

IN SEARCH OF STANDARDS OF SERVICE FOR URBAN
PUBLIC TRANSPORT

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ABSTRACT: This paper provides a review of the reasons for the development of standards of service and operation for urban public transport, the kinds of standards that can be struck, how they can be quantified and their impact upon a community. It places public transport services in the context of what a community might expect from them and then presents a reasonably comprehensive explanation and summary of those standards proposed for ACTION, Canberra's bus service. Finally it points out areas where research effort would provide communities with a greater understanding of the roles their public transport services play.

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PUBLIC TRANSPORT STANDARDS

INTRODUCTION

The purpose of this paper is to provide a review of the reasons for the development of standards of service and operations for urban public transport, the kinds of standards that can be struck, how they can be quantified and their impact upon the community.

There are three main groups of people within the community who are concerned about the development of such standards, reflecting their different concerns with the nature of the public transport product. The first group is the consumers of urban public transport services whose actions (i.e. by using or not using the public transport services offered) determine the levels of passenger demand and the financial results of the operators who provide the services. The consumers' perceptions of the public transport services available are the feedstock for the behavioural analysis of the second group.

The second group is the evaluators who are concerned to discover what factors influence the actually realised level of passenger demand for urban public transport services. Their work is based on the underlying assumption that most potential users of public transport services possess a number of mode choices from which they may choose one or more based on factors that may be inherent in that mode and factors that may be exogenous. The former include accessibility, reliability, headway, comfort, convenience, etc. The latter include such items as personal income, private car ownership, land use distribution, the purpose of the journey etc. The purpose of the evaluators' activity, ultimately, should be the provision of advice to Governments about how to provide the "best" transport impact from the funds available. There would obviously have to be due allowance made for the competition for funds between different sectors of the Economy.

The third group is the operators who provide the public transport services that the consumers and evaluators examine so closely. Their concern should be the provision of the best range of services using the infrastructure, rollingstock and manpower available. Hence they should have a preoccupation with the productivity of their undertaking on one hand and hopefully the impact or effectiveness of their operations on the other. Productivity or efficiency I take to be a measure of the amount of transport task generated per unit employment. This definition reflects the labour intensive nature of public transport operations. On the other hand effectiveness is a measure of the proportion of the transport task actually utilised by passengers. Measures of both efficiency and effectiveness are currently a review and research topic for the UT3 Study with the current (1978/79) OECD Road Research Program.

This paper will thus review the reasons why standards should be struck, the types of standards that could be considered and what values may be placed upon these standards. The paper draws upon Canberra experience to try to illustrate these. The paper will also suggest a basis for measuring or setting the levels of various standards. It will finally nominate areas of work where the operator should seek guidance or assistance from the evaluator to aid his quest for the most acceptable public transport operations for the community.

WHY STANDARDS

Before examining why there should be standards of service for urban public transport, some statement of where public transport fits into the total of urban transport scene needs to be made.

The most pessimistic situation, apart from outright closure, is that public transport is an insurance policy against the infrequent occurrence when private transport is not available. From the result of the Short Term Transport Planning Study of Canberra, carried out for the National Capital Development Commission (NCDC) in 1975/76 by P. G. Pak Poy and Associates and John Paterson Urban Systems:

- i) on any one day 10-12% of the population used ACTION, Canberra's bus service;
- ii) within any one week 20% of the population used ACTION's services; and
- iii) over a long period of time, up to 60-70% of the population used ACTION's services.

Also within this situation, public transport could be promoted in place of private transport for intensive and predictable passenger movements (e.g. the journey to work or to school) to yield a better overall use of land use resources (e.g. roads, residential and employment areas) if the community accepts the additional public transport operating costs. I cite, as an example, the case of city parking lots especially if these are only a low order temporary use of scarce urban land. The standards that are set to meet these conditions would thus be the minimum sufficient to achieve the desired result.

