

An Inquiry into Pricing of Public
Passenger Transport Services

Fare Structures for Public Transport

**INDEPENDENT PRICING AND REGULATORY TRIBUNAL
OF NEW SOUTH WALES**

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Passenger Transport Services

Fare Structures for Public Transport

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Please forward submissions by 19 April 1996.

Public Hearings to consider the interim reports of this review and determinations of
maximum prices from July 1996 for declared passenger transport fares will be held on
26 April 1996 at the Sydney Hilton Hotel, 259 Pitt St, Sydney

The Tribunal is releasing the following Interim Reports for this review. Copies of the reports
are available from the Tribunal's office.

Report No 1	Government Payments for Public Transport
Report No 2	Buses and Ferries
Report No 3	CityRail
Report No 4	Fare Structures for Public Transport
Report No 5	Framework for Public Transport Pricing
Report No 6	Fair Fares: An Overview

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ABBREVIATIONS

CBD	Central Business District
DoT	Department of Transport
SRA	State Rail Authority of NSW
SSTS	School Student Transport Scheme
STA	State Transit Authority of NSW

GLOSSARY

<i>CityRail</i>	Urban passenger rail operator within the Greater Metropolitan region. A business unit of SRA.
<i>CityMet</i>	A classification of CityRail's operating area in the Sydney Metropolitan, bounded by Macarthur, Waterfall, Penrith, Richmond and Cowan (a radius of 55.5 km from the CBD).
<i>Concession</i>	A concession is a reduction in the price charged to certain users of a specific activity.
<i>Concession reimbursements</i>	Payments by Government to an operator to cover the cost of revenue forgone in providing a concession.
<i>Cross subsidy</i>	Occurs when prices of a service are not strictly related to costs. The outcome is that some passenger groups pay more than the costs they are imposing on the system, and some customer groups pay less. The difference between what the two groups pay is a cross subsidy.
<i>Discount</i>	Usually apply to periodical tickets and are set in relation to travel at the standard (peak) fare.
<i>Free transfers</i>	Where tickets allow free transfer between different services of a particular transport mode.
<i>Multi-mode tickets</i>	Tickets which allow travel on different transport modes. For example, the bus/ferry and bus/ferry/rail TravelPass tickets.
<i>Multi-trip</i>	Tickets which allow multiple use of the transport system.
<i>Newcastle Buses</i>	A business unit of STA, operates bus services in the Newcastle metropolitan.
<i>Newcastle Ferries</i>	A business unit of STA, operates a ferry service in Newcastle.
<i>Off-peak</i>	Periods outside the peak period.
<i>Off-peak fares</i>	Discounted fares offered in off-peak periods.
<i>Peak</i>	Periods of high use of the network, often associated with congestion. Peak periods generally occur in the morning and afternoon.
<i>Peak fares</i>	The standard fare payable in peak periods.

<i>Periodical tickets</i>	Multi-trip tickets which allow unlimited use of the system for a period of time, usually weekly, monthly, quarterly and yearly.
<i>Private buses</i>	The largest provider of public transport in NSW, operating buses mainly in areas not serviced by STA.
<i>State Rail Authority (SRA)</i>	Government owned railway operating throughout NSW.
<i>State Transit Authority (STA)</i>	Government owned bus and ferry operator within Sydney and Newcastle.
<i>Sydney Buses</i>	A business unit of STA, operates bus services in the Sydney Metropolitan.
<i>Sydney Ferries</i>	A business unit of STA, operates ferry services in Sydney.

EXECUTIVE SUMMARY

- Fare structures for bus and train travel in NSW are mainly distance based. (Section 1.3).
- CityRail groups its distance based tickets into a number of bands to limit the number of fares. (Section 1.3.1).
- Sydney Buses and Newcastle Buses presently set their fares using distance based sections. Like CityRail, sections are grouped together to limit the number of fares. (Sections 1.3.2 and 1.3.4).
- Ferry fares in Sydney and Newcastle are based on flat fares for travel in specific zones. (Sections 1.3.3 and 1.3.5).
- Private bus fares are strictly distance-related. (Section 1.3.6).
- Fare structures should be tailored to suit the core business activity of each transport mode. For example, where the core business is transporting commuters to their workplace, then ticket pricing principles should be set on periodical ticket types. This is particularly relevant to CityRail and Sydney Buses. All other (minor) ticket types should be set in relation to periodicals. Casual cash fares should thus be considered as a premium for infrequent travellers, over and above the standard price of periodicals for regular commuters. (Section 1.4).
- Fare structures should play an important role in public transport by:
 - Recovering from passengers the full value of journeys taken.
 - Allowing transport operators to recover their total efficient costs. (Section 2.2).
- Fare structures are designed to achieve a number of diverse goals. In addition to the two points above, they should take account of the external benefits of public transport, minimise fraud, be simple and equitable, and permit integration. (Sections 2.3 to 2.7).
- The main types of fare structures are: flat, fixed zones, distance based, time based. The choice of any of these structures involves balancing their advantages and disadvantages. For example, flat and zone fares are useful to achieve fare structure simplicity. The more complex distance and time based fares assist agencies to recover their costs. In practice, NSW public transport system fare structures are mixtures of each of these fare structures. (Section 3).

CityRail

- CityRail has based its fare structure proposal on improving single fares. CityRail believes that if the price of singles, and the relationship between single and other fares are adjusted, fares will better reflect costs and will form the basis for an integrated fare structure. (Section 4.2).

The Tribunal supports the following principles for CityRail:

1. Single fares need to be increased and made more cost reflective.
 2. The off-peak fare needs to be increased in relation to the single fare
 3. Small increases to periodical fares are justified. (Section 4.2.3).
- In future submissions, the Tribunal would like CityRail to put forward proposals which are based on optimising fares for its core business activities. (Section 4.2.3).

Sydney Buses

- Sydney Buses seeks to restructure its fares so that discounts on TravelPass and TravelTen tickets are reduced to 15% of the equivalent cash fare. (Section 4.3.2).
- STA bus fares should be limited by efficient costs, which are lower than STA's present costs and more closely aligned to private bus operators costs. (Section 4.3.3).
- Except for the TravelPass tickets, Sydney Buses should submit revised proposals for fares which are consistent with a weighted average of all fare types not increasing. TravelPass prices may be affected by increases in rail and ferry fares. (Section 4.3.3).
- The Tribunal is not convinced that discounts on TravelPass and TravelTen tickets need to be reduced and standardised at 15% of the equivalent cost of travelling on a cash fare. (Section 4.3.3).
- The real price of both single and multi-ride fares should be reduced by leaving them unchanged over the next few years, matching cost reductions which STA should make. (Section 4.3.3).
- Groups of sections need to be more finely tuned to relate fares more closely with distance travelled. (Section 4.3.3).
- Newcastle fare structures should be separated from Sydney fare structures. (Section 4.3.3).

Sydney Ferries

- Sydney Ferries has proposed a 2-zone fare structure for the Inner Harbour. (Section 4.4.1).
- The Tribunal believes that a distance based fare structure (with a fixed component) would be the optimal fare choice for Sydney Ferries, and that steps should be taken to implement such a fare structure as soon as possible. It requests Sydney Ferries to develop further proposals along these lines. (Section 4.4.2).
- In the meantime, the Tribunal does not recommend that the Inner Harbour service be divided into two new zones of up to and beyond 10 kms. Dividing the Inner Harbour area into more finely tuned zones is compatible with the introduction of distance based ferry fares. (Section 4.4.2).
- Based on Sydney Ferries core business, cash fares should be increased by a larger percentage than periodical fares. (Section 4.4.2).

- Casual ferry fares should be aligned to the value of the leisure trips, and not related to bus fares for the same journey. (Section 4.4.2).
- Discounts for FerryTen tickets should not be reduced. (Section 4.4.2).
- Fare prices for individual trips between TravelPass and TravelTen should be equalised. (Section 4.4.2).
- Sydney Ferries should be provided with the flexibility to take advantage of special events and offer discounts during unfavourable weather conditions to maximise revenue. (Section 4.4.2).

Newcastle Buses

- Newcastle Buses propose to replace the current distance based fare scale with a time based fare structure. (Section 4.5.2).
- The Tribunal supports the introduction of time based fare structure for Newcastle Buses. The Tribunal recommends that Newcastle Buses brings forward a more detailed proposal providing details of the revenue implications and the effects on the various customer groups. (Section 4.5.3).

Integrated Ticketing

- Integrated ticketing occurs when a single ticket is available which allows travellers to use the services of all forms of public transport, and is already available for travel on STA or CityRail TravelPasses. The main additional beneficiaries of fully integrated public transport ticketing in Sydney would be travellers originating on the private bus network who wish to transfer to CityRail services. (Sections 5.3 and 5.4).
- Solving the issue of revenue division between modes is an important prerequisite to integrated transport ticketing in Sydney. (Section 5.5.2).
- The Tribunal is mindful of the issues associated with the Brown Metropass. However, the Tribunal believes the extension of this type of ticket would be a useful step towards integrated fares in the Sydney public transport system. The Tribunal therefore recommends extension of the Metropass ticket. (Section 5.6.1).
- There are significant complexities involved in establishing a cash multi-modal fare system. These include standardising public transport ticketing, through a zone fare structure, and deciding on how ticketing income is to be divided. Given these complexities, the Tribunal considers that cash multi-modal ticketing is not practical in Sydney at this stage. Priority should therefore be given to an incremental approach to integrating ticketing. (Section 5.6.2).
- The Tribunal recommends that Sydney Buses submit a proposal to introduce a cash fare which allows free transfer between buses at bus interchange points. (Section 5.6.3).

1 TRANSPORT PROVISION AND EXISTING FARE STRUCTURES IN NSW

1.1 Introduction

This chapter examines the current fare structures of public transport operators in NSW.

In discussing current fare structures, this chapter:

- describes the major public transport providers in NSW
- describes users of public transport
- summarises the fare structures of the transport providers, including concessions and discounts.

1.2 Public transport providers in NSW

1.2.1 CityRail

CityRail provides rail services within Sydney and the adjoining metropolitan areas, including Newcastle. CityRail's area covers the whole of Sydney and extends to regional centres as far as Dungog and Scone to the north, Lithgow to the west and Goulburn and Bomaderry (Nowra) to the south.

CityRail carries very large numbers of passengers, including over 800,000 customers each weekday¹. The system comprises 296 stations, about 1,500 carriages and 1,700 km of electrified track over 1,000 route kilometres. CityRail provides about 2,300 services each weekday (400 peak and 1900 off-peak), and employs approximately 8,300 personnel.

1.2.2 STA

The DoT contracts with bus operators (both STA and private operators) to provide services for particular areas which meet specified minimum standards. The STA operates services mainly in the eastern part of the metropolitan area, the lower North Shore and the Warringah area with services focused on the city CBD. The STA also provides bus services in Newcastle. Outside the area covered by the STA, private bus operators provide over 300 different bus routes. The bus network is more flexible than the rail systems routes, because bus routes and frequencies can be changed readily to meet the demands of the passengers.

In addition to buses, STA runs ferry services, which provide access from harbourside suburbs to the city CBD via Circular Quay. A large proportion of ferry patronage is for tourism and leisure activities.

¹ CityRail, *Submission to the Pricing Tribunal, Fare Review 1995*.

STA comprises the following business divisions:

- **Sydney Buses** which carries around 610,000 passengers on a weekday and has an annual patronage of 177 million². The fleet comprises approximately 1,300 buses, operating on approximately 500 bus routes from 11 depots with a staff of 2,942.
- **Sydney Ferries** which carries 38,200 passengers on a weekday and has an annual patronage of 14 million. Seventy per cent of the 13.4 million passenger journeys on Sydney Ferries are for tourism and leisure pursuits. With a fleet of 26 vessels and a staff of 390, Sydney Ferries provides a wide range of services including:
 1. *Outer Harbour services*: Manly Ferries and JetCats
 2. *Inner Harbour services*: including Mosman, Watson Bay, Balmain and Hunters Hill.
 3. *Parramatta River service*: including Abbotsford and Meadowbank.
- **Newcastle Buses and Ferries** which carries 13 million passengers annually. The fleet of 160 buses and two ferries have a staff of 386.

