heavy vehicle charges that was agreed by Ministers at the ATC meeting in May 2001. This procedure is to apply annually on 1 July each year, from July 2002 onwards (as agreed by Ministers).

It follows two closely related Regulatory Impact Statements noted above, that is:

- Annual Adjustment Procedure for Heavy Vehicle Charges: Regulatory Impact Statement, May 2001; and
- Annual Adjustment Procedure for Heavy Vehicle Charges – Initial Adjustment: Regulatory Impact Statement, July 2001

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1. PROBLEM AND OBJECTIVES

1.1 Problem

1.1.1 Charges Determinations

The National Road Transport Commission is responsible for regularly reviewing the level of charges as part of its role to improve road transport's efficiency and safety and reduce its environmental impacts. The development of nationally uniform charges on a national basis was one of the key reasons for the establishment of the NRTC in 1991. Uniform charges are a key issue for the road transport industry.

The NRTC is required to use the methodology set out in the NRTC Act, and to make assessments as to whether charges are at the right levels.

These assessments are contained in a "Determination", which is recommended to Australia's Transport Ministers for decision. Two Determinations have been made (in 1992 and 2000) and implemented by all governments, and an initial application of the annual adjustment formula occurred in most jurisdictions on 1 October 2001.

Decisions relating to heavy vehicle charges are currently made on a zonal basis, with Zone A comprising New South Wales, Victoria, Tasmania, the Australian Capital Territory and the Commonwealth and Zone B comprising Queensland, Western Australia, South Australia and the Northern Territory. The effect of the voting arrangements that apply within each zone is that a majority must vote in support of the proposal in order for it to be agreed, that is, at least 3 out of 5 in Zone A must vote in favour, or at least 3 out of 4 in Zone B must vote in favour of a proposal for it to go through.

1.1.2 How Charges Have Been Determined to Date

Until now, the process used to determine heavy vehicle charges has involved:

- establishing the amount and classification of road expenditure Australia-wide;
- developing procedures to identify what proportion of these costs are attributable to heavy vehicles, and on what measure of road use they depend;
- establishing the number and use of road vehicles by different categories; and
- estimating the range of charges by vehicle type that fully recovers the expenditure.

The process is undertaken by NRTC using a large spreadsheet model designed for the purpose, gathering the necessary data and reviewing the basic assumptions made at each determination. Data is collected, primarily from the jurisdictions and the ABS, with supplementary surveys or investigations carried out to improve any shortcomings in the available information.

This process results in a range of charges for heavy vehicles that recovers road expenditure as consistently as possible between the different types of heavy vehicle. The charges have two components: a fuel excise component and a registration charge. Revenue from the fuel excise component is part of general Federal fuel excise revenue, whilst registration charges are collected by the States and Territories and used at the discretion of each jurisdiction.

Because of the extensive consultation, data collection and analysis required to undertake the cost allocation procedure, full determination of charges has only occurred twice since the

NRTC was established, in 1995 (on a 1992-based analysis) and 2000 (on a 1997-based analysis).

A 3rd Heavy Vehicle Charges Determination is included in the NRTC's strategic plan and is scheduled to be completed in 2003/04.

Given that the next determination may be a few years away, NRTC has been requested to propose a method to adjust heavy vehicle charges on an annual basis, so that they keep pace with changing circumstances and potentially reduce the impact of a charges review every 4-5 years.

1.1.3 Indexation of Charges

At the ATC meeting of April 1999, Ministers asked the NRTC to submit a proposal to them on the annual indexation of heavy vehicle registration charges. The Ministers intended that indexation would apply in each of the years between Determinations to ensure that charges kept pace with heavy vehicle road use costs and to allow a smoother transition to the outcomes of future Determinations.

Accordingly, the NRTC asked Ministers to vote on indexing charges, commencing in July 2001. The proposal Ministers were asked to consider involved indexing charges by changes in the Consumer Price Index, and would have required Ministers to decide each year whether or not to apply the indexation procedure.

This proposal was unanimously supported by Zone A Ministers. However Zone B rejected the proposal as two jurisdictions (Western Australia and the Northern Territory) voted against indexation. The proposal was rejected by these two jurisdictions due to the impacts on remote areas.

This rejection of the proposal created the potential to undermine the existence of nationally uniform charges.

1.2 Objectives

Governments worldwide face significant scrutiny in the manner by which charges and taxes imposed on all aspects of society are determined, costed and implemented. Agencies responsible for determining charges face the difficult task of balancing competing interests, while ensuring that resulting systems are equitable, justifiable, readily enforceable where required, and meet with a generally high level of compliance.

Charges imposed on the operators of heavy vehicles are no exception, and issues associated with the level of such charges and related expenditure on various classes and location of roads have been consistent subjects of debate for many years.

At the November 2000 Australian Transport Council (ATC) meeting, Ministers requested the Standing Committee on Transport (SCOT) and the National Road Transport Commission (NRTC) to develop an annual adjustment procedure for heavy vehicle charges:

“NRTC in consultation with SCOT will advise Ministers at their next ATC meeting on a sound formula for annual adjustment to heavy vehicle charges.”

The minutes of the last ATC meeting also indicated that:

“In the event that there was no agreement on the adjustment of charges, the “default” position was that Ministers would then vote at the same meeting on the application of the CPI index minus the impact of GST.”

An Advisory Group, comprising representatives of road authorities, industry and specialist researchers (members as listed in Appendix C) was convened to discuss the objectives and possible approaches that could be adopted to adjust heavy vehicle charges.

The Advisory Group identified objectives that jurisdictions would seek to achieve through an annual adjustment procedure for heavy vehicle charges, and the relative importance of each, are shown in Table 1.1. This Table also contains the qualitative views of Advisory Group Members on the relative importance of each objective.

Table 1.1 Annual Adjustment Objectives

Objective	Abbreviated title	Jurisdiction weighting	Industry views on importance
1 To increase revenue from registration charges so that they reflect increased demands on Government resources	Revenue	21%	Similar
2 To ensure the resulting charges are efficient (match estimated costs of road use) and provide continuity between charging determinations	Efficiency Weighting	15%>	Similar
3 To ensure that the resulting charges are equitable (they are fair and can be justified)	Equity	20%	Similar
4 To provide a simple, readily understandable and transparent approach to the underlying calculations	Simplicity	21%	Slightly greater
5 To minimise hardship on remote areas	Remote areas	23%	Similar

Objectives 2, 3 and 4 ensure that the approach adopted is consistent with the charging principals set out in the Heavy Vehicles Agreement. Objectives 1 and 5 are additional objectives that were identified by the Advisory Group based upon discussions with Ministers.

2. PROPOSAL AND ALTERNATIVES CONSIDERED

2.1 Proposed Method

Three alternatives were presented to ATC for consideration. These alternatives comprised:

1. the proposed annual adjustment formula requested by Ministers at the last ATC meeting;
2. the fall-back position identified at that meeting of indexing charges in accordance with underlying inflation (that is, changes in the Consumer Price Index (CPI) less the impacts of the introduction of the Goods and Services Tax); and
3. the original proposal of indexing charges in accordance with changes in CPI, which was accepted by Zone A and rejected by Zone B in February 2000.

It was decided that in the event that both Zones approved the first of these alternatives, the other two would be disregarded.

At the ATC meeting on 25 May 2001, Ministers agreed upon the annual adjustment formula.

2.1.1 Annual Adjustment Formula

The annual adjustment formula for heavy vehicle charges agreed by Ministers would adjust charges in accordance with changes in road expenditure and expected changes in road use. It takes the form:

$$\begin{aligned}
 \text{Adjustment (\%)} = & \quad 0.60 \times \text{Change in Rural Arterial Expenditure (\%)} \\
 & + 0.21 \times \text{Change in Urban Arterial Expenditure (\%)} \\
 & + 0.02 \times \text{Change in Urban Local Expenditure (\%)} \\
 & + 0.17 \times \text{Change in Rural Local Expenditure (\%)} \\
 & - 1.5\% \text{ (ie, Road Use Factor)}
 \end{aligned}$$

It was proposed that the maximum increase in heavy vehicle charges would be limited to a “ceiling” of underlying CPI (ie, CPI with the GST spike removed). Reductions in charges will be avoided by including a “floor” of 0%. The formula also takes account of where changes in road expenditure occurred.

The Road Use Factor of – 1.5 adjusts changes in road expenditure by expected changes in road use. Expected changes in road use reflect likely changes in vehicle numbers and the distances they travel. These likely changes were estimated on the basis of trends over the past decade. Their importance was established by assessing their influence on heavy vehicle charges using the method of determining charges used in the 2nd Charges Determination. Due to difficulties in accurately assessing changes in road use year to year, the Road Use Factor has been fixed for the duration of the annual adjustment procedure, that is, until the Third Heavy Vehicle Registration Charges Determination.

Expenditure on roads that are more intensively used by heavy vehicles has a greater influence than expenditure elsewhere. That is, expenditure on rural arterial roads has a much greater impact on charges than expenditure on urban local roads. This relationship in the charging model (as used in the Second Charges Determination) is carried forward to the formula and is the reason for different weightings for different categories of road expenditure. The way these weightings were calculated is detailed in Appendix D. In essence, they were derived by establishing what effect there would be on charges from changes in different types of expenditure and different aspects of road use (based on the charging model used in the 2nd

Charges Determination). If expenditure on all categories of roads increases by the same proportion, the weightings have no impact.

The results of the formula are in percentages. All changes in road expenditure are measured as percentage changes between the average of the three most recent years of expenditure compared to the average of expenditure in the previous three years (that is, annual percentage changes between three-year moving averages of road expenditure). The three-year average used to determine changes in expenditure has the effect of smoothing out any large fluctuations year to year.

2.2 Options

This section of the RIS identifies the range of options that were considered to achieve the desired policy objectives. The range of options considered extend beyond those that were submitted to Ministers for consideration and all are described and discussed in this RIS.