An intermediate situation, which probably characterises the current state of Australian urban public transport, is that public transport is provided for a number of diverse political, social and transport reasons. In addition to the reasons cited in the pessimistic situation, public transport is touted as an alternative to the more expensive capital works that would make private transport totally feasible, such as catering for the bulk journey to work to large central

PUBLIC TRANSPORT STANDARDS

business districts or areas. But this is not nearly as powerful an argument when one considers that the balance (e.g. 66-81% in Sydney in 1971) of the remaining journey to work is diffused throughout industrial and outlying commercial and retail locations, where the road network can substantially cope, without major infrastructure additions.

Public transport is also seen by Government as a social service providing mobility to transport disadvantaged groups, such as to scholars for their travel to school and for general child and pensioner travel. An insidious feature of such operations is the difficulty of estimating their true costs and value and thus marking government public transport authorities with the stigma of uncontrollable deficits. From an analysis of ACTION's 1976/77 performance in covering the journey to school, after the receipt of an explicit school travel subsidy (on top of scholars fares), between 66% and 75% of costs were covered, depending on the definitions applied within the analysis. However this explicit subsidy, which is unusual in the Australian scene, was intended to cover 100% of the costs attributable to school travel!

Finally, there is the optimistic situation of public transport as a full substitute for private transport, in an attempt to wean Australian cities from their almost complete dependence on private transport. The practical difficulty with such a concept can be illustrated from the results of successive urban transport studies in Australia which point to public transport catering for between 10% (Canberra) and 30% (Sydney) only of the total regional travel. In particular, the Sydney Area Transportation Study estimated that roughly 30% of total urban travel was catered for by public transport in 1971. The proportion has fallen since then, given the decline in urban public transport patronage until 1976/77. However in 1947, 85-90% of the total urban travel was being catered for by public transport resulting in 670 trips per person annually. This is surprisingly similar to the 1970's amount of regional travel of 640 trips per person annually. For public transport to regain its 1940's dominance the trip rate as well as the absolute amount of travel would have to rise since the compact, public transport oriented city of the 1940's had dispersed by the 1970's. A more likely scenario would be that travel demand would be suppressed with an unknown but unwanted amount of social disruption.

Standards, which thus reflect what is feasible to provide or for public transport to perform, offer a measure of the different physical attributes of a particular public transport system to meet the role expected of it. For the operator, a set of standards

WARDROP

will allow him to detect abnormal operations, either too extravagant or too lean. They would thus provide him with the means of establishing a marketing package of public transport. They would also be the basis for the presentation of demands for the funding of infrastructure and rollingstock or operational subsidies, provided they carried the weight of community acceptance.

Both for the consumer and the evaluator, standards provide a means of describing the qualities of individual public transport systems in a consistent manner. Such standards would be available for the promotion of the revitalisation of old networks and the planning of new ones. They would provide the active consumer with a set of targets to press for in the reform of existing operations. They would also make the basis of comparison between alternative public transport systems more consistent. The curse of recent public transport evaluations in Australia has been the promotion of rival modes without proper regard for the task to be handled. The Parramatta Region Public Transport Study attempted to describe the infrastructure and kinds of operations for rail, tram and bus systems at different levels of patronage in catchment areas of different characteristics around Parramatta. One of the Study's findings was the pragmatic conclusion that each mode performed best in different corridors and that no one mode predominated. This is a situation where the evaluator is trying to make the best of an essentially "apples and pears" comparison. The Parramatta work was preceded by a more general and less precise document: *The Characteristics of Urban Transportation Systems* which was published by UMTA for similar evaluations in the USA.

Standards should allow the community to relate the costs of providing a particular level of service to the transport task required. One such device is London Transport's costs and passenger kilometres trade-off as a means of determining the threshold level of service, given the budget for a year's operations. However, one has to acknowledge that the minimum standards of service will vary with the land use that public transport is expected to serve, and will only be exceeded where the traffic warrants. The community, (or its proxy the Treasury) then, has the opportunity to accept, modify or reject the public transport service offered, knowing better the consequences, as outlined by the Toronto Transit Commission in its recent Standards work. It is thus incumbent upon the operator to identify his costs and revenues with respect to his chosen level of service by:

- i) individual route or discrete group of routes;

PUBLIC TRANSPORT STANDARDS

- ii) service strata, e.g. basic, off-peak balance, commuter peak, school peak; and
- iii) day of operations, e.g. weekdays, Saturdays and Sundays and public holidays.