1.2.3 Private buses

With over 1,000 bus operators, managing more than 5,000 buses and over 7,000 staff, the private bus industry is the largest provider of public transport in NSW. Research carried out by Travers Morgan in 1986 revealed that 33% of all public transport journeys in NSW were undertaken on private buses, compared with 29% the STA's government buses, 27% by rail, 8% by taxi, 2% by ferry and 1% by aeroplane or helicopter.

1.3 Summary of NSW fare structures

CityRail and STA sell cash tickets for single and return journeys and pre-paid discounted tickets for multi-trip journeys.

1.3.1 CityRail

CityRail has five broad fare categories:

- (i) *Single and return fares* are distance based and are available on the day of issue. The Adult Single is available for one way travel in peak and off-peak periods. All other ticket prices are related to this fare.
- (ii) *Off-peak return tickets* are available for travel after 9:00 am on weekdays and all day on weekends and public holidays. The current price is equivalent to between 20-80% of the peak return fare, depending on the distance travelled. CityRail aims to price this fare at 1.4 to 1.5 times the single fare. Child off-peak fares have a zone structure.
- (iii) *Periodical fares* are distance based and available for a week or for periods from a month to a year. These fares are offered at a price much less than the equivalent single fare. These fares permit unlimited journeys between the

² Source: State Transit Authority.

stations indicated on the tickets. CityRail aims to price all weekly tickets at eight times the single fare.

- (iv) *Intermodal TravelPasses* are available for unlimited weekly, quarterly or yearly travel within designated zones.
- (v) *Concessional travel* is available to a wide range of concession card holders.

Current fare structure - distance based

CityRail's fares are based on the distance travelled between the origin station and the destination station. Distances are grouped in broad bands. CityRail has distance bands as far as 529 km, but Table 1.1 shows only the distance bands for the CityMet area (ie up to 55.5 km).

Table 1.1 Distance bands for CityRail fares

Band	1	2	3	4	5	6
Distance (km)	4.00	13.66	26.53	36.19	45.85	55.50
Return cash fare (\$)	2.80	3.20	5.20	6.00	7.20	8.40
Weekly fare (\$)	9.00	14.00	19.40	23.00	28.00	28.00

1.3.2 Sydney Buses

The STA's existing fare structure consists of both distance based and zone fares. The three main ticket types are:

- (i) *Single ticket* - a single ride, distance based cash ticket purchased at the time of catching the bus.
- (ii) *TravelTen ticket* - provides 10 trips on the same distance basis as the daily cash fares. It can be purchased off-bus, through newsagencies or some railway stations.
- (iii) *TravelPass ticket* - a multi-modal, zone-based periodical ticket which allows unlimited travel during the period for which it is valid. May be used on bus only, or on bus/ferry, or on bus/ferry/rail.

Both TravelTen and TravelPass tickets are priced at a fare which is much lower than the equivalent single journey fare. For example, TravelTen tickets offer discounts ranging from 33% (1-2 sections) to 9% (22-27 sections). That is, the 1-2 section TravelTen costs 33% less than the cost of ten 1-2 section cash fares.

Sydney Buses - current fare structure

Sydney Buses' distance based fares use route sections of 1.6 kilometres in length. Single fares are shown in Table 1.2.

Table 1.2 Sydney Buses current fare structure

Distance (Sections)	Fare (\$)
1 -2	1.20
3 - 9	2.50
10 - 15	3.30
16 - 21	4.00
22 +	4.40

1.3.3 Sydney Ferries

Sydney Ferries' fare structure is based on flat fares for travel within specific zones. The three zones are Inner Harbour, Manly/Rydalmere, and Parramatta. The cash fares for single journeys are shown in Table 1.3.

Table 1.3 Sydney Ferries' current fare structure

Zone	Fare (\$)
Inner Harbour	2.80
Manly/Rydalmere	3.60
Parramatta	4.20

Sydney Ferries also offers periodical tickets for regular users. FerryTen tickets, valid for 10 trips, are offered at a substantial discount to the equivalent 10 trips on the casual cash fare. For example, the Inner Harbour FerryTen is 41% cheaper than 10 trips on the Inner Harbour casual cash fare. The Manly/Rydalmere FerryTen is 32% cheaper, and the Parramatta FerryTen 31% cheaper than the cost of 10 casual cash fares for each distance.

1.3.4 Newcastle Buses

Newcastle Buses presently uses the same fare scales as Sydney Buses, but with three bands for cash fares: 1-2, 3-9, and 10-15 sections. To apply these fares, the bus network requires that drivers be familiar with 802 section points, containing 2500 stops. There is significant over-riding by passengers buying the cheapest 1-2 section fares, and riding into the 3-9 section range. Newcastle Buses estimates that 30% of passengers buying 1-2 section tickets are over-riding.

1.3.5 Newcastle Ferries

Newcastle Ferries provides only a single service, the Stockton Ferry service. The fare is \$1.30.

1.3.6 Private buses

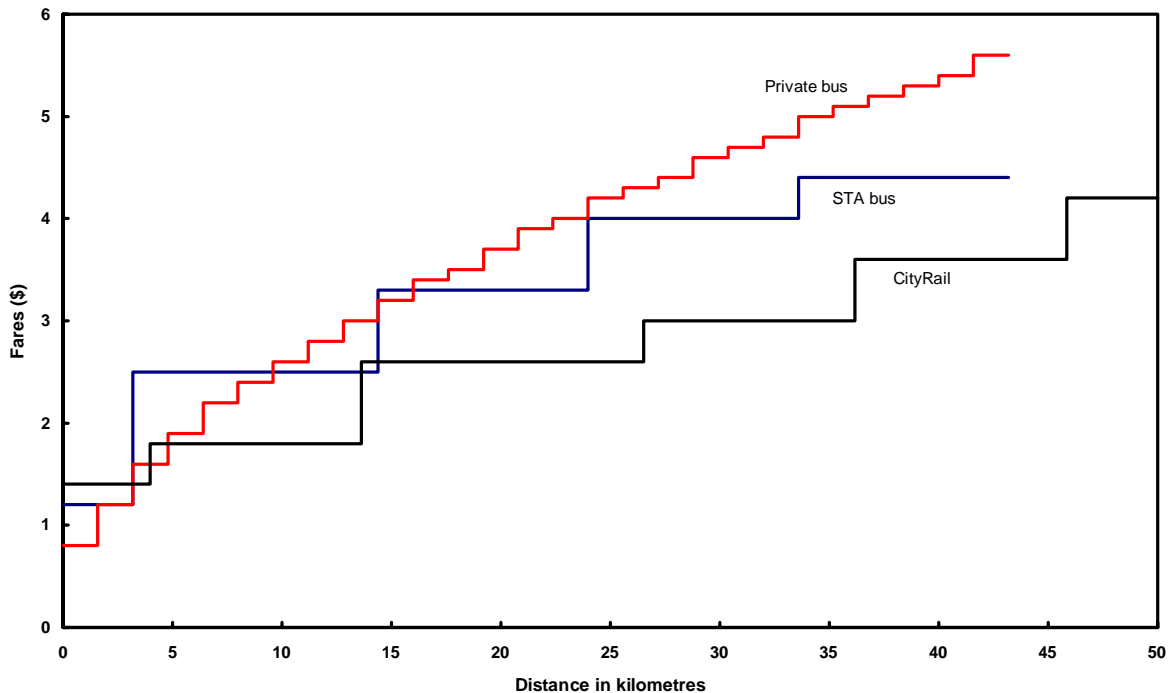
Private buses use distance based, sectional fares. Unlike Sydney Buses' fares, private bus fares are not categorised into multiple section bands. There is a different, higher fare for each additional section travelled.

Private buses offer little in the way of periodical or multi-modal fares. All travellers pay the same cash (casual fare). One exception to this is the discounted multi-modal Brown Metropass. This ticket allows frequent users to obtain discounted travel on private buses in St Mary's and Mount Druitt, if it is combined with train travel. The Brown Metropass is discussed further in Section 5.6.1.

1.3.7 Comparison of fare structures

Figure 1.1 compares the fares for bus and rail travel within the CityMet area.

Figure 1.1 Comparison of STA single journey fares with private operator fares and train fares



There are two major features from Figure 1.1:

- (i) Private bus fares are more closely related to distance than the banded fares that are used by STA and CityRail. This means that private bus fares more closely reflect distance-related service costs, minimising cross-subsidies. The advantages of distance based fare structures are discussed in chapter 3.
- (ii) For a given distance of travel, bus fares are generally higher than rail fares and private bus fares are generally higher than STA fares (other than the shorter distances).

1.4 The discount issue - multi-trip discounts for peak travel

CityRail and STA offer regular travellers multi-trip fares which are much lower than cash fares. Multi-trip tickets include rail Weeklies, intermodal TravelPasses and ferry TravelTen tickets. These are the ticket types used by the majority of STA and CityRail passengers who pay a full fare. That is, 54 %³ of CityRail's, and 75 %⁴ of STA's non-concession passengers are presently travelling on these ticket types.

In the past, these price differences (compared with the "cash" fare for occasional travellers) have been referred to as "discounts". Given the core business functions of

³ CityRail, *Submission to the Pricing Tribunal, Fare Review 1995*, Table 3.7.

⁴ State Transit, *Submission to the Pricing Tribunal*, Appendix 6.

CityRail and STA buses in particular, it may be more useful to consider multi-modal fares as the standard.

Importantly, the Tribunal believes that the public transport operators should set fares to better reflect the particular characteristics of their market segments. That is, fares should better reflect the nature of the core business customers and the costs they impose on each system.

CityRail's and Sydney Buses' core business is moving commuters to and from the workplace in the morning and evening peaks, with large additional travel by school students in the morning peak. With the concessional SSTS and half-price student fares, this means that the multi-ride and periodical tickets represent the core business products of these transport operators. On this view, the (higher) cash fares could be considered as a premium over the core business ticket which is paid by occasional travellers.

1.4.1 Inter-modal fares

Many travellers need to change from one mode to another during the course of a journey. Current fare structures do not always permit free movement between, and within, modes.

Both STA and CityRail issue a limited number of multi-modal and multi-trip tickets. However, these are generally available only for weekly or longer tickets and, in most cases, are not available for travel on private buses.

1.5 Off-peak fares

Presently, off-peak fares are offered for CityRail services only.

1.5.1 CityRail

Public transport providers incur the majority of their operating costs in peak periods. Historically, it was thought that setting fares in off-peak times at a discount to peak fares would increase the number of passenger trips taken, thus maximising CityRail's revenue. However, there is little evidence to show this substitution of travelling mode really occurs.

Around 14% of CityRail's revenue is derived from off-peak fares, compared with 66% of revenue from single, return and weekly tickets. 28% of off-peak ticket users are travelling to work, and 45% of those have incomes over \$25,000⁵.

A reduction in the very substantial off-peak concession would result in an increase in net revenue.

⁵ CityRail, *Submission to the Pricing Tribunal, Fare Review 1995*.

Sydney Buses

Sydney Buses already offers a wide range of concessional fares for passenger groups who generally travel in off-peak periods. Thirty different types of beneficiary are catered for, including the elderly and the unemployed. In general, these passenger groups do not commute to regular places of employment, instead travelling in off-peak periods.

There is no off-peak concession on Sydney Buses. On its main routes, Sydney Buses gains relatively high passenger loadings at present fares, and would lose revenue by offering an off-peak concession which would attract only a limited number of additional users.

Sydney Ferries

66% of passengers on Sydney Ferries are discretionary travellers who travel during off-peak periods. A discount would result in a substantial loss of revenue, and would attract few new passengers.

About 40% of ferry commuters use TravelPasses.

Newcastle Buses and Ferries

STA argues that there is no peak travelling period in Newcastle. The benefits of off-peak fares are not available.

Private buses

No off-peak fares are available on private buses.

1.6 Concessions

All operators offer concessions to selected customers, and the Government makes up the differences between concession and normal fares. CityRail has suggested⁶ that there are as many as 75,000 pensioner trips on its system each day. Some of the concessions provided are discussed below:

- *Pensioner concessions:* CityRail and STA provides unlimited travel on trains buses and ferries. Private operators do not offer the same pensioner concession tickets. Instead, they offer a discounted ticket which is valid for the journey of issue only.
- *Student concessions:* Operators provide three forms: student concessions travel to and from school, school age concessions and tertiary student concessions.