The purpose of the adjustment procedure is to provide a mechanism for regularly updating charge levels between more complete reviews of charge levels in determinations. Although other, non-regulatory approaches may be possible, the prime objectives of a heavy vehicle registration system (vehicle identification and revenue raising) are not readily achieved by other means.

2.2.1 Options Considered

A range of approaches to adjusting heavy vehicle charges is possible, from simple indexation based on a recognised index (such as CPI) to full annual recalculation of charges. The options identified and considered worthy of further consideration are as shown in Table 2.1.

Table 2.1 Options for Adjusting Heavy Vehicle Charges between Determinations

Option	Abbreviated Title
A Full recalculation using the method applied in heavy vehicle charges determinations.	Full recalculation
B Applying a simplified formula that captures (but may not precisely match) the main influences on charges in a full charges determination (ie. road expenditure and road use).	Adjustment formula
C Indexation based on changes in total road expenditure.	Expenditure Index
D Indexation based on changes in the costs of inputs to roadworks (the road construction price index – RCPI).	RCPI
E Indexation based on Consumer Price Index (CPI).	CPI
F Indexation based on CPI adjusted for the impact of the introduction of GST.	Underlying Inflation
G No adjustment to heavy vehicle charges.	No Adjustment

These options were considered by the Charges Advisory Group as representing the most practical options available to adjust charges on an annual basis. Ministers were asked to formally consider three of these options, comprising Options B, E and F.

2.2.2 Derivation of the Options

The options were developed as follows:

- **Full Recalculation:** This option was not developed in detail as part of this assessment because of the excessive resources required to do so, and the lack of data availability at the present time. Any full recalculation would involve review of the underlying assumptions, the cost allocation relationships (involving ongoing research into heavy vehicle impacts on road pavements), and the base assumptions about which costs are recovered, the relationship between the fuel and registration components, and so on. It has been assumed that a full recalculation approach would be too resource-intensive and too expensive to undertake annually.
- **Adjustment Formula:** A full description of the derivation of the adjustment formula is given in Appendix D. In essence, the formula adjusts heavy vehicle charges in line with changes in road expenditure (broken down between urban and rural arterial and local roads), adjusted for changes in road use and the number of vehicles in the fleet.

As mentioned above, Ministers agreed to use this adjustment formula for heavy vehicle registration charges.

- **Expenditure Index:** This option involves adjustment of heavy vehicle charges pro rata to annual changes in road expenditure.
- **RCPI:** This option involves adjustment of heavy vehicle charges pro rata to annual changes in the price of road construction and maintenance, as defined by the published Road Construction Price Index (ref. Bureau of Transport Economics).
- **CPI:** This option involves adjustment of heavy vehicle charges pro rata to annual changes in consumer prices, as defined by the Australian Consumer Price Index.
- **Underlying inflation:** This option is the same as the CPI option but would remove any one-off policy-related effects that might distort prices; the introduction of GST caused such a distortion in 2000, for example.

2.2.3 Differentiating by Vehicle Type

Some SCOT members requested the NRTC investigate the effects of differentiating by broad vehicle types in the adjustment formula¹. Differentiating between rigid trucks and articulated trucks (including B-doubles and road trains) was investigated.

The analysis showed that if road expenditure increases at a higher rate than CPI plus 1%, differentiating between vehicle classes has little impact. If smaller increases in expenditure occur, increases in charges for rigid trucks would be a little smaller, but there would be virtually no difference in charges for articulated trucks. Further details of the analyses are shown in Section 3.6. Differentiating between articulated trucks with one trailer and B-doubles/road trains is not worthwhile, as adjustments for each of these classes would be very similar.

Overall, the complexity of differentiating between vehicle types in the adjustment formula is not believed to be warranted. This is due to the fact that little difference is likely to result in

¹ Note that, by definition indexation approaches to adjustment of charges based on CPI changes are not able to differentiate by vehicle type. Consequently, examining the two indexation options to be considered by Ministers are in this context is not relevant.

the adjustments to charges for different vehicles (see Figure 3.3 in Section 3.6), particularly if road expenditure continues to increase at a similar rate to recent years.

2.2.4 Remote Areas

The adjustment formula is weighted to ensure that adjustments to heavy vehicle charges are most closely linked to road expenditure that is dependent on heavy vehicle use. Expenditure on roads that has a greater impact on the heavy vehicle share of road costs (based on the calculations used in the 2nd Charges Determination) is weighted more heavily. Consequently, large increases in expenditure on urban roads and local roads would have a limited impact on adjustments to heavy vehicle charges.

The adjustment formula also provides a way to address the concerns of the remote areas without differentially charging vehicles operating in these areas.

Alternative approaches to taking into account concerns of remote areas and minimising the hardship of charges adjustments on these areas, such as differentially treating road trains or other vehicles used in remote areas have been canvassed. All pose significant concerns (as outlined below), particularly for national uniformity in heavy vehicle charges and inappropriate pricing signals.

Under the selected approach changes in charges for heavy vehicles by applying the initial adjustment procedure were of a relatively small amount per annum. Increases in registration charges ranged between \$10 for the smallest heavy vehicles and up to \$295 for the largest. The adjustment formula provides a justifiable mechanism for updating charges annually, and is therefore likely to be more acceptable in remote areas than CPI-based indexation. This is due to the fact that under a simple indexation approach, smaller increases in road expenditure would not be reflected in smaller increases in heavy vehicle charges.

One approach to minimising hardship on remote areas would be to apply a smaller adjustment to road trains than other vehicles. However, there is concern from some jurisdictions that the relativity of road train and B-double charges established in the Second Determination should be maintained so that the use of B-doubles is not discouraged. Concern was expressed that B-doubles are widely accepted to be a safer vehicle type and charging less for road train prime movers than B-double prime movers may encourage greater use of a less safe vehicle. Moreover, adjusting B-double charges by a smaller amount presents problems in more populous regions where road trains are not allowed and B-doubles are used in competition to rail services.

The adjustment formula adjusts charges in proportion to changes in road expenditure. Charges for road trains could be adjusted in proportion to the change in road expenditure in Zone B (the “remote” zone) only. However, this could result in a larger increase for road trains than for other vehicles. For example, arterial road expenditure grew by 12 per cent in Zone B and 11 per cent across all jurisdictions between 1997-98 and 1998-99. If adjustments to charges for road trains were linked to changes in expenditure in Zone B, this would have meant that charges for road trains would in fact increase more than charges for other vehicles.

2.3 Delivery Options

Due to the fact that Ministers agreed to an initial adjustment taking place as close as possible to 1 October 2001, the initial adjustment was made by means of an amendment to the *Road Transport Charges (Australian Capital Territory) Regulations 1995*.

It is proposed to put in place the automatic annual adjustment arrangements to apply from 1 July 2002 through primary legislation. That is, a draft amending Bill has been prepared titled

Road Transport Charges (Australian Capital Territory) Amendment Bill 2001. This Bill will put in place changes to the *Road Transport Charges (Australian Capital Territory) Act 1993*.

Alternatives would be to prepare annually regulations to adjust the applicable level of charges or to rely on changes to local legislation in each individual State and Territory. The first of these alternatives is not practical as it would be too resource intensive. The second would involve considerable additional effort for those jurisdictions that have opted to adopt the 'template' approach to legislating charge levels for heavy vehicle registration. This 'template' approach is the approach to legislating road transport reforms envisaged in the National Road Transport Commission legislation.

3. COSTS AND BENEFITS

3.1 Road Expenditure Recovery

Due to the length of time between charges determinations, recovery of road expenditure from heavy vehicles may be based upon figures that have become out of date. The result of this is that costs of road use attributed to classes of heavy vehicles are not being fully recovered. As the productivity of heavy vehicles improves and road expenditure increases, the heavy vehicle share of road construction and maintenance will increase further. It is important that the level of road expenditure recovery match the cost recovery target. The adjustment of heavy vehicle charges on an annual basis was seen as a way of keeping pace with changing circumstances and would potentially reduce the impact of a charges review every 4-5 years.

Registration charges from the 2nd Determination initially over-recovered from the heavy vehicle fleet as a whole, due to an over-recovery from the smaller heavy vehicles. However, changes in road expenditure (due to large increases over the last couple of years) and road use from when the calculations were done indicate that across the fleet as a whole, full recovery is now taking place.

3.2 Approach Adopted

The assessment of costs and benefits of the options has been undertaken in two ways. The first examines the results if each approach had been applied to vehicle charges since 1989. The second projects heavy vehicle charges under anticipated trends for road expenditure and road use by various classes of vehicles.

3.3 Option Assessment

The Advisory Group undertook an assessment of identified options, which are explained below.

Full recalculation (Option A) involves complex calculations which, although fully reflective of changes in road use and expenditure (factors influencing a Charges Determination), do not necessarily meet all the objectives of an annual adjustment procedure. In particular, objectives of simplicity are not well met, and implications on total revenue raised are difficult to predict. Option A automatically links adjustment of charges to changes in road expenditure and road use by areas, and thus is likely to provide better achievement of remote area objectives, if differential charges by area or vehicle type are adopted.

The **adjustment formula** approach (Option B) provides a simple calculation which tracks changes in road expenditure and expected changes in road use. This approach can be expected to provide good outcomes for all objectives. Option B also has potential to better link charges to changes in road expenditure and use by location, and thus could be expected to meet remote area objectives well.

The **expenditure index** approach (Option C) may be adversely affected by the fluctuations in road expenditure, unless some form of moving average over a previous number of years was adopted to smooth changes from year to year. However, the inclusion of a moving average is not sufficient to ensure that the approach delivers efficient and equitable outcomes, as it takes no account of changes in road use. This is the fundamental difference between Option C and Option B.

The **RCPI** approach performs well against objectives of raising revenue and simplicity (as do all index based approaches). RCPI is heavily influenced by oil price, as bitumen products and

fuel are major road construction components and thus could increase revenue too rapidly, and could also be subject to fluctuations associated with oil prices.