Studies such as the Bradford Bus Study, the Adelaide Bus Costing Study and my own work in Canberra have contributed to this task.

WHAT STANDARDS

The standards of service for urban public transport should be related to a set of objectives to which an operator should adhere. The set of objectives thus reflects qualitatively the way in which an operator should provide public transport services while the actual standards of service present quantitatively how this could be achieved. In Canberra, ACTION's objectives are:

- i) to provide efficient, effective and reliable public transport services within metropolitan Canberra, commensurate with the DCT/NCDC Agreed Transport Policy and Government imposed resource constraints;
- ii) to meet as many as possible of the Canberra community's diverse public transport demands, including its Public Service Obligations (PSO) within resource constraints;
- iii) to market an effective public transport service to maximise the use of the available resources;
- iv) to be cost and resource effective in both its capital investment and its operating expenditure;
- v) to operate within Government employment policies and maintain harmonious industrial relations at all levels of employment; and
- vi) to promote and sustain ACTION's progressive and sound public standing within the Canberra community.

There are alternative ways of stating some of these objectives. For example, as alternatives to ii) and iii), London Transport proposes the maximisation of public transport passenger kilometres of travel subject to a minimum amount of travel return per unit expenditure, as determined from their annual budget subsidy. Moreover it becomes clear from recent overseas experience, in Britain and Europe especially, that operators should explicitly identify their PSO's so that the community is better able to assess the return on its subsidisation of public transport operations.

WARDROP

Of course, the operator's objectives should be an honest statement of how he proposes to provide public transport. Also it is necessary for the community to understand them so that discussions about the actual standards of service can then be conducted rationally.

The following standards relate to the operation of ACTION's bus services in Canberra and are offered as reasonably comprehensive examples for discussion. They are divided into four distinct groups:

- i) route planning;
- ii) bus operations;
- iii) passenger comfort; and
- iv) passenger information.

Route Planning

All ACTION's bus routes should be accessible to the majority of Canberra's residents and visitors. There should be a Feeder or Inter-suburban bus route within 400 metres of 95% of residents within Canberra. There should be a bus route within 400 metres of 85% of Canberra's employment opportunities. There should be a bus route within 400 metres of 85% of the major retail and recreation facilities and tourist attractions within Canberra.

For at least 95% of all passenger journeys the point to point travel distances using ACTION's bus routes should be no greater than 20% longer than for the comparable journey by private vehicle, irrespective of the number of routes used to complete the journey.

There will be a hierarchy of ACTION's bus routes to meet both the need for community accessibility and the need for ACTION to operate efficiently as a result of Canberra's urban layout. Routes will be arranged for Linehaul/Feeder operation to concentrate patronage from the relatively sparse residential catchments within Canberra (14-22 persons/ha in 1978 compared to the average 1971 gross residential density of 48.9 persons/ha in Sydney) to offer a wide range of destinations out of a number of selected transfer locations. Feeder routes within a town will operate through suburbs to the Interchange in that Town Centre. Inter-suburban routes (functionally similar to Feeder routes) will operate through suburbs linking adjacent Interchanges or Towns. Intertown routes will connect Town Centres as directly as is possible on the existing arterial road system.

Feeder and intersuburban routes will be sufficiently short, allowing for achievable travel speeds, so that point to point travel times should be no greater than

PUBLIC TRANSPORT STANDARDS

50-70% longer than for comparable journeys by private car, irrespective of the number of routes used to complete the journey, for at least 80% of all passenger journeys. Route length must be a function of the normal variations expected in travel time along that route. The more dependable and less susceptible to traffic congestion the route, the longer it may be. ACTION's aim is that excessive route length does not lead to the deployment of additional buses to compensate for the effect of congestion. This feature has been detected in bus operation studies in Adelaide, Bristol and London. Currently the average Feeder route distances are 4.9-12.0 km, Inter-suburban 14.1-15.1 km and Intertown 22.4 km.