A detailed discussion of concessions can be found in Transport Interim Report No 1 Government Payments for Public Transport.

⁶ CityRail, *Submission to the Pricing Tribunal, Fare Review 1995*.

1.7 Conclusion

Government-run public transport agencies offer a wide range of tickets, including discounted travel for frequent users, as well as tickets which allow multi-modal travel. Tickets on private buses services are mainly cash fares, with few discounts for frequent use.

The current fares structures for bus and train travel are mainly distance based. CityRail groups its distance based tickets into a number of bands to limit the number of fares. Sydney Buses and Newcastle Buses presently set their fares using distance based sections. As with CityRail, sections are grouped together to limit the number of fares. Private bus fares are the only strictly distance related fares in NSW. That is, the number of fares equals the number of sections, with a higher fare for each further section travelled. Ferry fares in Sydney and Newcastle are based on flat fares for travel in specific zones.

The Tribunal believes that fare structures need to centre on the core business activity of each transport mode. For example, where the core business is transporting commuters, then the core fare against which others are set should be the periodical and multi-trip ticket types. This is particularly relevant to CityRail and Sydney Buses. In this case, “cash” fare levels (singles, returns and off-peak) are best considered as a premium paid by occasional travellers relative to the per trip equivalent of the core periodical (CityRail Rail Weekly) or multi-trip (STA TravelTen) fare. Where the core business is occasional travel such as for leisure/tourist activities (such as Sydney Ferries), then the corresponding core fare should be the “cash” single or return ticket.

2 WHAT FARE STRUCTURES ARE DESIGNED TO ACHIEVE

2.1 Introduction

The goals of fare structures are outlined in this chapter. Fare structures need to take account of the following considerations, some of which may conflict:

- **Recovering from passengers the full value of journeys taken** - ensuring passengers gain value for money from travel for which they are prepared to pay. Transport agencies also seek to recover efficient costs and achieve an acceptable overall financial outcome.
- **Taking account of external benefits** - encouraging people to use public transport, thereby reducing road congestion and pollution.
- **Preventing fraud** - ensuring passengers not to travel without a ticket, on the wrong type of ticket, or underpay for their journey.
- **Being easily understood and convenient to use** - ensuring optimal system use, minimal accidental fraud and good customer-staff relations.
- **Permitting integration** - setting fare structures consistently for different transport modes so that passengers may use different modes for the one overall journey.
- **Maintaining equity** - maximise public transport access to different groups in the community, including the financially disadvantaged and people with disabilities.

2.2 Recovering the full value of the journey taken, recovering efficient costs and achieving an acceptable financial outcome

The primary goal of any fare structure should be to recover from passengers the full value of the journey taken.

In general, fares should not be set below the marginal (or avoidable costs) of making the journey (the amount that would be saved if the journey was not taken). If fares are below marginal costs, travel that is of little or no value to the passenger may be encouraged. Investment in loss-making services may be required. Holding fares below marginal cost may be justified if the social and economic benefits of providing the service are great enough.

Fares may sometimes be set above marginal costs if passengers are prepared to pay such fares (ie the effect on patronage is not severe). The economies of railways may require fares above marginal cost if an acceptable level of cost recovery is to be achieved. (In this respect, railways differ from urban water and electricity). Once again, however, the environmental and social consequences of higher fares need to be considered.

Fares should be based on the efficient, rather than the actual, costs of production if customers are not to be asked to pay for inefficiency. By recovering an agency's total efficient costs, fare structures provide an acceptable overall financial outcome for the transport agency.

2.3 Taking account of external benefits

The use of roads, particularly during peak periods causes pollution, congestion and accidents.

In fact, road congestion in Sydney and Melbourne is estimated to cost the economy some \$4 billion a year. This cost is borne disproportionately by trade and commerce⁷. In addition to financial cost, road congestion leads to the emission of chemicals, such as lead and carbon-dioxide, which disadvantages everyone.

Conversely, everyone is advantaged by external benefits, which are caused by the actions of individuals, but accrue to the whole of society. Public transport has the ability to produce external benefits by reducing road congestion. These benefits include less congestion, fewer road accidents, and less noise and air pollution. That is, more intensive use of the public transport system will lead a fall in overall transport costs, financial and other, for society as a whole.

Therefore, a fare structure for public transport should encourage people to use public transport rather than private motor vehicles. Where there are significant external benefits from usage of the public transport mode (usually a railway) optimal fares may be set below the cost of service, but at a level which maximises the external benefits.

2.4 Preventing fraud

On public transport, fraud involves intentionally travelling:

1. without purchasing a ticket
2. beyond the entitlement of the purchased ticket (overriding)
3. on the wrong ticket type (eg a concession fare rather than a full fare).

A public transport fare structure should minimise fraud. Transport agencies forgo revenue when passengers commit fraud. This shortfall must be made up by imposing higher fares on fare paying passengers, or through increased government subsidies.

Fraud costs CityRail about \$10m per year. This is mainly the result of fare evasion, as people simply walk around the turnstiles when ticketing officers are not present. Where turnstiles do operate, people cannot exit a station without a ticket, or override on a fare. Therefore, fraud is not caused by the ticketing system itself, but the inability to validate tickets at particular stations.

It is impossible to board a bus without a ticket. However, people intentionally override the valid distance of a ticket. The current fare structure is one of distance based sections which are grouped together into five different bands. This gives people an incentive to understate the number of sections they are travelling.

Private buses' fare structures are also distance based, sectional fares. However, the fare structure on private buses is very finely tuned, so that there is a different fare

⁷ Industry Commission, 1994, *Urban Transport: Overview, Findings and Recommendations*, Report No. 37, AGPS, February 1994, p 7.

for each section of travel. This significantly reduces the incentive to understate travel distance, and override, as there is little saving in doing so.

2.5 Being simple to understand and convenient to use

Simplicity is an important feature of any fare structure. A simple fare system should lead to:

- Optimal system use - people can plan their transport needs.
- Minimal accidental fraud - there are few accidental mistakes in purchasing tickets.
- Good customer staff relations - problems caused by complex fare structures are avoided.

Customers should have a broad understanding of how fares are determined. This will help commuters to plan their transport needs and maximise their use of the public transport system. In addition, simplicity of fare structures means that ticketing officers can issue fares even for the most irregular types of trips without too much difficulty.

However, fare structures which are overly simplistic also have drawbacks. It is difficult for transport agencies to match their costs and revenues, and this affects service level efficiency and cost recovery. In addition, overly simplistic fare structures often involve some sort of fare averaging. This means that a situation can arise where some customer groups are subsidising other customer groups.

The question of simplicity of different types of fare structures is looked at in detail in chapter 3.

2.6 Permitting integration

Integration of public transport provides a number of advantages:

- Simplicity of use - one ticket is valid for all forms of public transport.
- Convenience - number of different tickets which need to be purchased is limited.
- Standardised ticketing and operations - bus/rail/ferry interchanges are well planned, and ticketing options are standardised on all services, and for all transport operators, as are fare prices.

Current fare structures in Sydney are compatible with partial integration. This may be a useful characteristic, as the benefits of fare structures which are primarily distance based can be maintained, while the advantages of increasing the level of fares integration can also be achieved. Fare integration is discussed in detail in chapter 5.

2.7 Maintaining equity

In the community's eyes, an important aspect of public transport fare structures is equity. This means that people expect to pay a similar fare for a similar service.

Fare structures may include targeted concession fares for disadvantaged groups, such as pensioners and the unemployed. Concessions are discussed in detail in the Tribunal's Transport Interim Report No 1.

Fare structures should aim to minimise cross-subsidisation where some customer groups are paying more in fares than the costs they add to transport agencies' operations, and some groups pay less in fares than the costs added to transport agencies' operations.

2.8 Conclusion

Fare structures for public transport are designed to achieve a number of often competing goals. Any fare structure needs to strike a balance between these goals.

3 TYPES OF FARE STRUCTURES

3.1 Introduction

This chapter examines the different types of fare structures, and comments on the advantages and disadvantages of each.

At present, 56% of travellers on STA buses travel on fixed zones, and the remaining 44% use tickets that are distance based. The corresponding figures for CityRail are 34% and 66% respectively.

3.2 Summary of main types of fare structures

The main fare structures are as follows:

- **Flat** a single fare applied to all services.
- **Fixed zones** defined with reference to a number of geographical zones which remain fixed irrespective of where the ticket is purchased within the zone.
- **Distance based** sectional fares are set with reference to geographic reference points.
- **Time based** includes off-peak fares for use in non-peak periods, and sectional fares based on sections of time travelled.

Each of these fare structures has its own strengths and weaknesses, which are outlined in Table 3.1 and discussed below.

3.3 Flat fares

Flat fares are single fares which apply to all services or a subset of services. For example, the Sydney Ferries Inner Harbour cash fare, is applicable to all ferry travel in the inner harbour region. Another example is the rapid transit system in New York, USA. Flat fare tokens are needed to gain entry to the system, and one token is valid for as long as you are within the system, irrespective of the distance travelled.

Advantages of flat fares

The single largest advantage of a flat fare ticketing system is its simplicity.

Ticket issuing costs for flat fares are low relative to other ticketing systems. Unlike other fare systems, ticket issuing officers do not need to know the destination or the number of sections travelled to issue a ticket. Overriding is not possible under a flat fare system.

Disadvantages of flat fares

Despite their advantages, flat fare systems also have some disadvantages. There is no relationship between fares and costs. In general, people travelling further distances impose greater costs on the system than people travelling shorter distances.

Table 3.1 Strengths and weaknesses of fundamental fare structures

Structure	Strengths	Weaknesses
Flat	<ul style="list-style-type: none"> • simplicity • relatively low ticket issuing costs • reduces fraud opportunities (ie no scope for over-riding) 	<ul style="list-style-type: none"> • no relationship between fares and costs • implicit cross-subsidisation (ie short distance travellers subsidise long distance travellers) • distortionary impacts on travel behaviour/cross-subsidisation (ie number of short distance trips made is below optimal level and number of long distance trips made is above optimal level)
Distance based	<ul style="list-style-type: none"> • direct relationship between fares and distance travelled and hence costs of service provision • perceived to be fair by customers 	<ul style="list-style-type: none"> • transfers difficult but not impossible to handle • difficult to calculate fare for irregular journeys
Time based	<ul style="list-style-type: none"> • simplicity • transfers between services and modes are straightforward • fares able to broadly reflect the distance travelled and hence service costs but less so than distance based fare structure • easier to understand than distance based fare structure • transfers between services and modes are straightforward 	<ul style="list-style-type: none"> • service delays and cancellations affect ticket 'value' • no direct relationship between fares and cost of service provision • difficult to allocate farebox revenue between services and modes • 'boundary problems' - those travelling a short distance across a zonal boundary often feel aggrieved • difficult to allocate revenue between services and modes

(Source: Symonds Travers Morgan, *Fares and Ticketing Policies: International Review*, 1995, p 15.)

This imbalance between fares and costs means that an implicit cross-subsidy occurs. In general, under a flat fare system, customer groups which travel a shorter distance are cross-subsidising those that travel a longer distance.

This imbalance between costs and ticket prices has a distortionary impact on travel behaviour. The number of short distance trips is below the optimal level as customers perceive the flat fare to be relatively high for short distance trips. In contrast, long distance travellers perceive the flat fare to be relatively cheap in contrast to short distance travel. This means that relatively more long distance trips occur, with additional costs contributed to the system.

3.4 Zone fares

Zone fares are similar to flat fares in that only one fare is payable in a specified, geographically-defined area of travel. Zone and flat fares differ in that there is usually more than one well defined zone in a particular area, and zones may or may not overlap.

Zone fares have distance and time based variations:

- A **distance based** zone fare allows a passenger to travel by bus to any point in the furthest zone paid for, changing buses where necessary.

A **time based** zone ticket issued is stamped with the expiry time when it is issued and the passenger journey must be completed by that time.

Advantages of zone fares

Zone fares are attractive because they:

- simplify ticket issuing and checking
- are compatible with an integrated ticketing system
- allow free transfers between buses.

Zone fares are relatively simple, and reflect the distance travelled. Thus zone fares broadly reflect service costs. However, zone fares are not as closely based on distance travelled as are sectional fares.

