

Road / Transit Equity

Jack Mallinckrodt
AJM Engineering
April 5, 2001

SUMMARY: *The planned allocation of future OCTA resources between road and transit is vastly out of proportion to rational, quantifiable measures of balance, equity need, benefit, and cost effectiveness.*

Balance and Equity are stated as important OCTA goals. But little if any thought seems to have been given to definition or measure of these terms. This paper suggests several measurable factors that should be taken into account in such considerations, summarized in the following comments and in Table 1 following.

Equity -- Person-Trips Served: The Orange County road system serves 46 times as many ("unlinked") person "trips" as does transit, (9.3 M person-trips/day vs. 0.20 M person-trips/day). On the basis of individual equity, it could be argued that expenditures should be in a near corresponding ratio, 46 times more for roads than transit.

Balance -- Volume of Transport Served: An average auto trip is several times larger than an unlinked transit trip. Measured in person-miles, Orange County roads and privately owned vehicles (POV) provide 135 times as much transportation as transit¹

Need -- Level-of-Service: We believe there is a social need for an *adequate* mass transit system for the truly transit dependent minority. How does the *adequacy* or level-of-service of our transit system compare with that of our road system that serves the 98% or so majority?

In terms of Level-Of-Service (LOS), on a national basis, the Orange County bus system ranks at the 24th percentile², roughly equivalent to a letter grade of "C". By contrast our roads system is near worst in the nation after only Los Angeles, Washington DC, and Miami, ranking at the 5th percentile³, a flunking grade of "F".

Our roads system is in far greater *need* of help than our transit system. We may aspire to better transit service but we don't literally *need* it, nearly so much as we do more road capacity.

Cost of Inadequate Road Capacity: Inadequate road capacity means congestion lost time, and time is money. The present cost for Orange County is estimated as over \$4 billion per year⁴ a direct result of our inadequate road system capacity. This is a substantial damper on the Orange County economy.

There is also surely some social cost of inadequate transit capacity, but in tangible terms, it is nowhere near comparable to the cost of road congestion due to inadequate road capacity.

Quality of Life -- Decongestion. The Orange County Poll has consistently found that congestion is among the most serious concerns of residents. Any addition of capacity, road or transit will reduce congestion. But the 1997 OCTA MIS found that dollar for dollar, roads would provide 18 times as much freeway decongestion and 7 times as much arterial decongestion as light rail.

Affordability Given limited government funding for transportation, we should be buying the most capacity possible per affordable dollar. Everyone would benefit thereby. Real, usable, road capacity is far more affordable than transit capacity.

In terms of net government cost (that is, subsidy, not taking into account user fees), dollar for dollar, using Orange County actual experience numbers, we can buy 14 times as much capacity with roads as transit. In terms of *net* cost the ratio is effective infinite since road and auto user fees much more than pay for all expenditures on roads nationally⁵.

Environmental Benefits. OCTA's own 1996 MIS study shows that dollar for dollar we can buy twice as much reduction of CO emissions and 1.7 times more reduction of energy consumption with roads than transit. If we compare roads with the Centerline Light Rail system, the figures are far more unbalanced 5.6 times as much reduction of CO emissions and 4.3 times as much reduction of energy consumption with roads as compared to light rail.

Summary of Benefits. Summarizing the above factors, every measure we have been able to devise of persons benefited, amount of transportation served, need, level-of-service, environmental benefit, and affordability, favor investment in roads over transit by ratios of from 2 to 200 times.

Expenditures. Planned expenditures, however, are in *the opposite ratio*. According to the OCTA "Long Range Financial Plan, 1999" (latest version) projected future expenditures, 2000 through 2018 allocate 84% of projected available funding to transit, only 16% to roads. (\$7.2 billion transit vs. \$1.4 billion roads)

The planned allocation of OCTA resources between road and transit is vastly out of proportion to rational, quantifiable measures of balance, equity, and effectiveness.

Table 1. Measures of Benefit, Need & Effectiveness, vs Expenditures					
Item	Units	Roads	Transit	Ratio	Favoring
Persons served	M-ps-	13.7	0.2	46.0	Roads
Travel Volume Supported	M-ps-mi/day	86.6	0.7	133.0	Roads
Present Level of Service	% ile	4.9	24.4	5.0	Roads
Cost of Capacity Shortfall	\$B-/yr	3.3	?	»1.0	Roads
Benefit/Cost (OCTA MIS)					
Travel Time Saving/\$	%/100M\$/yr	6.0	4.3	1.4	Roads
Fwy Decongestion	%/100M\$/yr	17.7	0.0	Inf	Roads
Arterial Decongestion	%/100M\$/yr	7.0	2.4	2.9	Roads
CO Emissions	%/100M\$/yr	5.6	4.3	1.3	Roads
Energy Consumption.	%/100M\$/yr	4.2	3.6	1.2	Roads
Total Benefit/Cost	%/100M\$/yr	8.1	2.9	2.8	Roads
Cost Effectiveness	ps-mi/\$	22.8	1.6	14.4	Roads
20 yr Planned Expenditure	1\$ B	1.4	7.0	5.0	Transit

ENDNOTES

¹ Bus 0.55, Metro, 0.10, Roads 86.6 million ps-mi/day, Fast Forward 1998, NTDB, 1998, NTSP, 1995, Road/Transit = 135

² The LOS index for bus (which constitutes over 95% of OC transit) is the (Number of Vehicle Miles) per (Passenger Mile), directly proportional to bus and route service increases or its inverse, the Average Vehicle Occupancy (AVO) a nearly direct indicator of Standing-Room-Only and Pass-by incidents. Its components, (annual person miles) and (annual vehicle revenue miles), are both obtainable for all agencies from the DOT National Transit Database, NTDB.

³ Based on the Texas Transportation Institute Urban Congestion Index.

⁴ Based on TTI 96 data, OCTA Fast Forward roads inventory, current congestion index of 1.36, and value of time \$9.64 per hour

⁵ See <www.urbantransport.org/hwysub.pdf>