An Interchange will be the focus for all Feeder and Inter-suburban routes, which ply within a Town (typically 10-25 routes), to meet and coordinate with Intertown routes. Interchanges will be located in Town Centres adjacent to commercial and retail facilities to maximise the attractiveness of Feeder and Inter-suburban routes. Because transferring at Interchanges between routes is mandatory for on-travel, Interchanges will be placed at least eight kilometres apart on the most direct route between Town Centres to provide a sufficient travel time incentive for passengers to offset the inconvenience of having to transfer. This distance is a function of the speed differential between Feeder/Inter-suburban routes and Intertown routes and the degree of directness of the resulting network.

An Exchange will be the focus of some of the Feeder and Inter-suburban routes within a Town to facilitate optional transferring between routes. A number of Exchanges may be located within a Town. This is to provide opportunities for more direct travel within that Town than through the adjacent Interchange and to allow flexibility in route planning without having to necessarily introduce additional routes. Exchanges should be located at least four kilometres apart from each other and from the nearest Interchange. Exchanges should permit at least a five minute reduction in total travel time (including transferring between routes) over the shortest alternative bus travel time.

Research work is being carried out by Franz Salzborn, at Adelaide University, into the feasibility of constructing bus networks, using Interchange and Exchanges, which permit the application of ACTION's transfer time and travel time standards. He has established mathematical conditions under which feasible networks, based on Interchanges and differential Feeder, Inter-suburban and Intertown headways, may be constructed. He is now attempting to generalise these conditions to cover a limited number of Exchanges and passenger demand sharing between successive arrivals and departures of Intertown Services at Interchanges.

WARDROP

The combination of the route hierarchy and the placement of Interchanges and Exchanges must permit region-wide travel requiring:

- i) no transfers between routes when travelling from a suburb to the adjacent Town Centre or when travelling from a Town Centre to another Town Centre;
- ii) a maximum of one transfer between routes when travelling from a suburb to another suburb within the same Town or when travelling from a suburb to a Town Centre elsewhere; and
- iii) A maximum of two transfers between routes for travel anywhere within Canberra.

Networks such as are proposed here are being implemented in Edmonton and Vancouver in Canada.

Bus Operations

Bus stop spacing is dependent on the density of residential, employment and recreation development of the area served by a bus route. For Feeder and Inter-suburban routes, bus stops should be spaced generally between 400 and 600 metres apart. The actual spacing would depend upon the location of intra-suburban walkways and the location of shops, schools, employment centres and recreation facilities. Intertown routes, except within Town Centres, should have stops at least two to four kilometres apart, depending upon the location of major intervening employment locations.

Buses will travel at all times as close as possible to the ruling speed limits consistent with passenger demand and vehicle performance. In particular the maximum gradient of any route should not exceed 6-8%. Services on Feeder and Inter-suburban routes should run at block speeds of at least 25 to 30 km/h between terminus and Interchange. These routes run mainly on distributor roads (minimum carriageway width of seven metres) in suburban areas subject to 60 km/h speed limits (reducing to 20 km/h at flagged school crossings). Services on Intertown routes should run at block speeds of at least 40 to 45 km/h between Interchanges, comparable to the speeds attainable by the suburban trains, in all-stations operations, in Sydney with an average station spacing of 1.5-2.0 km. These routes generally operate on arterials and on some exclusive roadway and are subject to 60 to 80 km/h speed limits. Table 1 summarises ACTION's block speeds.

PUBLIC TRANSPORT STANDARDS

TABLE 1: ACTION's Block Speeds and their Influencing Factors

Type of Service	Route Length (km)	Stop Spacing (km)	Routing Speed Limit (km/h)	Block Speeds (km/h) by Terrain	
				Level	Hilly
Feeder	5-12	0.4-0.6	20-60	25-35	20-25
Inter-suburban	14-15				
Intertown	20+	2.0-4.0	60-80	45-50	40-45

Where travel speeds deteriorate more than 10% from these target speeds due to general traffic congestion, provision should be made for bus priority measures and/or facilities to reinstate these overall desirable speeds irrespective of the type of route. It is expected that there would be variations in running times depending upon the amount of passenger traffic offering and the general vehicular traffic flow, through which a route is to operate, and these should be explicitly allowed for within the timetable as studies have indicated in Britain and recently in Adelaide. However no service should ever run more than two minutes late on arrival at an Interchange or an Exchange, in order that target transfer times are always met. All departures from Interchanges and termini should be in accord with the timetable.