The two CPI approaches perform well on objectives of simplicity and raising revenue, but are more difficult to link accurately to road use and road expenditure levels. Further, CPI has historically fluctuated significantly at times and thus this approach could have concerns on consistency and continuity objectives summarised in the efficiency objective. Consequently, in presenting these options to Ministers, it was proposed that an annual decision be made on whether to proceed with indexation in that year.

All options could be further modified through the application of “floor” and or “ceiling” provisions, setting maximum and minimum levels for changes. However, the application of a “ceiling” of the sort envisaged in the adjustment formula is not relevant to indexation options as the proposed “ceiling” comprises underlying inflation.

Table 3.1 Revised Option Assessment

Objectives	A Full Recalculation	B Adjustment Formula	C Expenditure Index	D RCPI	E CPI	F CPI minus X
Revenue	?					
Efficiency						
Equity						
Simplicity						
Remote Areas						
Overall						



From this initial assessment, Option B seemed the best of the options as it provides the best match across the range of objectives considered important for an annual adjustment mechanism. This view was supported in principle by the Charges Advisory Group and most SCOT members. However, it was felt that further analysis of the financial outcomes from applying these alternatives should be examined and that Ministers should consider the two CPI-based indexation options because of their simplicity.

3.4 Application of Options to Historic Data

The graph in Figure 3.1 shows how heavy vehicle charges would have changed if they had been adjusted by the possible adjustment procedures discussed above. Option F – Underlying Inflation (ie compensating for GST impact on CPI) is not shown, as there are no historic precedents. Option A (full recalculation) is also not shown because it is impossible to predict how the basic assumptions used in the process might have changed if reviewed annually.

Floors and ceilings could potentially be applied to the expenditure option and therefore remove some of its disadvantages. However, this still does not take account of changes in road use that are fundamental to the Charging Principals set out in the Heavy Vehicle Agreement. Floors and ceilings by their very nature are inapplicable to the other approaches.

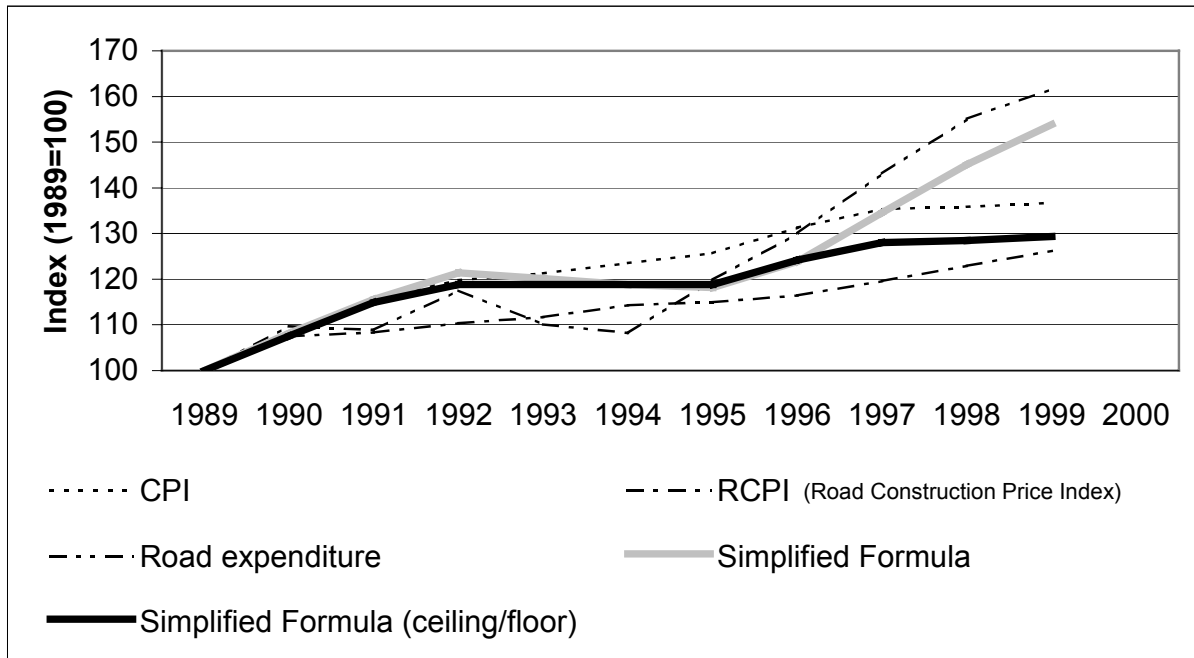


Figure 3.1 Historical Application of Possible Adjustment Mechanisms

Major implications and findings from this analysis are:

- In most years, and especially since 1994, road expenditure has increased faster than CPI.
- Applying the adjustment formula without a ceiling or floor (the solid grey line), heavy vehicle charges would have risen faster than inflation (because growth in road expenditure exceeded inflation), but slower than actual road expenditure increases (due to the allowance for increasing road use). If the expenditure on local roads had grown faster than on arterial roads, increases in charges would have been less than inflation. This is because heavy vehicles make much greater use of arterial roads, particularly rural arterial roads.
- Without a ceiling and floor, the simplified method would have yielded a slight reduction in charges in 1995, reflecting the fall in road expenditure from 1992 to 1994, smoothed out by the use of the three year moving average. If a floor were applied, charges would not have changed for these years.
- If CPI were applied as a “ceiling” (the solid black line) then heavy vehicle charges would have risen in line with inflation for most of the 1990s, except for the 1992-1994 period when road expenditure dropped.
- The road construction price index (RCPI) has generally followed CPI except since 1997, probably due to real increases in oil prices (a significant component of road expenditure is on bituminous products and fuel).

3.5 Future projections

The likely impact of applying the adjustment formula approach to adjusting heavy vehicle charges in the future has been examined, based on two scenarios that could be expected in the future from recent trends:

- road expenditure is assumed to grow at 4.5% pa in Scenario 1 and 3.0% in Scenario 2;
- GDP is assumed to grow at 3% pa, with CPI at 2% pa;
- heavy vehicle use is assumed to grow at 90% of GDP (i.e. 2.7%pa), and light vehicle use at 70% of GDP (i.e. 2.1%pa);
- gradual improvements in fuel consumption occur (vehicles are 1% more fuel-efficient each year), reflecting observed trends; and
- the size of the heavy vehicle fleet is assumed to grow 1% pa slower than vehicle use, reflecting the increasing use per vehicle that is being observed.

In Scenario 1, where road expenditure is assumed to grow by 4.5% pa, the adjustment formula would result in greater increases than CPI unless a ceiling is included in the adjustment procedure, as can be seen in Figure 3.2. A ceiling equivalent to the underlying CPI was considered the most appropriate.

In Scenario 2, where road expenditure is assumed to grow by 3% pa, incorporating a ceiling into the adjustment formula would have no effect, as CPI is greater than the outcome from the adjustment formula.

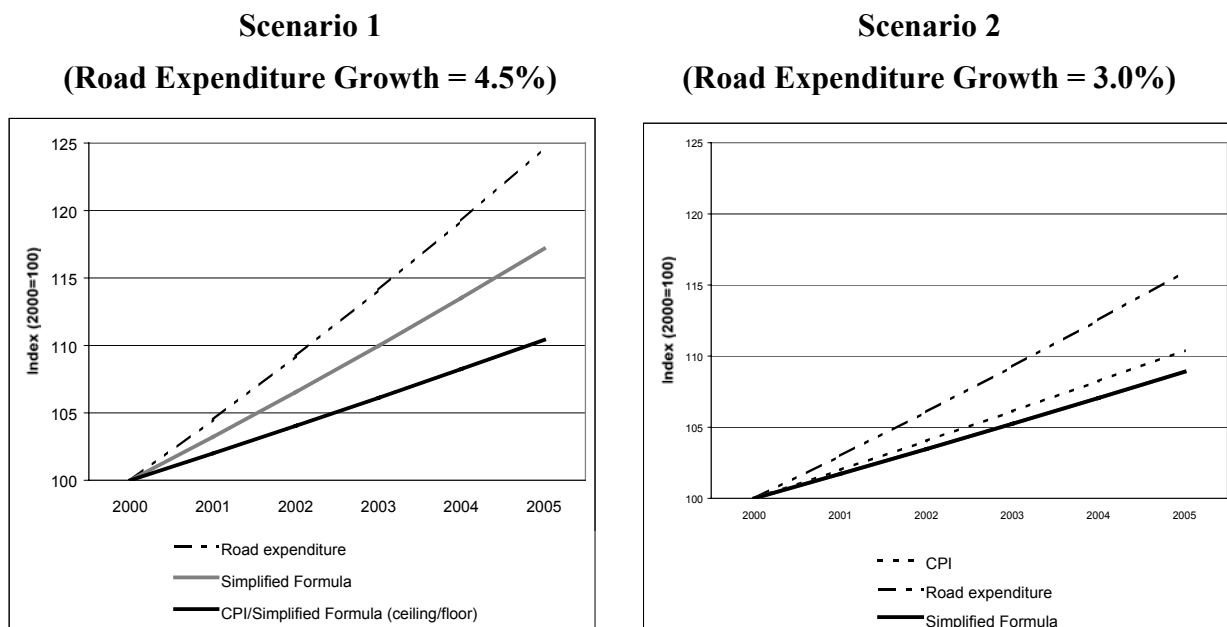


Figure 3.2 Future Impacts of Charges Adjustment Procedures

The adjustment formula adjusts for the effects of increasing road use, meaning heavy vehicle charges would rise more slowly than road expenditure, but the actual revenue from heavy vehicle charges would be preserved by the increase in numbers of vehicles.

3.6 Differentiating by vehicle type

Adjustments differ between rigid and articulated trucks using this disaggregated approach for two reasons. First there are differences in their patterns of use of arterial and local roads. Second, there are variations in expected changes in vehicle use between the two groups of vehicles. That is, there has been greater growth in larger trucks (articulated trucks, B-doubles and road trains) than rigid trucks, and this trend is expected to continue.