Because they are simple (one fare) and the zones are clearly defined, zone fares are easier to understand than sectional distance based fares. This simplicity is applicable to integrated ticketing. For example, TravelPass tickets are purchased at a set price, and are valid on all government bus/ferry/rail services in a particular area.

In addition, because of its simplicity, a zone ticketing system minimises fare evasion and over riding. It is relatively simple to detect evasion as a ticket is valid only within its relevant zone.

Unlike distance based fares, zone fares allow free transfers between buses within the specified zone. This is a major advantage of zone fares. Free transfers are an issue with current fare structures. They may encourage public transport usage as passengers perceive added value for money.

Disadvantages of zone fares

Zone fares also have some disadvantages. Firstly, zone fares need to be set at an average cost. This means that passengers travelling a short distance are implicitly subsidising longer distance travellers. The result is that a zone system encourages longer distance (and consequently higher cost travellers) and may discourage lower cost short distance passengers.

Furthermore it is difficult to allocate fare revenue between services (for individual transport agencies) and modes (for an integrated system). Since fares are set at an average cost, fare revenue for particular services will not match the cost of providing particular services. For the same reason, it is difficult to allocate revenue among modes. The revenue from TravelPass tickets is split between Sydney Buses, Sydney Ferries, and CityRail. Historically, this revenue split has been a difficult area for these operators to agree on. This is further discussed in the context of fare integration in section 5.5.

Another disadvantage is that one cannot travel across a zonal boundary on a particular zone ticket. This is particularly important to people who need to travel only a short distance across a particular zone. A zone fare system requires an additional ticket to be purchased for the distance travelled.

3.5 Distance based fares

Distance based fares are set on the distance travelled. A pure distance based pricing system would charge an increased fare per additional kilometre travelled. In Sydney, distance based fares are usually defined with reference to artificially created section points (as with Sydney Buses).

Advantages of distance based fares

Unlike flat fares, there is a direct relationship between distance based fares and the distance travelled. This is important for two reasons. Firstly, for the transport agency, as fares can be related directly to the cost of providing services, resulting in revenue collection which more closely reflects costs.

Secondly, distance based fares are perceived as fair by customers, because they are strictly based on the amount of travel eliminated. Cross-subsidies between customer groups are thereby limited.

Disadvantages of distance based fares

Distance based fares require a good knowledge of travel routes and the distance between each route. Passengers have an incentive to understate the distance to be travelled and therefore reduce travel costs. Overriding is difficult to detect unless one knows each passenger's origin and destination.

In addition, distance based fares are incompatible with integration, as the origin and destination on all forms of transport need to be known before a multi-modal ticket can be sold. Fare evasion would be very difficult to detect in these circumstances. Finally, transfers are not allowed. Buses extract a new fare when a passenger transfers to another bus, regardless of distance travelled.

3.6 Time based fares

Generally, time based fares are valid for travel within a specified period regardless of the distance travelled or the number of transfers. A pure time based system would charge a new (higher) fare for each additional minute of travel. In practice, time based fares are usually based on multiples of 30 minutes. The government transport systems in Melbourne, Adelaide and Perth have elements of a time based fare structures.

Newcastle Buses is proposing to introduce a time based fare structure as part of this review. This proposal is examined in section 4.5.

Advantages of time based fares

The primary advantage of time based sectional fares is simplicity. A passenger simply needs to know the average travel time to a particular destination, and the ticket can be purchased. This simplicity also lends itself to integrated transport, as transfers between modes are made easily, as long as these occur within the allotted time.

In addition, time based fares offers passengers an alternative payment method for passengers and transport agencies.

Disadvantages of time based fares

The main disadvantages of time based sectional fares revolve around simplicity. Average cost pricing is required. This means that some passengers can derive greater value for each ticket, and it is difficult for service providers to match revenues and costs. For example, 30 minute time based fares would provide a relatively larger benefit to passengers travelling close to 30 minutes, than to those travelling for less than 15 minutes.

Since tickets are based on transit time, there is no close relationship between fare prices and the cost of providing the service. This makes it difficult for service providers to allocate revenue between services and modes.

Further, service delays and cancellations can affect the value of a ticket. For example, the ability to travel on a half-hour pre-purchased ticket will depend on services running to time. Any cancellations or breakdowns would affect the validity of such a ticket. There is scope for people to understate the journey travel time, and thereby travel on artificially reduced ticket prices.

Finally, time based sectional fares have some built in incentive for overriding. That is, passengers may be able to travel for a time in excess of the validity of their ticket if the transport mode is boarded before the ticket expires.

3.6.1 Off-peak fares

Reductions on flat, distance based or zone fares may be offered outside peak periods if:

- demand elasticities are higher for non-journey-to-work travel, so that lower fares lead to transport substitution in favour of public transport
- marginal costs are lower, because the threshold costs of operation have already been covered by the peak traffic which determines the availability of infrastructure - rolling stock, station staffs and crews.

Advantages of off-peak fares

Off-peak fares have two main objectives. Firstly, they aim to maximise service revenue by encouraging additional people to use government rather than private transport. Secondly, off-peak fares aim to reduce the costs of travel providers by shifting passengers between the peak and off-peak periods.

Disadvantages of off-peak fares

In a report for the Tribunal, Professor Hensher⁸ indicates that there is little substitution for rail passengers between peak and off-peak periods. Further, there is no evidence that off-peak rail fares are actually encouraging more people to use rail

⁸ Hensher and Raimond, *Evaluation of Fare Elasticities for the Sydney Region*, January 1996.

instead of other forms of travel. This means that off-peak fares may not be achieving their intended purpose of maximising revenues.

This situation has a dual effect on the costs of the transport agency. Firstly, total costs are not reduced by lowering travel demand in peak periods. Second, low off-peak fares are not maximising revenue. The overall result is a larger revenue shortfall.

This casts doubt on the case for a large discount on CityRail's off-peak fares.

3.7 Conclusion

The aim of this chapter has been to outline the various types of fare structure options available.

Specifically, flat, zone, distance, and time based fare structures are discussed. The choice of any of these structures involves a choice of balance between the advantages and disadvantages of each. For example, flat and zone fares are useful when simplicity of fare structures is desired. The more complex distance and time based fares assist agencies to recover their costs.

In practice, NSW public transport system fare structures are made up of variations of each of the pure structures. Chapter 4 discusses the fare structure proposals submitted by each of the Government public transport agencies in NSW. Fare structures can become extremely complex (for example, see Newcastle Buses, section 4.5.1). The Tribunal is endeavouring to ensure structures are fair, cost-effective, and equitable.

4 PROPOSALS BY THE AUTHORITIES

4.1 Introduction

This chapter provides an overview of the fare structure proposals submitted by CityRail and STA. STA proposals are discussed in more detail in Tribunal Interim Report No 3 Buses and Ferries. CityRail proposals are further discussed in Tribunal Transport Interim Report No 2, CityRail.

4.2 CityRail

4.2.1 Fare proposal

In its submission to the Tribunal, CityRail has concentrated on making single tickets more cost reflective as they have not kept pace with inflation over recent years.

CityRail recommends a weighted average overall fare increase of 2.9% for 1996-97. This option would allow for some adjustments in weekly, off-peak, single and related fares.

For cash fares, CityRail has proposed retention of the present system, with the addition of a flat fare for travel within a CBD zone bounded by Redfern, North Sydney and Kings Cross. Other cash fares would be based on a 5 km first zone, then bands of 10 km (and 20 km bands beyond the suburban area). The 5 km rail fares (single, return and off-peak) would become minimum fares.

4.2.2 Fare structure proposal

CityRail aims to price its single fares efficiently and consistently, under a distance based pricing regime. With single prices set in such a manner, the main emphasis becomes one of adjusting relativities between ticket types. In its submission to the Tribunal, CityRail has stated that:

Single fares need to be made more cost reflective as they form the basis for other ticket types

CityRail explains that past pricing of single fares has resulted in anomalies in the fare charged per km for different fare bands. Although fares are set on a distance based fare structure, ticket prices do not always reflect the distance travelled. These structural anomalies mean that the per kilometre charge for distance travelled actually drops as more kilometres are travelled. This is not consistent with CityRail's basis for setting fares.

Accordingly, CityRail believes that adjusting the single fares and fixing the relationship between single and other fares will enable fares to better reflect costs, forming the basis for an integrated fare structure.

Aiming to improve the relativity between single and off-peak fares

CityRail states the ratio of off-peak fares to single fares has fallen, and become less even across fare bands. Presently, some off-peak fares are less than the single fare, as

discounts on off-peak fares vary from 20-80% of return fare prices. This means that off-peak fares represent very good value for money.

CityRail is aiming to set an off-peak fare at 1.4 to 1.5 times the relevant single fare.

Small increases to periodical fares

CityRail believes there is no great need for changes to periodical fares. The price of the weekly ticket is approaching eight times the single in the shorter distance bands. This means that periodical fares are structured in a manner which is consistent with CityRail's pricing objectives. CityRail recognises the need to maintain the value for money aspect of periodical tickets.

Accordingly, CityRail feels any increases in the cost of periodical tickets must be designed to ensure this relativity with the single ticket remains unchanged or is improved (ie brought closer to eight times the single ticket price).

4.2.3 Tribunal comment on proposed fare structure

CityRail has based its fare structure proposal on adjusting the relationship between single fares and periodicals. CityRail believes that adjusting the single fares and improving the relationship between single and other fares will enable fares to better reflect costs and will better form the basis for an integrated fare structure.

Although it understands the reasons for CityRail's approach, the Tribunal believes that fare structures should be based on an agency's core business activities. For CityRail, this means basing its fare structure around periodical fares as the core products. In this way, the higher per trip equivalent "cash" single and return tickets can be (reasonably) viewed as a premium charged for occasional travel. ***In future submissions, the Tribunal would like CityRail to put forward proposals which are based on optimising fares for its core business activities.***

In general, the Tribunal agrees with CityRail that fares will need restructuring to better reflect the cost of services and to eliminate many of the anomalies which currently exist. In particular, the Tribunal supports the following principles:

- 1. Single fares need to be increased and made more cost reflective. However, as is discussed in Transport Report 3, there is a limit to the increases which residents of outer areas can be expected to pay.***
- 2. The relativity between single and off-peak fares should be improved.***
- 3. Small increases should be made to periodical fares.***

The specific increases to each fare type are discussed in detail in the Tribunal's Transport Interim Report No 3, CityRail.

4.3 STA - Sydney Buses

4.3.1 Problems with current fare structure

In its submission, STA argues that the second block of sections for cash fares and TravelTens, priced at \$2.50 for from 3 - 9 sections (and \$16 for 10 rides), imposes too big a jump in fare from the \$1.20 for the first two sections.

Sydney Buses also wishes to change the TravelPass zones to a circular pattern based roughly on distance from the CBD. It is proposed that discounts on TravelTen and TravelPass tickets be reduced to a 15% discount on cash fares.

One of the main objectives of STA’s submission is to secure endorsement of the major principles which are proposed by STA to underpin the structure of future fares. STA feels that the most important of these principles are those which work strongly towards encouraging patronage.

To build patronage, the STA wants a fare structure which:

- is simple for passengers to understand
- represents good value for money
- is seen as cost reflective by passengers and by STA
- is equitable in that one passenger group does not subsidise the real travel costs of another.

In addition to these features, STA feels that fares must be fully integrated for all types of journeys which require more than just a single mode trip. Finally, STA feels the new fare system should be consumption based to ensure that fares are charged on the basis of measured amount of travel consumed, based on either distance or time.

4.3.2 Proposed changes in fare levels

In its submission, STA recommends the following changes to its fares:

- A general increase in fares is needed if the current level of Government funding is to be reduced.
- The high discounts available on TravelPass, and to a lesser extent, TravelTen and FerryTen should be reduced to a level of 15% over time (any increases should be implemented over a period of five years).
- The (real) price of single ride fares should be reduced by leaving them unchanged over a period of time.
- The groups of sections for single ride fares and TravelTens must be recalibrated.
- Newcastle fares need to be separated from Sydney fares.