Target transfer times at Interchanges and Exchanges must be achieved if ACTION is to guarantee an attractive Linehaul/Feeder service. At least two minutes, but no longer than five minutes, should be allowed for passengers to transfer between any two routes at Interchanges and Exchanges. Intertown services should not dwell longer than three minutes at intermediate Interchanges while co-ordinating with Feeder and Inter-suburban services. Dwell times at Exchanges should not exceed one minute, depending on the number of passengers alighting and boarding.

ACTION's experience, as recorded in its 1976, 1977 and 1978 Interchange Surveys, has indicated that a well co-ordinated Linehaul/Feeder operation using Interchanges substantially increases patronage ahead of growth in population and employment. There was a 10-20% increase in patronage from 1976, after the introduction of fully co-ordinated services in early 1977, compared to a 2.5% increase in population and a 1.4% decrease in employment. There was a further 5-10% increase in patronage over the 12 months prior to the 1978 survey, compared to a 3.4% increase in population and a 1.7% increase in employment. This phenomenon is at variance with conventional transport economic theory which implies that passenger transfers carry heavy disbenefits and thus should be avoided in the planning of public transport services.

WARDROP

The headways of services on all routes should depend on the need to provide a minimum level of access to and from residential areas. This is an area where research work would be appreciated by operators. From Canberra experience for example, for Feeder and Inter-suburban routes, 30 minute headways in residential areas during the weekday and off-peak and Saturday mornings has been found sufficient. Headways could be reduced to 60 minutes during very light conditions and strengthened to 15 minutes during AM, PM and even midday commuter peaks (or shorter if the passenger demand exists). Intertown services should operate on headways no longer than 15 minutes, strengthening to shorter headways as the travel demand increases. Table 2 gives a full table of headways for all types of services.

TABLE 2: ACTION's Headways by Type of Service, Day of Week and Time of Day

Day of Week - Time of Day	Headways (min) by Type of Service		
	Feeder	Inter-suburban	Inter-Town
Weekday			
Start of business to 0730	30-60	30-60	15
AM peak, 0730-0900	15-30	15-30	7/8
Off peak, 0900-1600	30	15-30	15
PM peak, 1600-1800	15-30	15-30	7/8
Post peak, 1800-1930	30	30	15
1930 to close of business	60	60	15
Saturdays			
Start of business to 0730	60	60	15
AM shopping, 0730-1300	30-60	30-60	15
1300 to close of business	60	60	15
Sundays			
All day, 0930-1900	60	60	15

Feeder and Inter-suburban routes operating along common roads or within the immediate vicinity of each other (say no more than 800-1000 metres apart) should be arranged to alternate so as to effectively halve headways and benefit passengers choosing to use different services. As far as possible, bus and passenger arrivals and departures should be uniformly distributed between successive time slots at Interchanges to even out the passenger loadings to and from Intertown services and to make more effective use of vehicles and manpower.

PUBLIC TRANSPORT STANDARDS

Passenger Comfort

All bus stops should be provided with basic facilities comprising a bus stop sign, a concrete pad and a path connection to adjacent residential, employment or shopping areas. Furthermore at least 80% of all passengers waiting for Feeder and Inter-suburban services should be provided with a seat and shelter. Priority of provision of shelters should be given to:

- (i) passengers travelling inbound to Interchanges;
- (ii) passengers waiting at employment and shopping centres and recreation facilities; and
- (iii) passengers waiting at bus stops in exposed areas.

All passengers transferring between routes at Interchanges and Exchanges should be sheltered from the weather. Transferring between routes at Interchanges should be entirely under cover. All wayside shelters should be cleaned weekly, while Interchanges and Exchanges should be cleaned daily.