An analysis was undertaken to examine separate formulae for three vehicle groups:

- rigid trucks

- articulated trucks (single axle semi-trailers)
- multi-trailer combinations (B-doubles and road trains).

Differences between articulated trucks and multi-trailer combinations were so small that separate results for these two categories are not shown. Figure 3.3 shows examples of applying different formulae to the two vehicle categories, compared with a single formula for all heavy vehicles and CPI.

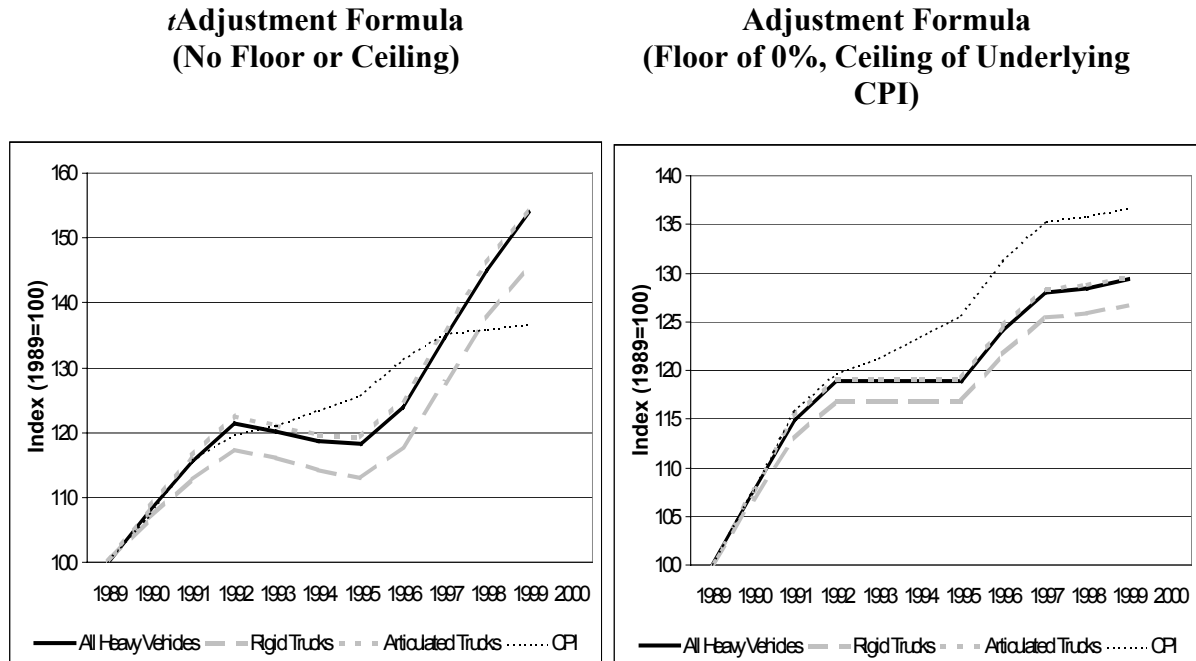


Figure 3.3 Examples of Differentiating by Vehicle Type Using Historical Data

Figure 3.3 shows that if the adjustment procedure differentiates between types:

- rigid vehicle charges would have risen more slowly than charges for articulated trucks
- charges for articulated trucks would have risen slightly faster than a single formula for all heavy vehicle types
- charges for all heavy vehicle types would have risen more quickly than CPI in latter years if there is no “ceiling” in the adjustment formula. When a “ceiling” of CPI is applied, increases are very similar for all heavy vehicle types.

3.7 Outcome

Analysis suggests that the annual adjustment formula could result in increases in annual registration charges of 0.5-1.0%, if road expenditure increases by 2% per annum, or 3.5-4.0% if road expenditure increases by 5% per annum. The precise result in any given year will depend on how road expenditure is distributed between different road categories .

For the initial adjustment, the NRTC obtained road expenditure data from road authorities. Data was sought for the two most recent years of actual expenditure plus the current budget year, but due to uncertainties with budgeted expenditure, the three most recent years of actual expenditure was used. Similar data was obtained from published sources for local roads. As there is no official published series for underlying inflation, the NRTC obtained from the Australian Bureau of Statistics a “constant tax rate measure” of the Consumer Price Index.

This series provides an estimate of underlying inflation, removing the effects of the recent tax changes.

On the basis of the data supplied, application of the agreed formula resulted in an initial adjustment factor of 5.56%. Underlying inflation, for the four quarters to December 2000 compared to the four quarters to December 1999, is 3.30%. The adjustment factor for heavy vehicle registration charges, which was to apply from 1 October 2001, was therefore 3.30%. The relevant data and calculations are set out in the Annual Adjustment Procedure for Heavy Vehicle Charges – Initial Adjustment: Regulatory Impact Statement – July 2001 (Appendix E). The table below shows the results of the 3.30% increase for the different vehicle types.

Table 3.2 Adjusted Initial Charges

DIVISION 1 - LOAD CARRYING VEHICLES				
Vehicle Type	2 axle	3 axle	4 axle	5 axle
Trucks				
Truck (type 1)	310	620	930	930
Truck (type 2)	516	826	2,066	2,066
Short combination truck	568	2,066	2,066	2,066
Medium combination truck	3,925	3,925	4,235	4,235
Long combination truck	5,423	5,423	5,423	5,423
Prime Movers				
Short combination prime mover	1,343	3,512	4,545	4,545
B-double prime mover	4,132	5,165	5,681	5,681
Road train prime mover	5,165	5,165	5,681	5,681
DIVISION 2 - LOAD CARRYING TRAILERS				
The amount calculated using the formula: $\$310 \times \text{Number of axles}$				
DIVISION 3 - BUSES				
Bus Type	2 axle	3 axle	4 axle	
Bus (type 1)	310			
Bus (type 2)	516	1291	1291	
Articulated bus		516	516	
DIVISION 4 - SPECIAL PURPOSE VEHICLES				
Special purpose vehicle (type P)	No charge			
Special purpose vehicle (type T)	\$207			
Special purpose vehicle (type O)	The amount calculated using the formula: $\$258 + \$258 \times \text{Number of axles in excess of 2}$			
PERMIT FEES				
The charge for the grant of permit to operate a vehicle over 125 tonnes carrying an indivisible load is to be calculated as:				
4 cents x ESA-km				

Similar changes in charge levels are expected to occur when this same procedure is applied automatically each year. Exact amounts can't be established at this stage as they will depend on changes in road expenditure and CPI each year and in the future.

To put these adjusted changes in charges into context as far as total operating costs are concerned, Appendix A shows that the total operating costs of a 3-axle articulated truck is \$321,000 per year. An increase of \$142 (see table above) is around 0.04% of these costs. Similarly, the operating costs of a B-double are estimated at \$479,000 per year. An increase in charges of \$225 is also around 0.05% of these total costs. Therefore, any increase in charges is likely to have a negligible effect on freight rates.

As mentioned above, there is no official published series taking into account the impact caused by the introduction of the GST in 2000. The “constant tax rate measure” of the CPI that the NRTC obtained from the Australian Bureau of Statistics only applies up until the June 2001 quarter. From September 2001 the CPI quarterly figures published by the ABS are no longer affected by the GST and can therefore be used in the annual adjustment formula. However, the difference between the actual and the adjusted CPI figure is not constant quarter to quarter. The NRTC has re-scaled the adjusted index so that all future index numbers need no further adjustment.

Calculations for the July 2002 annual adjustment formula results will therefore utilise two NRTC “adjusted” index numbers for the March 2000 and June 2000 quarters. Remaining index numbers used in the calculation and all future calculations will rely solely on CPI figures published by the ABS.

The table below shows the data that should be used for the first adjustment in July 2002 once the Amendments to the *Road Transport Charges (ACT) Act 1993* have been made. Figures from the “NRTC (Adjusted)” and “ABS (Unofficial Adjusted)” columns are to be used. Note that at this time not all of the index numbers to be used for the July 2002 adjustment are available.

The “NRTC (Adjusted)” column results in the same percentage changes in CPI as the “ABS (Unofficial Adjusted)” column, as shown in the calculations of year-on-year average percentage changes.

Table 3.3 Example of Index Numbers to be Used for the July 2002 Adjustment

Year Quarter	CPI Levels (quarters)			Year average on year average percentage change (%)		
	ABS	ABS (Unofficial Adjusted)	NRTC (Adjusted)	ABS	ABS (Unofficial adjusted)	NRTC (Adjusted)
1999 March	121.8	121.8	<i>124.6</i>	na	na	na
June	122.3	122.3	<i>125.1</i>	na	na	na
September	123.4	123.4	<i>126.2</i>	na	na	na
December	124.1	124.1	<i>126.9</i>	na	na	na
Sum of 4 quarters	491.6	491.6	502.8			
2000 March	125.2	125.2	<i>128.0</i>	na	na	na
June	126.2	126.2	<i>129.1</i>	2.4	2.4	2.4
September	130.9	<i>128.0</i>	130.9	3.5	2.9	2.9
December	131.3	<i>128.4</i>	131.3	4.5	3.3	3.3
Sum of 4 quarters	513.6	507.8	519.3			
2001 March	132.7	<i>129.8</i>	132.7	5.3	3.5	3.5
June	133.8	<i>130.8</i>	133.8	6.0	3.6	3.6
September	na	na	na	na	na	na
December	na	na	na	na	na	na
Sum of 4 quarters	na	na	na	na	na	na

* Note: Figures for the September and December 2001 quarters are not yet available. Figures shown in italics are adjusted.

3.8 Regulatory Application

The existing regulations affect all owners and operators of heavy vehicles (rigid trucks, articulated trucks, B-doubles, road trains, buses and special purpose vehicles) in Australia.