Cash fares

Table 4.1 STA’s proposed pricing structure (cash fares)

Sections	Proposed fare (\$)	Present fare (\$)	Cost per km (to mid point) (\$)	Expected proportion of cash fares (%)
1 - 2	1.20	1.20	0.75	55%
3 - 4	1.70	2.50	0.52	18%
5 - 6	2.30	2.50	0.31	14%
7 - 10	3.00	2.50 - 3.30	variable	11%
11 - 15-	3.60	3.30	0.16	2%
16 - 21	4.20	4.00	0.11	small
22+	4.80	4.40	variable	small

Table 4.1 outlines STA's proposed basis for setting cash fares. These proposed changes would be followed by changes in the relationship between cash and multi-ride fares, which together are expected to have a significant effect on demand. The net effect of changes in cash and multi-ride fares and a reduction in government support payments would be a real fare increase of 14%. Sydney Buses expects that such a fare increase would reduce overall patronage by 2 million boardings a year.

4.3.3 Tribunal comment on proposed fare structure

Sydney Buses would like to reduce discounts on TravelPass and TravelTen tickets so that these tickets cost 85% of the cost of ten trips on cash fares. Sydney Buses feels that single fares should be left unchanged for a period of time. In addition, STA has proposed a number of principles upon which it wishes its future fare structures to be based.

Like CityRail, Sydney Buses has submitted a fare structure proposal which relates its periodical tickets prices to the price of single fares. However, as has been stated several times above the Tribunal believes that the fare structure should be based on a transport agency's core business activity. For Sydney Buses, the core business is commuters, and the core ticket types are its periodicals. This means that periodical fares should be the basis for Sydney Buses' fare structure. Higher fares for single tickets should be viewed as a premium charge for occasional travel.

The Tribunal supports STA's general principles for future fare structures. In particular, future ticket pricing should be based on the principles of simplicity, cost reflectivity, value for money, integration and consumption based ticketing. However:

- 1. On the basis of comparative costs of private bus operators, and Sydney Buses' generally more favourable peak loadings, the Tribunal is not convinced that discounts on TravelPass and TravelTen tickets need to be reduced and standardised at a 15% discount on the equivalent cost of travelling on cash fares.***
- 2. Except for the TravelPass tickets, Sydney Buses should submit revised proposals for fares which are consistent with a weighted average of all fare types not increasing. TravelPass prices may be affected by increases in rail and ferry fares.***
- 3. The real price of single fares should be reduced by leaving them unchanged over the next few years.***
- 4. Groups of sections need to be more finely tuned to equate cash fares closer to distance travelled.***
- 5. Sydney Buses should allow penalty free transfers (see section 5.6.3).***
- 6. Newcastle fares structures should be separated from Sydney fare structures.***

The Tribunal is also concerned about the extent of the expected patronage reduction under Sydney Buses' proposal.

STA's proposals and the Tribunal's approach are discussed further in Interim Report No 4, Buses and Ferries.

4.4 STA - Sydney Ferries

4.4.1 Overview of fare structure proposal

Sydney Ferries has examined a number of alternative fare structures and six distance based options have been considered in detail.

Sydney Ferries argues that the technology to pursue its fare structure preference of a flag fall plus distance structure is not yet available. The preferred option for Sydney Ferries, in the absence of this technology, for the short to medium term, is:

- The current Manly Ferry services' fare structure to be retained unchanged.
- The current Jet cat service fare structure to remain as a premium product with a margin over the ferry service.
- The Inner Harbour service to be divided into two zones: Zone 1 - journeys up to 10 kms, and Zone 2 - journeys over 10 kms.
- A uniform fare to be charged for journeys beyond Meadowbank Rail Bridge. Currently, this category includes Rydalmere and Parramatta where two different fares apply.
- The current FerryTen discount for frequent users to be 15% of the single fare.
- TravelPass to be modified to allow individual trips to be paid for at a similar discount to FerryTen.
- Sydney Ferries also seeks to increase the flexibility of the fare structure to take advantage of special events and unfavourable weather conditions. For example, it may be prudent on wet days, when patronage will be otherwise low, to offer special discounted fares for the day to encourage additional patronage.

Sydney Ferries state that the implementation of this fare structure would:

- Comply with State Transit principles for future fare structures.
- Increase equity in fare distribution.
- Provide appropriate discounts for frequent users.
- Provide passengers with sufficient separation of zones and ensure there was no confusion.
- Be simple for customers to understand.
- Minimise any adverse impact of change.
- Increase Sydney Ferries' ability to recover costs.

4.4.2 Tribunal comment on proposed fare structure

After examining a number of fare structure options, Sydney Ferries has proposed a two zone fare structure for the Inner Harbour. Sydney Ferries states its overall preference is for an Inner Harbour fare structure based on sections plus a flag fall component.

In view of the problems associated with the current zone based structure, the Tribunal accepts that a distance based fare structure (with a fixed component) would be the optimal fare choice for Sydney Ferries, and that steps should be taken to implement such a fare structure as soon as possible. It requests Sydney Ferries to develop further proposals along these lines.

In the meantime, the Tribunal does not recommend that the Inner Harbour service be divided into two new zones of up to and beyond 10 kms. The Tribunal feels that dividing the Inner Harbour area into more finely tuned zones is compatible with the introduction of distance based ferry fares.

The Tribunal believes that Sydney Ferries' fare structures should revolve around its core business activities. In particular, this includes leisure and tourist and other occasional travel. Therefore, Sydney Ferries' fare structure proposals in future should concentrate on "cash" fares.

The Tribunal believes that:

- 1. Based on Sydney Ferries core business, cash fares should be increased by a larger percentage than periodical fares.***
- 2. The Tribunal is not convinced that discounts for FerryTen tickets be reduced.***
- 3. Fares for individual trips on TravelPass and TravelTen should be equalised.***
- 4. Sydney Ferries should have the flexibility to take advantage of special events and offer discounts during unfavourable weather conditions to maximise revenue.***

Sydney Ferries proposal is discussed further in Interim Report No 4, Buses and Ferries.

4.5 STA - Newcastle Buses and Ferries

4.5.1 Problems with current fare structures

There are 802 section points, and 2,500 bus stops in the Newcastle network. Newcastle Buses believes its fare structure is complex relative to the size of its system, and in comparison to Sydney Buses. Drivers have to know how many sections there are between any two bus stops to work out fares.

Newcastle Buses feels the complexity of the system is compounded by the number of tickets:

- 10 different types of cash fare, all distance based by sections
- 8 corresponding pre-purchase multi-ride tickets
- 8 different versions of the Bus-Ferry unlimited trip, zone based tickets
- 13 different versions of the Bus-Ferry-Train unlimited trip, zone based tickets
- 2 unlimited trip, bus only tickets
- 2 versions of the all day unlimited trip, pensioner ticket
- 1 multi-mode school term ticket.

Importantly, there is no provision in the current fare system for transfer tickets. Passengers who use the cash and multi-ride (TravelTen) tickets, have to pay two fares if they transfer from one bus to another. However, there are no penalties for transfers when unlimited trip tickets are used.

4.5.2 Fare structure proposal

Newcastle Buses feels the complexity and variety of ticket formats leads to customer and driver confusion, reduced patronage and loss of revenue through some overriding.

Newcastle Buses has examined a number of options designed to enhance revenue through more efficient usage of its existing resources.

Zonal fares

Presently, Newcastle Buses is divided into two zones - an inner zone and a network zone, both based on trips originating in the Newcastle CBD. The zones apply only for TravelPass tickets. However, these zones are no longer appropriate as travel patterns, population growth and regional centres have blurred the boundaries.

Newcastle Buses feels zone based fare systems will always encounter problems associated with the location of the zonal boundaries, short distance travel across the zonal boundaries, and attempts at fare evasion.

Distance based fares

Distance based fares form the fare basis for Newcastle Buses, with sections of 1.3 km to 1.9 km. Customers travelling on casual cash fares are required to pay a additional fare each time a different bus is boarded.

As with Sydney Buses, the way in which sections are grouped disadvantages 3-4 section travellers⁹, and those who transfer from one service to another. Newcastle Buses believes this irregularity could be reduced by more careful grouping of section blocks. However, this method will not allow for free transfers between services.

Time based fares

One significant aspect of time based fares is that there is no penalty or added cost in transferring from one bus to another (as long as this occurs within the allotted time frame). A time based system copes quite well with transfers.

One argument against time based fares is that traffic or service delays and cancellations can reduce the value of the ticket. This is not a problem in Newcastle, where on time running is reliable and traffic delays are rare.

Newcastle Buses believes the benefits of a time based system are:

- The elimination of zonal boundary problems for passengers, drivers and agents.
- Transfers between services and modes of travel are without penalty.
- Reduced workload for drivers, allowing them to concentrate on safety.
- The elimination of overriding, which currently occurs with distance based tickets.
- A significant reduction in administrative cost for STA.

⁹ On average, 27% of passengers travel 3 sections, by far the single most popular travel distance. This impacts on the perception of value for money for travel.

- Fares are flexible enough to attract additional patronage.
- Reduces the number of ticket types from 44 to 15.

This fare is the preferred pricing and ticketing option for Newcastle Buses.

Peak and off-peak fares

Unlike Sydney, Newcastle does not have a commuter peak. The busiest time of day is between the peaks, when pensioners are travelling. There would no significant growth in revenue or patronage if off-peak fares were offered.

4.5.3 Tribunal comment on proposed fare structure

Newcastle Buses proposes to replace the current distance based fare scale with a time based fare structure. Newcastle Buses argue that a time based fare structure will be more attractive because of its relative simplicity, and because it provides easier bus-to-bus transfers. This will stimulate increased patronage of public transport.

A time based system in Newcastle would provide equivalent revenue when compared to the current system for the same number of passengers on the same travel patterns.

Recommendation

The Tribunal supports the introduction of a time based fare structure for Newcastle Buses. The Tribunal recommends that Newcastle Buses submit a more detailed proposal providing details of the revenue implications and the effects on the various customer groups.

Newcastle Buses' proposals are is discussed further in the Tribunal's Transport Interim Report No 4, Buses and Ferries.

4.6 Conclusion

This chapter has examined the fare structure proposals submitted by each of the Government run transport agencies in NSW.

The Tribunal believes that fare structures should be based upon an agency's main business activity. Where commuting is its main business (eg CityRail and Sydney Buses), fare structures should be based on periodical tickets. Where occasional travel is the main business function (Sydney Ferries), fare structures should concentrate on "cash" single and return fares.

5 FARE INTEGRATION

5.1 Introduction

This chapter:

- defines integrated ticketing and considers the extent of integration in Sydney
- considers the advantages and disadvantages of an integrated ticketing system
- looks at the practicalities of a transition to a fully integrated system
- outlines some hybrid options involving combinations of the present system with an integrated system.

5.2 Purpose of integration

The purpose of integrated ticketing is to make the public transport system more attractive to customers, and more effective at meeting customers' demands. Patronage can be increased by offering customers increased flexibility, convenience and accessibility. This means that integrated ticketing needs to be simple, robust, easily understood, responsive to demand, cost reflective, and applicable across the whole public transport system.

5.3 Public transport integration defined

Integrated ticketing means a single ticket is available which allows travellers to use the services of all forms of public transport.

Integrated ticketing can imply one or more of the following:

- the same fares apply for similar trips on public transport all over Sydney
- the same ticket applies for different modes for the one trip
- free transfers are available.

Integrated ticketing can be used for either:

1. all travel, including all cash fares (ie one ticket for the whole inter-modal or multi-bus journey) or
2. stored value tickets, either season tickets or multi-ride tickets only.

5.4 Extent of integration in Sydney

At present, integrated ticketing does not apply to cash fares in Sydney. However, the second level of integration does exist. Inter-modal travel is possible using TravelPasses on CityRail, Sydney Buses and Sydney Ferry services.¹⁰

These multi-ride TravelPass periodical tickets are valid on all government bus, rail and ferry services in a particular zone (indicated by ticket colour). In addition, "link" tickets are provided for special events. TravelPasses are periodic tickets designed for regular, heavy users of public transport and therefore offer little attraction to casual and infrequent users.

¹⁰ Brown Metropass weeklies provide inter-modal travel between CityRail and several Western line stations.

Table 5.1 Extent of integration in the Sydney public transport system

	STA Buses (%)	STA Ferries (%)	CityRail (%)	Private buses (%)	Total (%)
1. Trips made using tickets allowing integrated travel					
Percentage of total	56	55	34	*	34
2. Trips using non-integrated tickets					
Percentage of total	44	45	66	100	66
Total	100	100	100	100	100

* Metropass experiment only, which is an extremely small proportion of total trips.
(Source: Stewart Joy Associates Pty Ltd.)