On board ACTION's vehicles, at least 95% of all passengers on Feeder and Inter-suburban services should be seated over the whole day. At least 90% of all adult passengers on Intertown services during the weekday morning and afternoon peak periods (0700 - 0900 and 1600 - 1800) and 75% of school children on school-only services should be seated. At all other times all passengers on Intertown services should be seated.

ACTION's vehicles should be equipped and operated to provide levels of lighting, ventilation, heating and noise suppression in accordance with the Australian Standard Urban Bus specifications. ACTION's vehicles should be maintained to a high standard of cleanliness and good repair. They should be swept out after completion of every trip. They should be washed externally and thoroughly swept daily and dusted and wiped internally monthly. They should be cleaned thoroughly quarterly. They should not be issued to traffic while exhibiting interior or exterior body damage, including that to upholstery and internal fittings. All buses should be thoroughly examined and road tested quarterly for body work deterioration. Special attention should be paid to loose panels and grab rails, door and window rattles. Buses showing obvious deterioration in livery should be scheduled for repainting.

WARDROP

Passenger Information

There should be a hierarchy of the means of informing ACTION's prospective passengers of the bus services available. They should accommodate the situation that ACTION offers its services to four different types of passengers:

- (i) the regular traveller on his normal route;
- (ii) the regular traveller elsewhere on the system;
- (iii) the infrequent traveller who is a Canberra resident; and
- (iv) the visitor who would be quite unfamiliar with the system.

Firstly there are the various means by which information may be made available concerning ACTION's operations. Then there are the details of these forms, drawn largely from local and interstate experience. Finally, general observations on how to disseminate information are considered.

Availability The first point of contact of the travelling public with ACTION's services is usually at its suburban bus stops. The ultimate form should be a uniquely numbered (along a particular route) named and signposted bus stop (with an ACTION logo) visible but not needlessly intrusive in a residential backdrop, normally provided with a suitable timetable, locality map and general instructions on how to use ACTION's services. The numbering of bus stops along routes in ascending order outbound from an inner Interchange offers both a sense of direction to the infrequent traveller and an indication of the presence of a bus route in otherwise anonymous surroundings. Bus routes do not have the advantage of tram tracks or a railway right-of-way to indicate their presence.

There is a hierarchy of bus stops, ranging from the suburban wayside stop, through Exchanges (where there are minor confluences of routes) to Interchanges (which are major confluences of routes and thus are formal transfer locations with passenger and operating facilities). At Interchanges there is a need to direct passengers within their confines to particular entrances and exits and to individual platform bays assigned to given routes. Interchanges will always be major sources of information for passengers.

PUBLIC TRANSPORT STANDARDS

Reassurance information is needed on ACTION's vehicles so that intending passengers are able to carry out their chosen journey. Thus route numbers and suitably informative route names must always be displayed at the front and side of a bus. Supplementary information should also be supplied where confusion might be possible, for example when there are variations within a given route. Internally, buses should display a suitable schematic diagram of the whole of ACTION's network, showing timing points, Transfers and Interchanges. The limited space within a bus means that such a diagram will be geographically distorted, but it should still retain routes in their correct relationship to each other and a semblance of the true orientation as, for example, in the Public Transport Commission (PTC) of NSW in-train suburban route diagram.

Forms There are two equally important means of informing intending ACTION passengers about its services: maps and timetables. Both need to vary in arrangement according to use. At the very least, a map, in pocket form, showing ACTION's colour coded routes superimposed on Canberra's street network must be available. Poster types, both of the map and suitable schematic diagrams should be available for display in public places and inside buses (possibly to fit above the windows, in place of advertising) colour coded to show the relationship between routes, their hierarchy and Interchange and Exchange opportunities and individual timing points. Locality maps or diagrams should also be prepared to accompany individual route timetables or bus stop timetables. At the very least, timing points on a route or group of routes superimposed on the local street network should be shown as, for example, on the Melbourne and Metropolitan Tramways Board (M & MTB) at-stop map.

