

Working Paper

Tram/LRV Productivity Improvement Targets

Corporate Development & Information Technology Division

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The Industry Commission has released PTC specific Productivity Improvement Targets (based on research by Travers Morgan Consultants). The targets relate to freight and urban/non-urban passenger rail operations.

Tram/LRV Productivity Improvement Targets were not addressed in the research and are (apparently) not being actively investigated by Australian bodies other than the PTC.

The American Public Transport Association has released comparative data for US and Canadian public transport systems, including Tram/Trolley/LRV operators which forms the basis of the information below. Additional information has been drawn from "Jane's Urban Transport Systems 1990". PTC information has been obtained from the 1991 Annual Report and the CD&IT Business Planning "Detail Business Segment Cost - Document 3".

The information derived should be considered a guide only, given the differences in the systems under review and that the data relied upon comes from two sources which may use different definitions for service components.

Tram systems in Toronto, Pittsburgh and Philadelphia are considered to be comparable in a broad sense with Melbourne, though direct comparisons are extremely difficult, given the differing populations, numbers of routes and vehicle characteristics. Attached as Appendix 1 is a comparison of system information - including other networks significantly smaller than Melbourne's (these smaller systems have not been included in deriving average figures).

Respective cost recoveries are:

	Toronto	Pittsb.	Philadel.	Melb.	Average Excl.PTC
LRV Rev.					
\$US*	38723468	5061744	31511791	46816000	N/Applic
LRV Exp.					
\$US	66364000	23503604	46592213	130112000	N/Applic
Cost					
Recov.%	58.35	21.54	67.63	35.98	49.17

Note : * = derived from total revenue - based on proportion
LRV trips represent of total unlinked passenger
journeys.

The cost recovery achieved by the PTC is only approximately half of the best practice for a comparable system (i.e. San Diego achieves 95.31%, but operates only 50 vehicles on 2 routes comprising 53.4 kms.). Philadelphia is the system closest in size to Melbourne, though its network and vehicle fleet is only approximately half the size.

Comparative productivity measures are as follows:

	Toronto	Pittsb.	Philadel.	Melb.	Average Excl.PTC
Psgr.Jrns.	79147000	9044143	46593664	105860000	N/Applic
No.Empl.	1324#	481.4	1356.5	3387*	N/Applic
No. Active Vehicles	300	70	236	633	N/Applic
Reven.\$US**	38723468	5061744	31511791	46816000	N/Applic
Psgr.Jrns. /Employee	59,778	18,787	34,348	31,254	37,637
Rev./Empl. (\$US)	29,247	10,514	23,230	13,822	20,997
Active Veh. /Route Km.	4.05	0.99	1.8	1.85	2.28

= derived by dividing TTC total LRV staff costs by the average cost of bus and trolley bus staff (i.e. \$US33857) in BC Transit.

* = 2977 Tram Ops, Admin. & Mtce. staff and 410 Pass. Div. & Corporate staff attributable to tram operations.

** = Exchange rate of \$1US=\$0.76AUS.

The best practice in passenger journeys/employee occurs in Toronto, and the PTC must improve this element of productivity by 91.3%.

Revenue/employee must be improved by 111.6% to the match best practice in Toronto.

The density of vehicles on the PTC network corresponds with that in Philadelphia, but is only half that in Toronto.

The comparative costs of system operations (i.e. in \$US) are:

		Toronto	Pittsb.	Philadel.	Melb.	Average Excl.PTC
Vehic.	\$US	31973000	6564835	20403519	71905495	
Ops.	%	48.2	27.9	43.8	55.3	39.9
Vehic.	\$US	17795000	4644898	10953820	18810399	
Mtce.	%	26.8	19.8	23.5	14.5	23.3
Non-Ve.	\$US	10263000	9143214	6098143	10527062	
Mtce.	%	15.5	38.9	13.1	8.1	22.5
Gen.	\$US	6333000	3150657	9136731	28853662	
Admin.	%	9.5	13.4	19.6	22.2	14.1
Op.Cost/Veh.		106576	93783	71843	113594	90734
Mtce.Cost/Veh.		59316	66355	21472	29716	49047
Non-Veh.Mtce. Cost/Track Km.		47823	91615	22223	22990	53887
Gen.Admin. Cost/Veh.		21110	45009	32171	45582	32763

Note : Excludes Depreciation and Interest

It is worthy of note that the PTC expends a larger proportion of funds on vehicle operations than any of the other systems. It is also notable that PTC spends a considerably smaller proportion of funds on vehicle and non-vehicle maintenance than the other systems (i.e. less than 2/3 of the former and a little more than 1/3 for the latter). This strongly suggests that the tram system has been starved of resources for maintenance over recent years.

This is borne out by the relative underfunding of the tram network, compared to trains. Boardings for trams and metropolitan trains were 105.8 and 94.5 million respectively in 1989/'90, yet capital funding for trams is only approx. 70% of that for trains in 1991/'92, i.e. \$63m. compared to \$88m.

Vehicle operating costs/vehicle are the highest in Melbourne (though only marginally more than Toronto), but in order to meet the best practice indicated in Philadelphia, productivity would have to improve by approximately 36%.

It may not be appropriate to aim to achieve the lowest costs for maintenance/vehicle, given that such expenditure may reflect resource starvation in particular systems. It may be more appropriate to aim for the average value of maintenance, meaning that the PTC must increase productivity by 65%.

It would be inappropriate to conclude that the PTC is operating near best practice for non-vehicle maintenance/track kilometre, as the above figure could reflect resource starvation or unusually high levels of expenditure to rehabilitate the systems in Toronto and Pittsburgh (e.g. the mountainous topography in Pittsburgh may explain a proportion of the very high cost on this system). The considerably greater size of the Melbourne network however, should provide significant economies of scale. It is assumed however, that productivity in non-vehicle maintenance could be improved by at least 10%.

General administrative costs/vehicle are lowest in Toronto and PTC must reduce its costs in this area by approximately 54% if it is to achieve this best practice.