As Table 5.1 indicates, Sydney public transport passengers are already strong users of integrated ticketing where it is available. In particular, around 56% of all trips on STA Buses are made with integrated tickets. On STA Ferries, the extent of integrated ticket travel is 55% of all trips, and it is 34% of all trips on CityRail.

Approximately 15% of all adult full fare journeys on CityRail services are made on TravelPass tickets. This figure is much higher for STA, where TravelPass journeys represent about 33% of all full fare journeys.

5.4.1 Non-integrated transport

The analysis above indicates that more than one-third of all public transport trips in Sydney are made using integrated ticketing which allows multi-modal travel. Passengers who undertake multi-modal travel but do not have access to integrated ticketing include:

1. **STA bus passengers paying cash fares or using TravelTens** (about 79 million trips per annum) who have to pay an additional fare if their journey involves transfers between buses.
2. **STA ferry cash fare or FerryTen passengers** (about 6 million trips per annum) who have to pay the fixed component of the fare on any feeder bus.
3. **CityRail cash fare passengers** (about 39 million trips per annum) using bus feeders.
4. **Private bus passengers** (about 120 million trips), of whom a relatively small proportion who use two buses on their journeys would benefit. The main beneficiaries of an expansion of integrated fares would be people living in areas served by the private bus operators, where fares are generally higher and season ticket discounts are unavailable. They could travel by bus to connect with rail.

Although the CityRail Weekly and other periodical tickets are not integrated tickets, passengers can purchase TravelPass tickets if these are of advantage to them.

5.4.2 Beneficiaries of further integrated ticketing

The main beneficiaries of the extension of public transport ticketing in Sydney would be travellers originating on the private bus network who wish to transfer to CityRail services, and who presently pay a full private bus fare in addition to either:

- a discounted rail season ticket fare (commuters)
- a rail off peak fare (non-pensioner casual travellers, or pensioners who pay a half fare on the bus and a \$1 fare to access the government-owned system).

The other group, is non-pensioner casual travellers who wish to make CityRail/STA journeys and who must presently pay 50 cents¹¹ to a dollar as an interchange penalty, plus any penalty arising from the breadth of CityRail farebands and State Transit fare zones. This group is of unknown size, but is probably small in relation to total daily public transport usage.

5.5 Revenue implications of integrated fares

5.5.1 Issues of revenue division

One of the primary issues in the provision of integrated ticketing is the need for an appropriate agreement for the division of ticketing revenue amongst the various operators. This is an important prerequisite in establishing any integrated fare system. Issues of revenue division involve deciding how ticketing revenue is to be allocated amongst the transport providers.

Technology is an important aspect in determining revenue entitlements. As the magnetic card validation systems used by STA and CityRail provide accurate usage data for each ticket issued, there is no difficulty in determining each mode's share of total revenues. To apply similar systems on the private buses would require an investment of approximately \$30 million for a validator for each bus, plus depot equipment¹².

5.5.2 Private bus revenue divisions

Integrated ticketing will be a critical issue for private bus operators who:

- currently gain the highest average fares from their riders
- have a naturally intense private interest in maximising profits.

Private bus operators are likely to require payment of the full private bus fare for their part of the journey as a condition of participating in integrated ticketing arrangements.

In that case, a disproportionate part of the cost of the integrated ticket used inter-modally between government and private systems would be placed on the government system. The government system would receive the remainder of the

¹¹ At the off-peak concession.

¹² This equipment will be required for future School Students Travel Scheme participation.

ticket price, after the private bus fare had been subtracted. This would raise anomalies, the cost of which would ultimately be borne by the Government:

- Private bus/rail commuters would combine an expensive bus feeder trip with a discounted rail trip. The private bus operator's entitlement could exceed the total season ticket fare.
- This is particularly likely to be the case for a journey which included a private bus ride on either end of a bus/rail/bus trip.

These options are not unacceptable *per se*: they would just be consequences of a government intention to have both integrated ticketing and profitable private bus operators. Such a system of revenue division would be resisted strongly by CityRail and STA.

Solving the issue of revenue division between modes is an important prerequisite to integrated transport ticketing in Sydney.

5.6 Ticketing options

This section outlines some of options for integrated ticketing. These options include:

- Metropass
- cash multi-modal fares
- free transfers
- pensioner concessions.

5.6.1 Metropass

The recently introduced Brown Metropass provides travel on private buses and government transport services.

Passengers are able to purchase the Metropass for travel on private buses to St Mary's and Mount Druitt railway stations, rail travel to Parramatta or the CBD, and the return journey.

The experience with the Brown Metropass has not been entirely favourable. Private bus operators argue that it has eroded their revenue base, because it is discounted, yet it accounts for a very small proportion of ticket sales. Some of these problems may be overcome once the Metropass is better known.

Recommendation

The Tribunal is mindful of the issues associated with the Brown Metropass. However, the Tribunal believes the extension of this type of ticket would be a useful step towards integrated fares in the Sydney public transport system. The Tribunal therefore recommends extension of the Metropass ticket.

5.6.2 Cash multi-modal tickets

At present, a traveller requiring casual bus, train and ferry travel must purchase individual tickets to ride upon each of the services.

The primary advantage of multi-modal cash tickets is simplicity. Only one ticket need be purchased for casual travel on any of the transport modes. Beneficiaries of a single ticket system would be:

- private bus/rail commuters, who already hold a rail weekly ticket, and would gain their bus feeder trips without additional charge within the CityRail zone
- off-peak discretionary travellers, for whom the time saved by not having to buy another ticket is not important

A practical, cash multi-modal ticketing system would require a zone fare system for all transport modes (see section 5.7). Some banding would be required to limit the number of tickets required to cater for the large number of journeys that are possible under integrated ticketing arrangements. Furthermore, multi-modal cash fares require the division of ticketing revenue between operators to be resolved.

As noted earlier, however, zone fares have a number of disadvantages which would become more clearly visible if zone tickets were the only type of tickets available in Sydney.

There are significant complexities involved in establishing a cash multi-modal fare system. These include standardising public transport ticketing, through a zone fare structure, and deciding on how ticketing income is to be divided. Given these complexities, the Tribunal considers that cash multi-modal ticketing is not practical in Sydney at this stage. Priority should therefore be given to an incremental approach to integrating ticketing.

5.6.3 Free transfers

Free transfers can be defined as the ability to move between different services without paying an additional fare. Periodical tickets already provide this facility. For example, a TravelPass allows the user to switch between various bus, train or ferry services without incurring an additional fare. Train cash fares also provide this facility because passengers are able to switch between different trains without paying an additional fare. Cash fares on buses do not allow a transfer facility. This means that a traveller must pay a full cash fare each time a bus is boarded.

Recommendation

The Tribunal recommends that Sydney Buses submits a proposal to introduce a cash fare which allows free transfer between buses at bus interchange points.

5.7 Practical integrated ticketing would require zone fares

Practical integrated ticketing for periodical tickets, multi-ride tickets and cash fares requires zone fares. The zones would aid checking and validating en route. A validator would reject a ticket presented for a journey which was beyond the validity of the ticket, and a ticket checker can could readily recognise the extent of the journey.

Regardless of the system adopted for multi-modal trips, private bus operators will wish to maintain their distance based fares for the majority of trips which are relatively straightforward.

As private bus operators will need to install validators for the \$1 pensioner fare, extension of the TravelPass system to incorporate travel on private buses would be simple. However, if fare integration is to extend to cash fares, as it does in other Australian cities, a zone cash fare structure will be obligatory. At that point, the remaining issue will be whether the two government public transport providers maintain their existing restricted-mode, broadly distance based cash fares for travellers who do not need to change buses, or who require rail-only journeys.

There would be a cost involved in offering distance based cash fares and zone fares, in terms of complexity of hardware and public perception. Each authority would need to judge whether this cost was exceeded by the revenue benefits of having distance based fares available. Convincing private bus owners of the general advantages would be difficult.

Even if a cash zone fare was to be limited to an all-day fare (as suggested by STA), zones would still be needed to set the price for tickets of different distances. A standard “all day intermodal” ticket, set at some average fare, would be of little value to short-trip passengers, but would present a large bonus to those intending to travel very long distances.

Based on the existing private bus fare scale, extension of the TravelPass to private buses would cost approximately \$45m¹³ per annum. As private bus operators could not afford so large a reduction in their revenue, the cost would fall on the Government. The cost of allowing TravelTen ticket to be used on private buses would be \$20m¹⁴ a year.

5.8 Smart cards

A smart card is a magnetically encoded plastic card. The smart card can be credited with pre-paid amounts, like Telstra’s Phonecard and amounts can be added or deducted.

To date, smart cards have not been used extensively in Australia for public transport. However, a trial is about to be launched in the Newcastle area.

¹³ Tribunal estimate.

¹⁴ Tribunal estimate.

Smart cards are not a substitute for ticket integration, but are a convenient way of buying tickets. It would not be acceptable for fares to be deducted from the stored value as travel was taken. Unless the rider had a good knowledge of fare structures, there would be no way of knowing the price of the journey before setting out.

Determining the distance travelled would require tickets to be validated at the beginning and end of the journey, and this would impose significant boarding and bus delay costs.

The alternative is for the value of the journey to be deducted before the journey is taken. This could be done before the commencement of each trip on each mode. This would inhibit the granting of discounts for intermodal journeys and would be a nuisance to passengers. A better option would be for the value of the whole intermodal journey to be deducted before travel commenced. The smart card then would then show successive modes that the through trip had been paid for. Revenue division can be considered later.

5.9 Conclusion

This chapter explained fare integration and the level of fare integration existing within public transport in NSW, where it is already partially integrated. The Tribunal feels that complete integration of this system may not be possible at this stage.

Instead, the Tribunal supports a number of measures which would increase the level of integration in the NSW public transport system. These include the introduction of a cash fare which allowed free transfers between buses at interchange points.

Further initiatives include increasing the level of integration between private buses and CityRail. The Tribunal has recommended extending the Metropass type of ticket to other private bus operators. This will extend the level of integration in Sydney on the basis of fare structures which reflect each transport agency's core business activities. That implies that the DoT and the private buses should set as a priority the introduction of a Brown Metropass ticket type between CityRail and the main private bus networks that feed into the CityRail system.

6 CONCLUSION

This report has summarised the current fare structures of the major public transport operators. It has outlined the goals of fare structures and the different types of fares. Agency proposals for future fare structures have been examined. Lastly, the extent and potential of integrated ticketing has been examined.

In general, the Tribunal supports the broad direction of the fare structure proposals. However, the Tribunal believes that public transport fare structures need to be better framed in a manner consistent with the core business activities of the business.

The Tribunal believes that fare structures should be based upon each agency's core business activity. All other fares should be set in relation to the core product(s). Where commuting is the main business (eg CityRail and Sydney Buses), fare structures should be based on periodical and multi-trip tickets. Where occasional travel is the main business function (eg Sydney Ferries), fare structures should focus on "cash" single and return fares.

The Tribunal does not believe that per CityRail and STA that the appropriate focus is on 'discounts' on periodicals. Rather, the periodical fare ought to be considered as the standard product for CityRail and the multi-trip the standard product for STA, including the joint TravelPass tickets. Premium "cash" fares may need some adjustment where anomalies exist relative to the "core" ticket type. Future fare structure proposals should better reflect this framework.

The Tribunal does not believe that Sydney Ferries should go ahead with its two-zone proposal. The Tribunal believes that this is inconsistent with the medium term direction of Sydney Ferries fare structures. More finely-tuned zones, and an emphasis on "cash" fares (as the core business fare) represent a more appropriate fare structure.

Newcastle Buses proposes replacing the current distance based fare scale with a time based fare structure. Newcastle Buses argues that a time based fare structure will be more attractive because of its relative simplicity, and because it provides easier bus-to-bus transfers. The Tribunal agrees with this proposal, and is eager to see the results of Newcastle Buses' application of a time based fare structure. This should be viewed as a worthwhile experiment which may have application to other parts of the STA (and private) system.