Table 3.4 shows the approximate number of vehicles for which heavy vehicle charges apply, by state and vehicle type. The 345,000 vehicles shown above are owned and operated by a wide range of companies and individuals, with a high proportion of operators having only one or two vehicles in their fleet.

Table 3.4 Approximate Number of Vehicles Affected by Heavy Vehicle Charges

Vehicles over 4.5 tonnes	State of Registration								Total
	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	
Rigid trucks	73 100	61 600	48 000	24 600	38 900	8 100	2 900	1 700	258 900
Articulated trucks	12 800	13 400	9 600	4 400	4 500	1 400	200	200	46 500
B-doubles	500	500	800	400	500	0	0	0	2 700
Road trains	400	0	1 700	400	2 100	0	500	0	5 100
Buses	9 700	2 000	3 700	2 400	3 200	1 100	500	100	22 700
Special purpose vehicles	600	3 300	1 600	1 200	1 400	600	100	100	8 900
TOTAL	97 100	80 800	65 400	33 400	50 600	11 200	4 200	2 100	344 800

Source: NRTC Heavy Vehicle Cost Allocation Model (estimated 1997 data)

4. CONSULTATIONS

4.1 Consultation Approach

The initial consultation approach adopted consisted of:

- Convening the Heavy Vehicle Charges Advisory Group, with representatives from road authorities, the road transport industry and specialist advisors, to discuss and advise on developing an annual adjustment procedure for heavy vehicles charges as requested by ATC;
- preparation of a briefing note, listing the potential options and issues associated with each one;
- holding a teleconference with members of the Standing Committee on Transport (SCOT) to review the options in the briefing note and agree a way forward;
- undertaking further research investigating issues raised at the SCOT teleconference and preparing a second briefing note;
- individual discussions with representatives and members of the Advisory Group and SCOT;
- discussion at meeting of Transport Agency Chief Executives and SCOT;
- establishment of the preferred adjustment procedure;
- preparation of this RIS;
- teleconferences with representative directors of road transport associations throughout Australia as well as the Remote Areas Group; and
- distribution of a discussion document that identified the project objectives, potential options and impacts of the suggested approach.

In June 2001, calculations for the adjustment factor, the adjusted charges, and draft Road Transport Charges (ACT) Amendment Regulations 2001 were distributed to TACE Members, TACE Observers, executive directors of road transport associations, jurisdictional contacts and several National Farmer's Federation members for comment. No major concerns were raised.

4.2 Comments Received

Discussions with the Heavy Vehicle Charges Advisory Group formed the basis for the development of the suggested approach.

SCOT gave broad endorsement of the suggested approach and the assessment of the options (although refined changes were made). There were concerns that the suggested approach is more complex than a simple indexation mechanism and examples were requested. These were provided in the form of the analyses that are included in this report.

Throughout industry consultations, concerns were raised regarding the integrity and transparency of the suggested approach. In the views expressed, it was indicated that for the adjustment process to have integrity, it must be consistent with the principals of the 2nd Determination - this means it must be linked in some way to road use and expenditure changes. For the process to be transparent, it must be readily understood and the way in

which the process is applied and the data used should be able to be scrutinised. There was general consensus that the approach being proposed is consistent with these requirements. It was expressed that any increase in transport costs, no matter what size, was an issue for some heavy vehicle operators in the current environment.

A strong view was expressed from some industry representatives that if adjustments were to be made, linkage with changes in road expenditure and road use were preferable to indexation based on CPI.

Following the distribution of documents explaining the adjustment factor along with related calculations, the Commission received only 2 replies expressing concerns over the adjustments to heavy vehicle registration charges. These concerns related to the:

- *Proposed timing*

Initially it was proposed that the annual adjustment apply from 1 July 2001, however the date of 1 October 2001 emerged from the ATC discussion, based on the Commission's advice as the earliest possible date for achieving the necessary changes in the template legislation. This means that the initial adjustment is in fact 3 months behind. All of the jurisdictions have a target date of July 2002 for the next adjustment and subsequent adjustments would be implemented on July each year up to the implementation of the 3rd Determination.

- *Absence of any reference to the fundamental review of heavy vehicle charges*

The ATC's decision on annual adjustments was predicated on the advice that a 3rd Determination (a full review of heavy vehicle charges) would be implemented in 2004.

- *"Ceiling" and "floor" approach*

Ministers indicated that they wished to consider a proposal to remove the ceiling from the formula when they meet in November 2001. Decisions regarding the floor were to be clarified at this time.

- *"Automatic" characterisation*

Given the timing of the next fundamental review of the 3rd Determination, it is impractical to expect any annual adjustment process other than an agreed formula (which is in fact a simplified version of the process applied in the 2nd Determination) in the intervening years.

- *NRTC's role*

The Commission has fulfilled a key role in the development of an annual adjustment that maintains integrity and transparency.

5. REASONS FOR PREFERRING THE PROPOSED APPROACH

The regulation impact assessment process adopted identified six major charge adjustment procedure options, which were further modified through the additional concepts of “ceiling” and “floor” levels to changes in charge levels.

These options were assessed against five regulatory objectives. A preliminary assessment was undertaken, which was then revised in light of further research and investigation undertaken in response to issues raised during earlier stages of the consultation process.

5.1 Recommendation

The recommendation from NRTC, following the Annual Adjustment Procedure for Heavy Vehicle Charges regulatory impact assessment process was for the:

Establishment of an annual adjustment procedure for heavy vehicle charges related to changes in road expenditure, corrected for expected changes in road use and heavy vehicle fleet size, and incorporating a “floor” of 0 per cent and a “ceiling” of the underlying growth in the Australian Consumer Price Index.

Option B, the adjustment formula with a ceiling and floor, was preferred on the basis that it performs best overall against the objectives, compared to other available options.

5.2 Assessment of Other Options

The disadvantages of the rejected options include the following:

- **Option A**, full recalculation, requires complex calculation and does not meet the objectives of simplicity and ease of explanation to owners and operators of heavy vehicles. Further, this approach would require significant consultation, research and analysis on an annual basis. The NRTC would not be able to do this without significant funding increases, and consultation indicates that doubtful value would be achieved from this approach.
- **Option C**, the road expenditure index, would be adversely affected in application by fluctuations in road construction expenditure across the years, and also in perception due to widely differing expenditure in different areas and on different road types. Further, this method takes no account of road use, nor of changes in vehicle numbers or average loadings.
- **Option D**, Road Construction Price Index (RCPI), is influenced by oil price, and so may show greater fluctuations than desirable in an index for adjusting heavy vehicle charges. This also does not take into account the various road use factors.
- **Options E and F**, CPI and Underlying Inflation, while widely understood and recognised, suffer from the lack of alignment between road expenditure and CPI, and the fact that both RCPI and road expenditure have been increasing much more quickly than CPI for most of the last decade. The idea of a factor taking into account GST impacts may also have an adverse perception of allowing indiscriminate adjustment to suit unspecified purposes.
- **Option G**, this would not be consistent with the objectives outlined in Section 1.2, in particular those associated with equity, efficiency and providing revenue streams to match resource requirements.

5.3 Consideration by Australian Transport Council

The adjustment formula was developed by NRTC, in conjunction with SCOT, in response to a request by Ministers at the November 2000 meeting of ATC. At that meeting, Ministers also stated that indexation of registration charges on the basis of underlying CPI would be considered as a fall-back position in the event that there was no agreement on the adjustment formula. Chief Executives of Transport Agencies at the TACE and SCOT meetings in April 2001 also requested that adjustment on the basis of full CPI be included as an option.

The three options are:

- (i) Simplified Charges Adjustment Formula
- (ii) Underlying Inflation
- (iii) Consumer Price Index

Option (i), if implemented operates automatically, however options (ii) and (iii) are subject to the approval each year of Ministers through a voting process to ensure the changes in charges are consistent with the charging processes.

At the meeting of Australian Transport Council on 25 May 2001, it was agreed that heavy vehicle registration charges would be adjusted annually by the adjustment formula.

It was further agreed that the initial application of the formula would be scheduled to take place as close as possible to 1 October 2001, and that this would include a ceiling of underlying inflation (CPI adjusted to remove the impact of changes to the tax system). Ministers also agreed that future adjustments would occur annually, on 1 July each year.

5.4 Development of Regulations and Amendments to the Act

The initial adjustment to the heavy vehicle registration charges was made by means of an amendment to the *Road Transport Charges (Australian Capital Territory) Regulations 1995*, and was to commence on 1 October 2001. These amendments were made under section 4 of the *Road Transport Charges (Australian Capital Territory) Act 1993*, which provides for a regulation-making power for annual variations of up to 5% in the level of charges. It is no longer appropriate to use this approach to implement the new agreed automatic annual adjustment procedure for two reasons:

1. the power limits adjustments to a maximum of 5%, while the agreed formula may result in larger adjustments (the initial adjustment was 3.3%); and
2. the approach does not allow the adjustment procedure to be automatically applied each year. Instead, regulations would need to be drafted and approved by the ATC in accordance with the National Road Transport Commission Act and made in the Commonwealth Parliament each year.

Amendments to the *Road Transport Charges (Australian Capital Territory) Act 1993*, will ensure that adjustments to heavy vehicle charges occur automatically each year from July 2002 in accordance with the agreed formula.

6. COMPLIANCE AND IMPLEMENTATION ISSUES

6.1 Compliance Issues

Vehicle registration charges are accepted as a fact of life by heavy vehicle operators, and represent a small proportion (typically less than 2 per cent) of total heavy vehicle operating costs. Two typical vehicle cost models, one for six-axle semi trailers and the other for B-double combinations, are shown in Appendix A to illustrate this.

Compliance with existing requirements is very high and enforcement requirements are very low. It is anticipated that the annual adjustment procedure would increase the perception of equity, efficiency and simplicity of heavy vehicle charges among owners and operators of such vehicles, while increasing total revenue.