Timetables may be produced in three different forms, depending on the use that may be made of them. There must, at the very least, be pocket-sized timetables for individual routes showing the passing times at selected timing points. Timing points should be important or prominent locations or features, generally no closer than three minutes travel time apart and no further than ten minutes. Exceptions should be made according to the importance of the feature, for example, although there are timing points at the Treasury/National Library and Barton (three minutes apart), Parliament House, the only intervening stop should also be shown. Pocket timetables should preferably be presented with times within a trip running vertically from top to bottom in the direction of travel.

To complement individual route timetables, there should be consolidated timetables for affinity groups of routes, for example, the Belconnen Feeder routes, in a vertical format like suburban railway timetables. They

WARDROP

should be available as posters, to be accompanied by suitable route maps for display in public places, including Interchanges and Exchanges. Such timetables are intended to show clearly all connection possibilities between individual services. They may also be produced as booklets covering all ACTION's services for use by regular travellers.

The third form of timetable would be suitable for display at bus stops to show the passage times of all routes serving a particular bus stop. This passage timetable should be in the form of a matrix of times when individual routes pass a bus stop. For bus stops between timing points, these times should be pro-rated and rounded down. It may be preferable that all routes serving a particular bus stop be consolidated into a single matrix, so that prospective passengers can see at a glance all services passing that stop at a given time. It should be complemented by a suitable locality map. Initially, passage timetables should be displayed at every inbound (to an Interchange) bus stop on Feeder routes, and at all Inter-suburban and Intertown bus stops outside Interchanges.

Signposting This is necessary at Interchanges and Exchanges to adequately direct passengers to and from entrances and exits and to the correct platform bays. Ideally platform bays should be dedicated to particular route(s) for passenger convenience. This is not absolutely necessary at Exchanges because of their generally small sites and the fact that buses using them would operate first in/first out. The sharing of platform bays may be necessary for economy of space within Interchanges but this should be arranged to be consistent with operating feasibility and passenger convenience.

General Measures All ACTION's publications should be available free to inform Canberra's residents and visitors about:

- (i) the extent of ACTION's services, including maps and timetables;
- (ii) how to use ACTION's services;
- (iii) the payment of fares; and
- (iv) ACTION's objectives and operating principles.

Such publications should be available from all agents (ie businesses which currently sell ACTION's off-vehicle tickets, mainly newsagents) in Canberra, at Interchanges, the City Information Centre, the ACT Tourist Bureau, Canberra Airport, Canberra Railway Station, airline and coach terminals, at all hotels and motels, at shopping

PUBLIC TRANSPORT STANDARDS

centres, all schools and other appropriate public places. Organisers of Conferences and gatherings should also be provided with such information to promote use of ACTION's services.

There should be press, radio and TV advertising appropriate for the occasion. Such publicity would be used to inform Canberra's residents and visitors of all changes to ACTION's operations and to maintain ACTION's public standing. Media notification of changes to individual route and consolidated timetables (e.g. changes to timings or to services etc) must pre-date actual changes. Individual and consolidated timetables and maps and diagrams should be available at least one week prior to significant service changes (e.g. involving more than two routes) and suitably advertised. Passage timetables, as well as other bus stop information (on blades, pegs or posted) should all be revised no later than one week after the introduction of changes.

A telephone information service should at least be available on weekdays to the general public, during 0700 to 1900 since this period covers an estimated 90% of weekday travel. It would be preferable, to provide this service from start to close of business on every day of operation. The availability of a telephone information service should not preclude any of the range of passenger information measures mentioned above.

Table 3 summarises the scope of passenger information measures.

HOW AND WHEN STANDARDS MAY BE USED

Practical Effect of Standards

Underlying this review of the development of standards of service for urban public transport is the assumption that an operator's existing resources, such as infrastructure, rollingstock and manpower, should be fully exploited before changes should be sought. The standards should map out the boundaries of the capabilities of a particular kind of operation or mode of travel. If the travel demand exceeds these boundaries then new kinds of operations or more suitable modes should be sought, always with a view to returning to the recipient community the best social, if not financial, benefits.

There would always be some interplay between different services provided by an operator under a common standards' umbrella. The aim of establishing and then adhering to a set of standards is that a predictable and co-ordinated service is offered to a community. Within a rigid set of standards the consumer would always experience localised under or over provision of services, especially