The Tribunal believes that an incremental approach to further integrated ticketing would be beneficial for the NSW public transport system. Complete fare integration requires certain pre-conditions, such as zone fares, multi-modal cash tickets, and the solution of the revenue division issue. As an interim measure, the Tribunal has proposed ways of increasing the level of integration.

In particular, the Tribunal encourages the DoT and the private buses to work on an extension of the Brown Metropass ticket to other private bus networks that feed in to the main CityRail commuter system. Operators should aim to develop a framework which allows free transfers between buses at interchange points.

APPENDIX 1 FARE STRUCTURES IN AUSTRALIA

Introduction

This Appendix outlines the fare structures of public transport operators in Australia, particularly in relation to flat, sectional and zone fare structures. Off-peak fare structures in Australia are also discussed.

Flat

- Adelaide (except for short distance trips).
- Canberra (for single vehicle boarding).

Sectional

- Sydney (sectional system overlaid with zone TravelPass system).
- Tasmania.

Zonal

- Brisbane (transfers not generally permitted).
- Darwin (transfers allowed for onward travel).
- Melbourne (multi-modal time based).
- Perth (multi-modal time based).

Table A1.1 summarises the fare systems adopted by public operators in major Australian cities, and highlights the following:

Off-peak fares

Lower priced off-peak fares are widely available for adult travel available in:

- Adelaide.
- Brisbane (Brisbane Transport and CityTrain).
- Melbourne (rail travel from Zones 2, 3 to CBD only).
- Perth (daily ticket only).
- Sydney (CityRail).
- Tasmania (daily tickets only).

In Canberra, off-peak tickets are available to adult concession groups and seniors only. Off-peak tickets are not available in Sydney (State Transit's bus and ferry services) or Darwin.

Transfers

Subject to a time limit (generally 2 hours), free transfers between services are permitted on zone tickets in Melbourne, Adelaide and Perth. Limited transfers can be made in Brisbane, Sydney (on multi-ride bus tickets) and Darwin. Transfers can be freely made on bus/ferry and bus/ferry/rail periodical tickets (ie TravelPasses) in Sydney. Free transfers are not permitted in Canberra or Tasmania.

An Inquiry into Pricing of Public Passenger Transport Services: Fare Structures

Table A1.1 Summary of key fare system features of Australian public transport operators

Operator/Modes	Basic Structure	Off-Peak Fares	Handling of Transfers	Multi Trip Ticketing	Periodical Ticketing
State Transit, Sydney (bus, ferry)	Bus: Distance based sectional (5 fare bands) Ferry: Route - specific fares Intermodal products (ie 'TravelPasses'):zone based	No	TravelPasses: unlimited transfers permitted. Multi-ride sectional tickets: transfers permitted at designated points only	Bus: 10 trip 'TravelTen', 9%-36% discount Ferry: 10 trip 'FerryTen', 17%-41% discount	Bus: daily ('BusTripper') Bus/ferry: daily ('DayTripper'), weekly Bus/ferry/rail: weekly, quarterly, annual (TravelPass)
CityRail, Sydney (rail)	Distance based fares Multi-modal products (ie 'TravelPasses'): zone-based	'Off-Peak Return' (rail) gives 30%-80% discount off return cash fares	Multi-modal tickets (ie TravelPasses) - allow unlimited transfers in zones defined. Rail Pass - allows unlimited trips between defined stations	No	TravelPass (bus, rail and ferry) - weekly, quarterly, annual Rail Pass (rail only) - weekly Flexipass (rail only) - 28 to 365 days
Brisbane Transport (bus, ferry)	Zonal - 5 concentric zones for bus services (also sectors for cross-corridor services).	'Off-Peak Saver' (bus and ferry): weekdays 9 am to 3:30 pm and after 7 pm, weekends and public holidays. 'Off-peak Roverlink' (bus, ferry and suburban trains): weekdays 9 am to 3 pm and after 7 pm, weekends and public holidays. Group Day Tickets (bus and ferry) ('Group Pass' and 'Family Pass'): weekends and public holidays.	Bus-to-bus transfer permitted only at designated points if both buses travelling in the same direction (excluding 1 zone tickets) Bus-rail and bus-ferry tickets available for some specific transfer movements.	10 trip 'Fare Saver' (bus), gives from cash tickets 16%-25% discount	Bus/ferry - Daily ('Day Rover'), weekly, monthly Bus/ferry (tertiary students) monthly, semester, annual Bus/ferry/rail - daily ('Roverlink').
CityTrain, Brisbane (Rail)	Zonal - 35 'zones' (each consisting of 1 to 6 stations), with about 16 different adult fare levels.	Off-peak return (rail only) - weekdays after 9 am. Weekend return (rail only) - additional 50% discount on off-peak return fares. 'Off-peak Roverlink' (as above).	Zonal tickets valid only for single entry to the system. Bus-rail and bus-ferry tickets available for some specific transfer movements.	No	'Multi-Trip Weekly' - offers unlimited travel between nominated stations for the price of eight single trips. Also weekly, monthly, quarterly, 6 monthly, yearly bus, ferry and suburban train - daily ('Roverlink').
ACTION, Canberra (Bus)	Flat Fare Double fare on 'Commuter Express' services	Day (Off-peak) ticket - adult concession card holders and seniors only (9 am to 4:30 weekdays, all day weekends and Public Holidays)	None pay on every boarding.	10 trip 'Fare Go', gives 30% discount.	Day (sightseeing) ticket, weekly, monthly.

Table A1.1 Summary of key fare system features of Australian public transport operators (continued)

Operator/Modes	Basic Structure	Off-Peak Fares	Handling of Transfers	Multi Trip Ticketing	Periodical Ticketing
The Met Melbourne (bus, rail, tram)	Zonal - 3 concentric zones Limited sectional - 2 section ticket valid in Zone 1 (trams, buses) only.	'Off-peak Saver': valid 9:30 am to 4 pm and after 6 pm weekdays for rail trips from Zone 2 or 3 to CBD plus CBD tram/bus travel. Group Day Ticket ('Group Get-A-Bout'): valid weekends and public holidays.	Zonal tickets permit free transfers within 2 hours.	Zonal (2 hour) tickets - sold in 5 ticket packs at 10% discount. 10 trip 'Short Trip Card' - gives 10 rides for price of 8.	Zonal tickets - Daily, Weekly, Monthly, Annual.
Metro, Tasmania (bus)	Distance based sectional (5 fare bands, 15 sections).	'Explorer Off-peak' (Day-Rover, Family day, 10 days): valid weekdays 9 am to 4:30 pm and after 6 pm, weekends and public holidays.	No transfers permitted on single/10 trip tickets.	10 trip ticket gives 22%-32% discount (adult) and 43%-36% discount (concessions) off cash fares.	Adult: 10 day off-peak Concession student: 10 day off-peak, monthly Concession adult (seniors): 10 day.
TransAdelaide (bus, rail, tram)	Flat Fare ('Zone ticket') Limited sectional - 2 section ticket with no transfers.	9:01am-3 pm weekdays (excluding Public Holidays), offer 18%-41% fare discounts.	Zone tickets permit free transfers within 2 hours.	10 trip 'Multi-Rider', discount of around 14% discount (adult), 38% discount (adult concession) and 38-48% discount (students) off cash fares.	Day ('Daytrip') only.
TransPerth (bus, rail, ferry)	Zonal - 8 concentric zones Limited sectional - 2 section ticket with limited transfers.	Daily ('All Day') - valid from 9 am weekdays, weekends and public holidays. Group Day Ticket ('Daytripper') valid weekends, public holidays and from 9 am on weekdays during school holidays.	Zonal tickets allow free transfer within 2 hours.	10 trip 'Multi-Rider', discount of around 14% off cash tickets.	28 Day Periodical Tickets (any zone denominations).
Darwin (bus)	Zonal - 4 zones.	None	Free transfers permitted at limited points for onward travel only.	10 trip 'Multi-ride' cards - provide 20% discount (adults, children) and 0\$-47% discount (pensioners).	Adults - none Students - weekly, term.

(Source: Travers Morgan, *Fares and Ticketing Policies and Practices: International Review*, 1995, pp 17-18.)

Multi-ride tickets

10 trip multi-ride tickets are available in Sydney (bus and ferry), Brisbane (bus and ferry), Canberra, Tasmania, Adelaide, Perth and Darwin. In Melbourne, a 10 trip ticket is available for 2 section travel within zone 1 only. Multi-ride tickets are not available at all on CityRail services in Sydney or CityTrain services in Brisbane.

Periodical tickets

An extensive range of periodical tickets is available in most cities with the exception of Tasmania (no adult all day periodicals), Adelaide (day ticket only) and Darwin (no periodical tickets). The zones of validity and the relative price levels make periodicals much more attractive in some cities than others.

Off-peak fare structures in Australia

Table A1.2 outlines the off-peak fares by Australian public transport operators.

Table A1.2 Summary of off-peak fares (adults) - Australian public operators

City/Mode	Extent of Off-Peak Discount Tickets	Periods of Validity
Sydney - bus/ferry	• None	
Sydney - rail	• Return cash tickets (30-80% discount) • 'CityHopper' ticket - unlimited days' rail travel in central area	• All except weekday am peak • All except weekday am peak
Brisbane - bus/ferry	• System-wide day ticket (attractive for longer and/or large number of trips)	• All except weekday peaks
Brisbane - rail	• Weekday off-peak return tickets, corresponding to each single cash ticket (c 30% discount) • Weekend return tickets, corresponding to each single cash ticket (about 50% discount off weekday off-peak return)	• Weekdays, except am peak • Weekends and public holidays
Canberra	• None for adults (apply for concession travel only)	
Melbourne	• Off-peak return, for rail trips between Zone 2/3 and CBD	• Weekdays, except peaks
Tasmania	• System-wide day ticket (attractive for longer and/or large number of trips)	• All except weekday peaks
Adelaide	• Full range of off-peak tickets, corresponding to each sectional/zone ticket type (cash and multi-ride) (20-41% discount)	• Weekday interpeak (0900-1500)
Perth	• System-wide day ticket (attractive for longer and/or large number of trips)	• All except weekday AM peak
Darwin	• None	

(Source: Travers Morgan, *Fares and Ticketing Policies and Practices: International Review*, 1995 p 27.)

The table indicates:

- The discounts offered on off-peak tickets by CityRail appear generous in comparison to other transport agencies.
- Brisbane Rail offers two levels of discount. One discount applies during the weekday off-peak, the other, larger, discount applies on weekends.
- There are no off-peak discounts in Canberra and Darwin.

Conclusion

This chapter has provided a summary of key fare system features of Australian public transport operators, including a summary of off-peak fares. There is no standard fare structure for any Australian operator. Fare structures differ because each is set to achieve differing goals, and for systems with different characteristics.

APPENDIX 2 FARE STRUCTURES OVERSEAS

Introduction

This Appendix examines fare structures internationally.

Current international fare structures

Table A2.1 Fare structures adopted internationally

Region	Flat	Sectional	Zonal
Western Europe	16	14	23
North America	36	3	15
Other	8	9	4
Total	60	26	42
%	61%	27%	43%

Source: Table derived from Jane's 1994-95 Urban Transport Systems.

Note: Table based on fare structures for 98 operators. Total adds to over 100%, as some operators adopt more than one fare system.

- 61% had some flat fare component
- 27% had some sectional (distance related) fares
- 43% had some zone fares.

Flat fare systems

An interesting characteristic of 'flat' fare systems is the way in which premium flat fares are charged for express services and long distance services. In some cases this includes the principle of special transfer fares which are less than standard fares. In this way passengers avoid paying the flag-fall element of fares more than once. Generally however, flat fare systems tend to penalise transfer by charging additional fares.

Sectional fare systems

The amount of information about sectional as well as flat fare systems is limited because these systems are generally very simple to operate and understand. Sectional systems are very common in the UK, where the objective of maximising fare revenue is considered paramount. This has tended to result in finely-graduated sectional systems, with a close relationship between fares and distance (the Sydney private operator fare structure is also of this type).

Zone fare systems

Most of the zone fare systems include elements of both sectional and flat fares, so are technically hybrid systems (eg flat fares for urban travel and zone fares for inter-urban travel). A main element of most such systems is the concept of free transfers (within a time limit) and integration of fares between modes. The European systems generally have a heavy emphasis on periodical tickets, rather than multi-trip or cash tickets for transfer (as in Australia). In the Tyne and Wear (UK) honeycomb system, transfers are available on a specific type of cash ticket, the periodical ticket dominated integrated fares.