6.2 Implementation Issues

Amendments to the *Road Transport Charges (ACT) Act 1993* will provide for the adjustment procedure to be applied as of 1 July each year. Commencement of the amendments is timed to ensure the automatic annual adjustment procedure is first applied from 1 July 2002. The legislation provides for the results to the adjustment to be published officially by the NRTC.

The NRTC proposes to distribute details of the data and calculations publicly for comment to ensure there is no uncertainty over the figures to be used. Each step of the calculations will be detailed, as will the final results. Individual registration authorities will also advise operators of heavy vehicles of the applicable changes by means of renewal notices.

6.3 Reporting of Road Expenditure

It is intended that the annual adjustment procedure for heavy vehicle charges be an automatic process. However, as road expenditure information used in the application of the formula is not available in advance, it can not be included in legislation ahead of time. This means that the information used to apply the formula will not be considered directly by the Commonwealth Parliament as each adjustment occurs. Nevertheless, there are checks and balances in this process and every effort is being made to make it as transparent as possible.

The NRTC will publish all expenditure data used in the application of the annual adjustment procedure each year. In the first year this will be done by means of a special bulletin, and thereafter in the Commission's Annual Report which is tabled in each Parliament.

The ceiling presently included in the annual adjustment formula provides a check on the maximum amount by which charges can increase. This ceiling is based on the CPI, which is frequently used for automatic indexing of taxes and charges. Inclusion of this ceiling means that if the expenditure data published by the NRTC results in large increases in heavy vehicle charges under the formula, these increases would not apply as the ceiling would come into play. Similarly, if there is a sudden decrease following an unusual increase in expenditure, the floor provides a check against decreases in charges that could be expected to increase again in the following year.

7. REVIEW PROCESS

The annual adjustment procedure is intended to update the 2nd Heavy Vehicle Charges Determination. It is intended to apply as an adjustment mechanism until the 3rd Determination is implemented. The 3rd Determination is scheduled to be completed at the end of 2003 as part of the NRTC's agreed Strategic Plan. The 3rd Determination would be expected to be implemented in July 2004.

The 3rd Determination will fully review charges applying to heavy vehicles for the costs of providing and maintaining roads. At the same time, any adjustment process to apply following the 3rd Determination up to the point of a future Determination will be considered.

8. STATEMENT OF COMPLIANCE WITH NATIONAL COMPETITION POLICY

It is submitted that the changes in the method of adjusting heavy charges are fully compliant with National Competition Policy.

No aspect of the changes restricts competition between participants and potential entrants to any market.

APPENDIX A: HEAVY VEHICLE COST MODELS

Truck Cost Model Comparison Based On Conventional Tautliner Trailer(s) With Air Suspension

	Tri-Axle Trailer 25 tonne payload		B-double 42 tonne payload		Comments / sources
	Cost (\$)	Proportion of Total (%)	Cost (\$)	Proportion of Total (%)	
Fixed Costs					
Finance					
- Prime mover	44 677	13.94	51 060	10.67	
- Trailer	14 324	4.47	28 647	5.98	
Insurance @ 3%	8 460	2.64	11 520	2.41	
Registration	4 300	1.34	6 800	1.42	VicRoads telephone enquiry 1/5/2001
TAC	1 322	0.41	1 322	0.28	TAC in Vic only, but equivalent charges other jurisdictions
Administration	5 500	1.72	5 500	1.15	
Vehicle eqmnt/ Sundries	2 000	0.62	3 000	0.63	
Total fixed costs	80 583	25.13	107 850	22.53	
Variable Costs					
Fuel	78 545	24.50	130 909	27.34	
Lubricants at 5%	3 927	1.22	6 545	1.37	Industry standard
Tyres (per axle)	10 800	3.37	27 000	5.64	Industry standard
Maintenance	19 800	6.18	33 000	6.89	Industry standard
Total variable costs	113 072	35.27	197 454	41.24	
Labour costs					
Drivers wages including oncosts	93 401	29.13	123 535	25.80	
Relief driver allowance	4 000	1.25	6 000	1.25	
Uniform	400	0.12	400	0.08	
Total labour costs	97 801	30.51	129 935	27.14	
Sub Total cost	291 457	90.91	435 238	90.91	
Profit margin @ 10%	29 146	9.09	43 524	9.09	
TOTAL	320 603	100	\$478 762	100%	
Cost per kilometre	1.78		\$1.59		

	Tri-Axle Trailer 25 tonne payload	B-double 42 tonne payload	Comments / sources
Assumptions			
Operating days per annum	250	300	Industry standards
Kilometres pa	180 000	300 000	Typical for interstate linehaul vehicles, first 5 years of use
Capital required			
<i>Equipment</i>			
- <i>Prime mover</i>	\$210 000	\$240 000	Typical specification International, Ford, Scania, Volvo
- <i>Trailer(s)</i>	\$72 000	\$144 000	Typical 48' tautliner
Total axles	6	9	
Interest rate	7.95%	7.95%	
Term of lease			
- <i>Prime mover</i>	4 years	4 years	Major transport company standard
- <i>Trailer(s)</i>	5 years	5 years	Major transport company standard
Residual			
- <i>Prime mover</i>	40%	40%	Typical lease arrangement
- <i>Trailer(s)</i>	30%	30%	Typical lease arrangement
Diesel price	\$0.72	\$0.72	With ANTS rebate
Kilometres per litre	1.75	1.45	Typical fuel consumption - interstate operations
Litres per 100 km	57.1	69.0	Typical fuel consumption - interstate operations

"Source: Sinclair Knight Merz Logistics Group industry inquiries, March 2001. Registration charges from Vicroads."

APPENDIX B: ABBREVIATIONS

ABS	<i>Australian Bureau of Statistics</i>
ATC	<i>Australian Transport Council</i>
ATS	<i>Australian Transport Secretariat</i>
COAG	<i>Council of Australian Governments</i>
CPI	<i>Consumer Price Index</i>
GST	<i>Goods and Services Tax</i>
NRTC	<i>National Road Transport Commission</i>
ORR	<i>Commonwealth Office of Regulation Review</i>
RCPI	<i>Road Construction Price Index</i>
RIA	<i>Regulatory Impact Assessment</i>
RIS	<i>Regulatory Impact Statement</i>
SCOT	<i>Standing Committee on Transport</i>
TACE	<i>Transport Agency Chief Executives</i>

APPENDIX C: HEAVY VEHICLE CHARGES ADVISORY GROUP MEMBERSHIP AND SUMMARY OF COMMENTS

Participants at Annual Adjustment of Heavy Vehicle Charges Advisory Group Meeting – 5 February, 2001.

Barry Moore	NRTC
Fiona Calvert	NRTC
Kerry Todero	NRTC
Dick Bullock	Bullpin Pty Ltd
William McDougall	Sinclair Knight Merz
Tony Boyd	VicRoads
Bruce Chipperfield	Vicroads
David Coonan	Department of Urban Services ACT
Phillip Cross	Department of Transport & Works NT
Robert Gunning	Australian Trucking Association
Philip Halton	Queensland Transport
David Hill	Australasian Railways Association
Robert Hogan	Department of Transport & Regional Services
Tim Martin	ARRB Transport Research Ltd
John Metcalfe	Australian Automobile Association
Bob Peters	Main Roads WA
Carl Ricks	Queensland Transport
Peter Rufford	Australian Local Govt Association
Chris Walker	NSW Roads and Traffic Authority
Anne Westley	Transport SA

Summary of Comments in response to the draft Annual Adjustment Procedure for Heavy Vehicle Charges – Initial Adjustment: Regulatory Impact Statement July 2001

ORGANISATION	ISSUE	COMMENTS
ALTA & ATA	The Interim Adjustment must be seen in context	In the view of the ATA, it is vital that the interim adjustment process represented by the current proposal is seen in context. In particular, it should be seen as providing an interim adjustment between more fundamental reviews of the cost recovery process and national truck registration charges.
ALTA & ATA	Interim Adjustment Recommendation	The paper must make it clear that a two-stage charge review process is recommended; namely: <ul style="list-style-type: none"> interim adjustments as mapped out; and fundamental reviews which open up all areas for examination.

ORGANISATION	ISSUE	COMMENTS
ALTA & ATA	Integrity	It is of fundamental importance that the integrity of the cost recovery process be maintained and enhanced.
ALTA & ATA	Public and Industry Confidence	Public and industry confidence in the cost recovery program can only be maintained if the charges determination process is subject to full public scrutiny.
ALTA & ATA	A Particular Proposal	The view of the ATA and its member organisations will take into regard any particular recommendations for a change in national truck registration charges depending on: <ul style="list-style-type: none"> • The way in which the policy framework is implemented; and • Prevailing circumstances at the time.
ALTA & ATA	Proposed Interim Adjustment	With the caveats noted above, the ATA accepts the interim adjustment process as outlined.
Department of Urban Services (ACT)		No comments to make on, or concerns with the draft RIS.
NSW RTA	Indexation based on road expenditure	The NRTC's proposed method of indexation based on the level of road expenditure is too complex.
NSW RTA	Indexation based on the CPI	<ul style="list-style-type: none"> • Indexation based on the CPI is conceptually simple, is used in other sectors of the economy for purposes of indexation and is more readily understood by the general public. • CPI indexation is likely to yield similar results as the proposed formula, particularly if it is 'capped' to the rate of CPI. • If CPI indexation were adopted, no amendment to model legislation would be required. • For NSW and any other jurisdiction that has adopted the legislation, the introduction of CPI based indexation on heavy vehicle charges could be implemented at relatively short notice.
Department of Infrastructure, Energy & Resources (Tas)	Section 3.3 - Figure 3.1	This would be more effective if the current charges were included.

ORGANISATION	ISSUE	COMMENTS
Department of Infrastructure, Energy & Resources (Tas)	Section 3.4	Although the draft RIS was prepared prior to the release of the second quarter figures for 2000-01, the assumed GDP and CPI now seem to be inaccurate. It is understood that Australia has experienced negative GDP in the last two quarters, which is expected to continue for the third quarter.
Department of Infrastructure, Energy & Resources (Tas)	Section 3.7	It is acknowledged that the figures quoted (1997 data) were used for the second charges determination. However, it is considered that more up to date information could be used. The table indicates that there are no B-Doubles operating in Tasmania. Whilst precise data is not available, information suggests that there are approximately 150 B-Doubles currently operating in Tasmania.
Department of Transport & Works (NT)		NT has no comments to make on the draft.
Queensland Transport		No comments on the draft RIS
Tasmanian Transport Association	Indexation of charges	Should not expenditure of funds hypothecated from fuel taxes (if any) be excluded – to avoid double taxation?
Tasmanian Transport Association		There should be an absolute cap – not just CPI less GST effect – if the index is to be automatic (ie. not to need annual vetting before implementation).

APPENDIX D: DERIVATION OF THE SIMPLIFIED CHARGES ADJUSTMENT FORMULA

Structure of the Formula

The simplified heavy vehicle charges adjustment formula is designed to capture the main influences on the level of charges, namely:

- the amount of road expenditure to be recovered;
- the number of heavy vehicles in the fleet; and
- the extent of their use.

In order to capture these influences in an adjustment procedure that does not require full runs of the cost allocation model annually, the adjustment formula needs to take the following form:

$$\text{Annual \% increase in HV charges} = A \times \text{Annual \% increase in road expenditure}^2$$

$$\text{Minus Road Use factor}$$

$$\text{Where Road Use factor} = B \times \text{Annual \% increase in road use}$$

$$\text{Plus } C \times \text{Annual \% increase in size of heavy vehicle fleet}$$

The factors A, B and C reflect the sensitivity of heavy vehicle charges to the other factors. For example:

- When **road expenditure** increases, the increase in charges will be sensitive to the relationships between expenditure and charges built into the cost allocation model. In particular the relative changes in expenditure between different road types (urban or rural, arterial or local, for example) will be important because of the different use levels of these roads by heavy vehicles.
- When **road use** increases, the cost allocation to heavy vehicles increases, but the amount of increase will also be sensitive to the amount of light vehicle use, since this determines the cost recovery from the fuel component. If heavy vehicle use increases more than light vehicle use (which has historically been the case), the cost allocation to heavy vehicles will increase.
- When the **size of the heavy vehicle fleet** increases, however, the cost allocation per heavy vehicle will decrease in direct proportion, making the factor C equal to -1.0 for all heavy vehicles.

These considerations are explained in more detail below.

Derivation of Values for A, B and C

In order to derive values for A, B and C, the Second Determination cost allocation spreadsheet model was run with small changes in input values to the variables given in Table D.1. These tests were done in order to establish to which factors the model is most sensitive, and therefore which to include in the derivation of the A, B and C factors.

² To smooth out the sometimes significant year-by-year fluctuations, a three-year moving average of road construction expenditure is used. This is consistent with the PAYGO approach used in the full heavy vehicle charges determination procedure.

This was done so that the formula could capture the relative sensitivity of heavy vehicle charges to the important components of expenditure, thus recognising, for example, that expenditure on rural local roads might change at a different rate to that of urban arterials.

The results of these test sensitivity runs were analysed to derive weights or factors for each sub-category, so that the factors A, B and C could be defined. The Road Use Factor is then estimated by making reasonable assumptions about likely future changes in vehicle use and fleet size over the next 3-5 years (the likely period of application of the annual adjustment formula before a Third Determination of charges is brought in).

Table D.1 Variables Used to Develop Charges Adjustment Formulae

	Sub-categories used
Road expenditure (A-factors)	Rural arterial road pavement related expenditure Rural arterial road other (non-pavement related) expenditure Rural local road expenditure Urban arterial road expenditure Urban local road expenditure
Road use (B-factors)	Light vehicle travel Rigid vehicle travel (including buses and special purpose vehicles) Articulated vehicle travel B-double and road train travel
Heavy vehicle fleet (C-factors)	Rigid vehicles (including buses and special purpose vehicles) Articulated vehicles B-doubles and road trains

Sensitivity Tests on Road Expenditure (A-factors)

Table D.2 shows the results of sensitivity tests to derive the A-factors (road expenditure weighting factors) for use in the formula. The process to establish the A factors was as follows:

- The Second Determination charges spreadsheet model was run with 10% changes in each sub-category of road expenditure shown in Table D.1.
- The cost allocation results were extracted by summary vehicle type for each run of the model (results in columns *a-e* of Table D.2).
- The change in cost allocation for a 1% change in each category was calculated from the results.

The three components of Table D.2 present the calculations as follows:

- **Part 1** presents the results of running the Second Determination spreadsheet model with 10% changes in each of the expenditure categories given in columns *a-f* of the table. For example, a 10% increase in total rural arterial road pavement-related expenditure gives rise to an allocation to heavy vehicles of \$1,322M (column *a*), compared to \$1,283M with no change (column *g*).
- **Part 2** shows the change in expenditure allocation, derived simply by subtracting the Base (no change) figures in column *g* from the figures in each column *a-f*. For example, the total change of \$39M in column *a* is derived by subtracting the Base expenditure allocation of \$1,283M (column *g*) from the expenditure of \$1,322M (column *a*).

- **Part 3** shows the derivation of the sensitivity weighting factors for inclusion in the adjustment formula. The factors are calculated by dividing the change in expenditure by the total (base) expenditure for each category (expressed as a percentage), then divided by 10 to give a factor for a 1% change. For example, the 0.305 factor for all heavy vehicles in column a is derived from $39 \div 1283 \times 100 \div 10$.

The figures in Table D.2 are presented for different vehicle types to illustrate the sensitivities, however since the charges adjustment formula is only to be applied to ALL heavy vehicle types, only the total heavy vehicle figures are relevant to the formula itself.

The resulting A-factors, given for all heavy vehicles, provide the relative weights to be applied to each component of expenditure change. For example, if rural arterial pavement costs change by 1%, the costs allocated to heavy vehicles will change by 0.305 of 1% (column a of Table D.2). However if urban local road expenditure changes by 1%, the costs allocated to heavy vehicles will change by only 0.023 of 1% (column e). This is consistent with the fact that the majority of heavy vehicle use is on arterial rather than local roads.

Table D.2 Derivation of Road Expenditure Weighting Factors (A-factors)

	Rural Arterial		Urban	Urban	Rural	Base
	Pavement <i>a</i>	Other <i>b</i>	Arterial <i>c</i>	Local <i>e</i>	Local <i>f</i>	(no change) <i>g</i>
Part 1. Allocated total expenditure (\$M) with 10% changes in expenditure in each of the categories¹						
Rigids	359	362	359	354	362	352
Artics	605	600	597	585	590	584
B-doubles	86	87	86	84	85	84
Road trains	196	196	194	190	192	190
Buses	56	56	56	55	56	55
Special purpose vehicles	19	19	19	19	20	19
Total	1 322	1 320	1 310	1 286	1 305	1 283
Rigids+buses+SPV	434	437	433	427	438	425
Artics+B-doubles+RT	888	883	877	859	867	857
Part 2. Change in expenditure from Base figures in column g (\$M)²						
Rigids	7	10	7	1	10	
Artics	21	17	13	1	6	
B-doubles	3	3	2	0	1	
Road trains	7	6	4	0	2	
Buses	1	2	1	0	1	
Special purpose vehicles	0	0	0	0	1	
Total change	39	37	27	3	22	
Rigids+buses+SPV	9	12	8	2	13	
Artics+B-doubles+RT	30	26	19	1	9	
Part 3. Factors for % change in heavy vehicle allocation as function of % changes in road expenditure by category³						
Rigids	0.204	0.277	0.191	0.041	0.288	
Artics	0.363	0.287	0.229	0.014	0.107	
B-doubles	0.303	0.359	0.225	0.013	0.099	
Road trains	0.353	0.308	0.219	0.014	0.106	
Buses	0.239	0.308	0.220	0.029	0.203	
Special purpose vehicles	0.054	0.069	0.045	0.098	0.734	
Total (A-factors)	0.305	0.290	0.213	0.023	0.169	
Rigids+buses+SPV	0.202	0.272	0.188	0.042	0.296	
Artics+B-doubles+RT	0.355	0.299	0.226	0.014	0.106	

NOTES

Totals may not agree due to rounding.

- Results of running the Second Determination cost allocation spreadsheet with 10% changes in expenditure on each of the expenditure categories (columns a-f above) in turn.
- Change from the Base (no change in expenditure), column g above. For example, the total change of \$39M in column a is derived by subtracting 1283 from 1322.
- Factors calculated by dividing the change in expenditure by the total (base) expenditure for each category (expressed as a percentage), divided by 10 to give a factor for a 1% change. For example, the 0.305 factor for all vehicles in column a is derived from $39 \div 1283 \times 100 \div 10$.

Sensitivity Tests on Road Use (B-factors)

A similar procedure was undertaken for road use as for road expenditure:

- The Second Determination charges spreadsheet model was run with 10% changes in road use.
- The cost allocation results were extracted by summary vehicle type for each run of the model.
- The change in cost allocation for a 1% change in each category was calculated from the results.