An Inquiry into Pricing of Public Passenger Transport Services: Fare Structures

Table A2.2 provides an overview of basic fare structure characteristics in various cities.

Table A2.2 Fare systems in other cities

City/Country	Basic Fare System Characteristics	Transfer Facilities
Flat Fare Based Systems		
Bangkok (Thailand)	<ul style="list-style-type: none"> Flat fare (premium fare for newer vehicles and supplements for limited stop, expressway and night services) 	<ul style="list-style-type: none"> Not reported
Barcelona (Spain)	<ul style="list-style-type: none"> Flat fare - common bus and metro multi-ride tickets and passes 	<ul style="list-style-type: none"> No transfers
Berlin (Germany)	<ul style="list-style-type: none"> Single tickets Book of 5 tickets 5 day, 7 day and monthly season tickets 	<ul style="list-style-type: none"> All tickets permit free transfer
Chicago (USA)	<ul style="list-style-type: none"> Peak and off-peak flat fare Exact single fare, token or monthly pass (bus) Exact single fare, token (metro) 	<ul style="list-style-type: none"> Not reported
Cleveland (USA)	<ul style="list-style-type: none"> Flat fare for local bus, express bus, metro Reduced fare on downtown buses Weekly and monthly passes 	<ul style="list-style-type: none"> Two free transfers (bus-to-bus) Free transfers from metro to express bus
Helsinki (Finland)	<ul style="list-style-type: none"> Single trip, 10 trip, and monthly tickets 	<ul style="list-style-type: none"> Not reported
Houston (USA)	<ul style="list-style-type: none"> Three flat fares - for local bus, express services and 'park and ride' Pre-purchased tickets and monthly passes 	<ul style="list-style-type: none"> Not reported
Lyon (France)	<ul style="list-style-type: none"> Flat fare - 3 hour ticket Multi-ride tickets (6 and 20 tickets) and monthly passes 	<ul style="list-style-type: none"> Three free transfers within 1 hour
Madrid (Spain)	<ul style="list-style-type: none"> Single trip, 10 trip, and single evening trip tickets 	<ul style="list-style-type: none"> Special single trip ticket available for transfer
New York (USA)	<ul style="list-style-type: none"> Exact single fare required on every boarding, or rapid transit system tokens used Tokens needed for each entry to rapid transit system gates (can be used as long as remain in system) Higher priced tokens for express buses 	<ul style="list-style-type: none"> No transfers
Ottawa (Canada)	<ul style="list-style-type: none"> Flat fare for single tickets Higher flat fare for long distance routes Periodicals available for all routes off-peak only or local routes all time 	<ul style="list-style-type: none"> Additional fare to transfer to long-distance route but special (lower) fare for transfer
Rome (Italy)	<ul style="list-style-type: none"> Flat fare - 90 minute time limit Multi-ride, day, weekly and monthly tickets 	<ul style="list-style-type: none"> Not reported
St Louis (USA)	<ul style="list-style-type: none"> Flat fare - express settlement Downtown 'fares free' area Exact cash fare, multi ride tickets, passes 	<ul style="list-style-type: none"> Transfer supplement
Toronto (Canada)	<ul style="list-style-type: none"> Single flat fare for bus, metro, tram and LRT Exact cash fare, multi ride tickets and tokens, daily and monthly passes 	<ul style="list-style-type: none"> Free transfers
SECTIONAL FARE BASED SYSTEMS		
Berne (Switzerland)	<ul style="list-style-type: none"> Av section length = 650 metres 3 single and multi-trip ticket types: 1-3, 4-5, 6-19 section 5 monthly periodicals: 1-3, 4-5, 6-9, 10-19, all sections 	<ul style="list-style-type: none"> Not reported
Dublin (Ireland)	<ul style="list-style-type: none"> Av. section = 500-600 metres 4 single trip fares for 1-3/4-7/8-12/all sections 	<ul style="list-style-type: none"> Not reported
Osaka (Japan)	<ul style="list-style-type: none"> Flat bus fares Multi-ride bus tickets, 1 and 3 month passes, monthly off-peak passes Metro-section-based fares (7 sections) Multi-ride metro tickets, 1,3 and 6 month metro tickets and 1,3 and 6 month metro, bus, tram passes 	<ul style="list-style-type: none"> Free bus transfer
Vancouver (Canada)	<ul style="list-style-type: none"> Time and distance based (3 time zones on working days) Exact fare, multi-ride tickets and monthly passes 	<ul style="list-style-type: none"> 90 minute free transfers
ZONE FARE BASED SYSTEMS		
Copenhagen (Denmark)	<ul style="list-style-type: none"> Honeycomb system based on concentric plus radial structure in central area 95 zones, average area 30 sq km (typically 4-5 km long/wide) Short trip 'problems' assisted by 1 and 2 zone fare being the same 	<ul style="list-style-type: none"> All zone tickets permit multi-modal transfer between buses and trains

Table A2.2 Fare systems in other cities (continued)

City/Country	Basic Fare System Characteristics	Transfer Facilities
Frankfurt (Germany)	<ul style="list-style-type: none"> Reduced off-peak single, short distance ticket Day tickets, weekly and monthly passes 	<ul style="list-style-type: none"> Not reported
Hamburg (W Germany)	<ul style="list-style-type: none"> For single tickets: 2 concentric zones, inner (20 km) and outer (40 km); special 2 section trip tickets for short trips For season tickets (periodicals): many zones for periodicals; 6 ticket types: 2, 4, 6, 8, 12 and all zones 	<ul style="list-style-type: none"> Free transfers within 2 hours
Hong Kong (Hong Kong)	<ul style="list-style-type: none"> Mass Transit Railway (MTR): zone with single and stored value tickets Kowloon-Canton Railway (KCR): zone, single and stored value North West Rail (NWR): 5 zones, single tickets, monthly passes 	<ul style="list-style-type: none"> Stored value tickets valid on both MTR and KCR Free transfer from NWR rail to KCR buses
London (UK)	<ul style="list-style-type: none"> 6 zones with different standard fares for bus and metro journeys within each zone or combination of zones Peak surcharge and off-peak short-distance bus fare Range of all mode (bus, metro and rail) and bus only passes 	<ul style="list-style-type: none"> Not reported
Merseyside (UK)	<ul style="list-style-type: none"> Section-based fares for individual operators Reduced maximum off-peak fare Pre-purchase one day (self validating) and zone periodical tickets available 	<ul style="list-style-type: none"> Not reported
Milan (Italy)	<ul style="list-style-type: none"> Flat fare (urban areas) and zone fares (inter-urban) Multi-ride tickets Weekly, monthly and annual passes 	<ul style="list-style-type: none"> Not reported
Munich (Germany)	<ul style="list-style-type: none"> Concentric rings structure Short trip tickets for a range of fare stages which are indicated on maps Minimum zone fare is a 1-2 zone ie. No single zone fare Multi-trip tickets 'strips' can be purchased, 1 strip for each zone (means multi-trips are variable by zones used) Separate (finer) zone system for weekly/monthly periodicals 	<ul style="list-style-type: none"> Free transfer within valid zones
Paris (France)	<ul style="list-style-type: none"> 5 zone concentric First zone fare type is 2 zone ticket Main ticket is periodical 'Carte Orange' (weekly/monthly/annual) Flat fare for Metro Section fares for buses 	<ul style="list-style-type: none"> Free transfer on periodicals (Carte Orange) No transfer on Metro flat fare
Philadelphia (USA)	<ul style="list-style-type: none"> Flat fare bus (city), metro, tramway Zonal fare suburban bus Weekly and monthly bus passes 	<ul style="list-style-type: none"> Not reported
Portland (USA)	<ul style="list-style-type: none"> 3 radial zones Free travel in city centre - 'fareless square' areas 10 trip ticket, day and monthly passes 	<ul style="list-style-type: none"> 1 hour free transfer
Seattle (USA)	<ul style="list-style-type: none"> 2 zones covering Seattle and rest of area respectively Free central area travel, peak surcharge Multi-ride tickets: 3-day, monthly and annual passes and all day passes at weekends 	<ul style="list-style-type: none"> 1 hour free transfers
Tyne and Wear (UK)	<ul style="list-style-type: none"> 40 zone Honeycomb system, zones about 5 km across Sectional fares for local travel, sections 1 km each 5 Rider multi-trip tickets for metro only Main ticket is Travelticket weekly/monthly/annual (this ticket includes photo of holder) Off-peak Travelticket also available 	<ul style="list-style-type: none"> Special 'Transfares' -bus/rail tickets for specific trip types (mostly to/from city) Most transfer trips use periodicals
Washington DC (USA)	<ul style="list-style-type: none"> Rail: distance based, bus: zone-based Peak and off-peak fares One day, two week and 28 day passes (28 days available for rail only) 	<ul style="list-style-type: none"> Free bus-to-bus transfers within 60-90 minutes Rail to bus transfers (additional fare may be payable) No bus to rail transfer

(Source: Jane's Urban Transport Systems, 1994-95.)

Conclusion

There is a wide variety of fare structures in different cities around the world. Many systems incorporate various aspects of flat, sectional and zone fares. No two fare structure systems are the same.

APPENDIX 3 EXAMPLES OF INTEGRATED TRANSPORT SYSTEMS

Introduction

This Appendix examines integrated transport systems in specific Australian and international cities.

London

London has integrated ticketing between the Underground, London Buses and British Rail commuter services for stored value (Travelcard) tickets only. There are no intermodal transfers with cash tickets. With the sale of London Buses subsidiaries, London has now moved to a situation analogous with the prospective system in Sydney, in which inter-modal revenues are divided between subsidised Underground and British Rail systems and privately owned bus companies.

The newly privatised companies in London have two sources of off-bus revenue

1. Travelcard divisions, from cards sold at Underground and British Rail stations.
2. Subsidies for loss-making routes, now paid by London Boroughs.

As the general subsidies are to be phased out by the year 2000, and either eliminated or replaced by competitively-bid contract services, pressure for maintenance of profits will be deflected on to revenue divisions.

Melbourne, Adelaide, Perth and Brisbane

Melbourne has a complete integrated ticketing system, in which virtually all tickets¹⁵ have multi-modal, time based (2 or 3 hours, or all day) validity within large zones. The 900 original private buses in Melbourne have their full operating costs met by the Government, and they pass revenues collected to the Government. A new private operator (Bosnjak) has its own fare scale, but honours Met tickets and bills the Government for the difference between its own fare and the revenue collected for the sale of Met fares.

Adelaide and Perth have universal time based zone fares, available on all modes. Brisbane does not yet have universal integrated ticketing between Queensland Railways and the Brisbane City Council buses, but inter-modal tickets are available for bus feeder operations at some stations.

North American Cities

These have little use for a totally integrated ticketing system, because their bus systems use coin boxes on a single or two zone system, with free timed transfers for those needing to change buses (no ticket is issued for a one-vehicle journey). The

¹⁵ The exceptions are a "train only" season ticket for commuters who prefer to walk to their local station and then walk to work, and a distance based ticket issued by a new private bus operator, but in this case most riders prefer the Met ticket which gives wider availability and a lower price for most trips.

metro systems usually operate with tokens, and the heavy rail commuter systems use stored value limited or unlimited multi-ride tickets, issued at a substantial discount from regular fares. There may be a movement to multi-modal commuter tickets as more sophisticated railway and metro ticketing systems are installed.

A common way to have single-ticket metro and bus riding (ie where entry is by token or coin) without revalidation of a magnetically encoded ticket is to have isolated transfer points within stations, where all people arriving on a bus are given seamless transfer to the metro rail and vice versa.

European cities

No generalisation is possible. They range from a fully integrated ticketing system in Hamburg, where the Verkehrsverbund meets the costs of all modes (which may be under different ownership) and retains all revenues; to systems like Paris, where integrated ticketing is available between the metro and the RER (the longer surface lines which go out beyond the city wall to the suburbs).

Conclusion

There are varying levels of ticketing integration in Australian and international cities. Ticketing integration is a function of the specific public transport characteristics of a particular city, as well as the goals which governments and transport agencies wish to pursue through ticketing policies.