Table D.3 Derivation of Road Use Weighting Factors (B-factors)

	Light Vehicle-km <i>a</i>	Rigid Heavy Vehicle-km <i>b</i>	Artic Heavy Vehicle-km <i>c</i>	Base (no change) <i>d</i>
Part 1. Allocated total expenditure (\$M) with 1% changes in each of the above road use categories¹				
Light vehicles	3290.7	3286.7	3286.7	3 288.0
Rigids	351.1	354.9	350.7	352.3
Artics	582.7	582.5	586.0	583.7
B-doubles	83.8	83.7	84.2	83.9
Road trains	189.6	189.3	190.4	189.8
Buses	54.4	55.0	54.3	54.6
Special purpose vehicles	18.5	18.6	18.5	18.5
Total	4570.8	4570.8	4570.8	4 570.8
Rigids+buses+SPV	424.0	428.6	423.5	425.4
Artics+B-doubles+RT	856.1	855.6	860.6	857.4
All heavy vehicles	1 280.1	1 284.1	1 284.1	1 282.8
Part 2. Change in expenditure from Base figures in column <i>d</i> (\$M)²				
Light vehicles	2.7	-1.4	-1.3	
Rigids	-1.1	2.7	-1.5	
Artics	-1.0	-1.2	2.2	
B-doubles	-0.1	-0.2	0.3	
Road trains	-0.2	-0.4	0.6	
Buses	-0.2	0.4	-0.2	
Special purpose vehicles	0.0	0.1	-0.1	
Total	0.0	0.0	0.0	
Rigids+buses+SPV	-1.4	3.2	-1.8	
Artics+B-doubles+RT	-1.3	-1.8	3.2	
All heavy vehicles	-2.7	1.4	1.3	
Factors for % change in cost allocation as function of % changes in road use by category²				
Light vehicles	0.08	-0.04	-0.04	
Rigids+buses+SPV	-0.32	0.75	-0.43	
Artics+B-doubles+RT	-0.16	-0.21	0.37	
All heavy vehicles (B-factors)	-0.21	0.11	0.11	

NOTES

Totals may not agree due to rounding.

1. Results of running the Second Determination cost allocation spreadsheet with 1% changes in road use for each of the categories (columns a-c above) in turn.
2. Factors calculated by dividing the change in expenditure by the total (base) expenditure for each category (expressed as a percentage). For example, the -0.21 factor for all vehicles in column **a** is derived from $-2.7 \div 1280.1 \times 100$.

The three components of Table D.3 present the calculations as follows:

- **Part 1** presents the results of running the Second Determination spreadsheet model with 1% increases in each of the road use categories given in columns *a-c* of the table. Since this is looking at all vehicle types (including light vehicles), the total road expenditure remains fixed. For example, a 1% increase in light vehicle road use gives rise to a reduction in cost allocation to heavy vehicles from \$1,282.8M (column *d*) to \$1,280.1M (column *a*).
- **Part 2** shows the change in expenditure allocation, derived simply by subtracting the Base (no change) figures in column *d* from the figures in each column *a-c*. For example, the total change of -\$2.7M in column *a* is derived by subtracting the Base expenditure allocation of \$1,282.8M (column *d*) from the expenditure of \$1,280.1M (column *a*).
- **Part 3** shows the derivation of the sensitivity weighting factors for inclusion in the adjustment formula. The factors are calculated by dividing the change in expenditure by the total (base) expenditure for each category (expressed as a percentage). For example, the 0.305 factor for all heavy vehicles in column *a* is derived from $39 \div 1283 \times 100 \div 10$.

In order to derive factors for all heavy vehicles, the factors in columns *b* and *c* of Table D.3 can be simply added together – so that the factor for a 1% change in total heavy vehicle use is 0.22 (adding 0.11 from column *b* to 0.11 from column *c*).

The results illustrate that the cost allocation is relatively insensitive to small changes in road use – for example, a 1% increase in light vehicle use results in a reduction in heavy vehicle cost allocation of only 0.21 of 1%. Conversely, a 1% increase in heavy vehicle use results in only a 0.22 of 1% increase in heavy vehicle cost allocation (the 0.22 comes from addition of 0.11 in column *b*, and 0.11 in column *c*, of Table D.3).

Sensitivity Tests on Number of Vehicles (C-factors)

Detailed sensitivity tests were not required on the number of vehicles, because the cost allocation is inversely proportional to the number of vehicles (in other words, a 1% increase in the number of heavy vehicles will lead to a 1% decrease in the charge per vehicle). Therefore the C-factor is equal to -1.0 for all heavy vehicles.

Derivation of the Road Use Factor

The estimated road use correction factor is derived from the values of the B-factors and C-factors described above, applied to some assumed expected rates of growth in road use and vehicle fleet size over the coming five years or so.

As explained earlier, the Road Use factor = $B \times \text{Annual \% increase in road use}$

Plus $C \times \text{Annual \% increase in size of heavy vehicle fleet}$

Using the B- and C-factors derived above, the road use factor is detailed in Table D.4.

Table D.4 Road Use Factor =

ROAD USE		Plus:	HEAVY VEHICLE FLEET	
Annual % change in:			Annual % change in:	
Light Veh-km	Rigid + artic Veh-km		Heavy vehicle Fleet size	
Multiplied by:			Multiplied by:	
0.21	-0.22		-1.00	
B-factors (see Table D.3)			C-factor	

In projecting for future years, the following base assumptions have been made:

- GDP growth 3.0% pa
- CPI growth 2.0% pa
- RCPI growth 2.0% pa
- Light vehicle use 70% of GDP = 2.1% pa
- Heavy vehicle use 80% of GDP = 2.4% pa
- LV fleet 1.0% slower than use = 1.1% pa
- HV fleet 1.0% slower than use = 1.4% pa

These assumptions are reasonably consistent with recent past trends, although consistent data on the amount of use and the size of the vehicle fleet are difficult to obtain; changes in methods of estimation from year to year make for less reliable time-series information.

Using these assumptions, the Road Use factor becomes:

$$0.21 \times \text{Annual \% increase in light vehicle-km} - 0.22 \times \text{Annual \% increase in heavy vehicle-km}$$

Plus $-1.0 \times \text{Annual \% increase in size of heavy vehicle fleet}$

The most important assumption is the change in size of the heavy vehicle fleet, which is assumed to be increasing at 1.4% pa. Recent evidence suggests that this is a reasonable assumption but it could be checked in future years by monitoring available information on heavy vehicle registrations.

Assuming a 2.4% pa change in heavy vehicle use (as measured by total VKT), a 2.1% pa change in light vehicle use and a 1.4% pa change in fleet size (reflecting the increasing use per vehicle that has been observed over recent years), the Road Use factor becomes:

$$0.21 \times 2.1\% - 0.22 \times 2.4\%$$

Plus $-1.0 \times 1.4\%$

Equals $-0.09\% - 1.4\% = -1.49\%$ (round to **-1.5%**)

The Overall Charges Adjustment Formula

The overall heavy vehicle charges adjustment formula is given in Table D.5, with the road expenditure component of the formula constructed from the A-factors derived in Table D.2.

Table D.5 Annual charge adjustment formula for all heavy vehicles =

ROAD EXPENDITURE					ROAD USE FACTOR	
Annual % change in road construction expenditure on:					Minus:	1.5%
Rural Arterials Pavement	Urban Other	Urban Arterials	Rural Locals	Rural Locals		
multiplied by:						
0.31	0.29	0.21	0.02	0.17		
A-factors (see Table D.2)						

The road expenditure factors (A-factors) can be amalgamated if required; for example, if only the total rural arterial expenditure is available, it can be multiplied by 0.595 (0.305 + 0.290). If only total expenditure is known, the A-factors sum to 1.00.

This is the recommended formula for adjusting heavy vehicle charges annually, after the 2nd charges determination. The 1.5% road use factor can be reviewed at intervals if desired, as more information comes to hand to refine the assumed growth factors for vehicle use and fleet size; especially fleet size, which is the major determinant.

APPENDIX E : CALCULATION OF THE ADJUSTMENT FACTOR

The agreed annual adjustment formula for heavy vehicle registration charges adjusts charges in accordance with changes in road expenditure and expected changes in road use. It takes the form:

$$\begin{aligned} \text{Adjustment (\%)} = & 0.60 \times \text{Change in Rural Arterial Expenditure (\%)} \\ & + 0.21 \times \text{Change in Urban Arterial Expenditure (\%)} \\ & + 0.17 \times \text{Change in Rural Local Expenditure (\%)} \\ & + 0.02 \times \text{Change in Urban Local Expenditure (\%)} \\ & - 1.5\% \text{ (ie, Road Use Factor)} \end{aligned}$$

Ministers decided that the maximum increase in heavy vehicle charges was to be limited to a “ceiling” of underlying inflation (ie, CPI with the impact of changes in the taxation system removed). Reductions in charges were to be avoided by including a “floor” of 0%.

The formula takes account of where changes in road expenditure occurred. Expenditure on roads that are more intensively used by heavy vehicles has a greater influence than expenditure elsewhere. That is, expenditure on rural arterial roads has a much greater impact on charges than expenditure on urban local roads. This relationship in the charging model (as used in the Second Charges Determination) is carried forward to the formula and is the reason for different weightings for different categories of road expenditure. The way these weightings were calculated is detailed in the Annual Adjustment Procedure for Heavy Vehicle Charges: Regulatory Impact Statement. If expenditure on all categories of roads increases by the same proportion, the weightings have no impact.

The Road Use Factor (-1.5%) takes into account expected changes in road use and reflects forecast changes in vehicle numbers and the distances they travel. These changes were estimated on the basis of trends over the past decade. Their importance was established by assessing their influence on heavy vehicle charges using the method of determining charges used in the Second Charges Determination.

The result of the formula is a percentage. All changes in road expenditure are measured as percentage changes between the average of the three most recent years of expenditure compared to the equivalent period one year later (that is, percentage changes between three-year moving averages of road expenditure). The three-year average used to determine changes in expenditure has the effect of smoothing out any large fluctuations year to year.

Based upon the most recent data available (see the Annual Adjustment Procedure for Heavy Vehicle Charges – Initial Adjustment: Regulatory Impact Statement – July 2001), this formula resulted in an adjustment factor of 5.56%. The formula was calculated as follows:

$$\text{Adjustment (\%)} = .60 \times 4.88\% + .21 \times 11.50\% + .17 \times 9.02\% + .02 \times 9.02\% - 1.5\% = 5.56\%$$

For the initial adjustment, this was more than the underlying inflation of 3.30%, therefore the ceiling applied and the adjustment factor for the initial adjustments to heavy vehicle road charges was 3.30% (rounded to the nearest dollar).