

## OC Transport - Chapter 3

### The 1997 OCTA Major Investment Study

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April 16, 2006

From 1995 through 1997, OCTA , with contractor Parsons-Brinkerhof, performed a “Major Investment Study” (now called “Alternatives Study”) of cost and performance of several major transportation alternatives for the county “Central Corridor” extending roughly 28 miles from Irvine to Fullerton [Ref 1].

Six build alternatives were identified and analyzed:.

1. Bus 1. A 49% bus service expansion, (“TSM”)
2. Bus 2 . A 116% bus service expansion, (“Enhanced bus”)
3. HOV. 14 In-mi Fwy HOV, 14 In-mi Fwy MF, 67 In-mi Art HOV.
4. Rail 1/3 A light rail system Fullerton, Main Street, Irvine.
5. Rail 5 Light rail system, Fullerton - Bristol Street - Irvine.
6. Mixed/Flow. Same physically as HOV but lanes operated as mixed flow, initially rejected on preliminary screening but ultimately reinstated on urging of AJM and director Salterelli.

Performance estimates were based on OCTAM model analysis. OCTAM is a sophisticated travel choice model, based on some 40 years of economic model development, calibrated to Orange County actual conditions, capable of predicting the change in ridership distribution and congestion resulting from almost any road or transit system capacity improvement.

After a number of false starts, errors, and corrections [detailed in Ref: 2], the final performance analysis yielded credible benefit estimates of

- average travel-time savings,
- freeway and arterial decongestion,
- travel time reduction for several representative trips,
- CO emissions reduction, and
- (with one additional correction here<sup>1</sup>) energy consumption reduction

and annualized lifetime total cost (1996 dollars) of each alternative.

These are summarized in Table 1. The listed benefits and cost are virgin data, exactly as listed in Table 1.1 of [Ref 1] with sole exception of the noted speed-factor energy correction.

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<sup>1</sup> The original, 1996 performance results for emissions and energy used an erroneous expression for emissions and energy that ignored essential “speed correction factors”, which had the effect of vastly underestimating the environmental benefits of roads alternatives. When this was pointed out to OCTA and PBQD the emissions results were corrected in the final, but not the energy results. The energy results here in Table 1, are corrected for this one remaining error. Full details of this are in Reference 2.

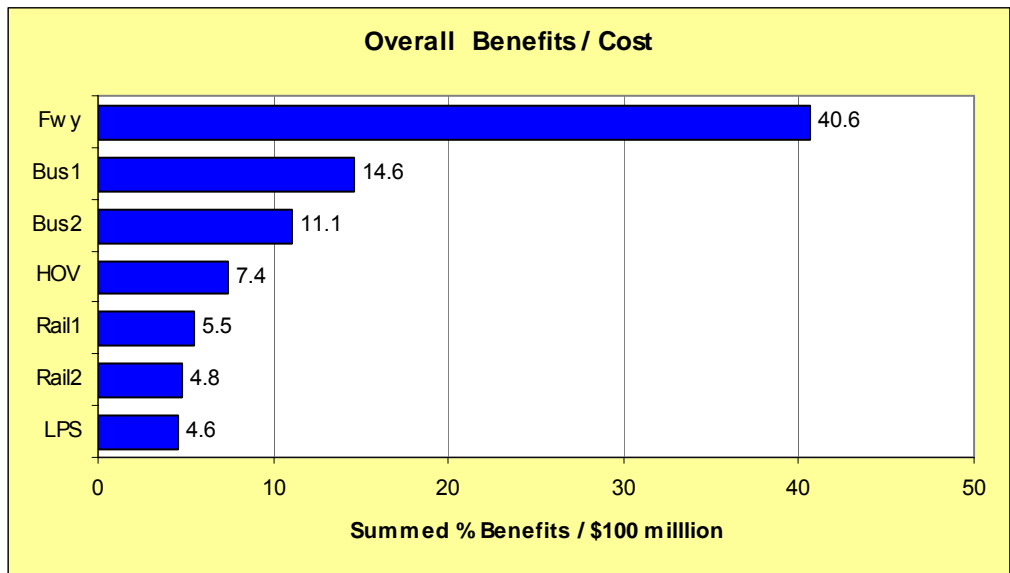
MIS ALTERNATIVES MOBILITY AND ENVIRONMENTAL BENEFITS								Ref. 1:		Ref. 3:
BENEFITS: (Per MIS Final)	UNITS	Fwy	Bus1	Bus2	HOV	Rail1	Rail2	Tbl 1.1	LPS	Tbl 3.1
Travel Time Saving	%	1.7	1.8	2.7	0.2	2.6	2.2	In.1	2.3	In.1
Freeway Congestion	%	5	0	1	2	1	1	In.4	2	In.4
Arterial Congestion	%	2	1	2	1	2	2	In.5	2	In.5
CO Emissions	%	1.6	1.8	2.7	0.1	2.4	2.1	In.16	2.3	In.16
Energy Consumption	%	1.2	1.5	2.4	0.1	2.2	1.9	In.17 (1)	2	In.17
Overall Summed Benefit	%	11.5	6.1	10.8	3.4	10.2	9.2		10.6	
<b>Total Net Annualized Cost (TNAC)</b>	\$ million/yr	28.3	41.8	97.3	45.9	186.7	191.4	In. 10	228.5	In. 10
BENEFITS/COST	UNITS	Fwy	Bus1	Bus2	HOV	Rail1	Rail2		LPS	
TravelTime Saving	% / \$100mill /yr	6.01	4.31	2.77	0.44	1.39	1.15		1.01	
Freeway Decongestion	% / \$100mill /yr	17.67	0.00	1.03	4.36	0.54	0.52		0.88	
Arterial Decongestion	% / \$100mill /yr	7.07	2.39	2.06	2.18	1.07	1.04		0.88	
CO Emissions Reduction	% / \$100mill /yr	5.65	4.31	2.77	0.22	1.29	1.10		1.01	
Energy Consumption Reduction	% / \$100mill /yr	4.24	3.59	2.47	0.22	1.18	0.99		0.88	
<b>Overall Summed Benefit/Cost</b>	% / \$100mill /yr	40.64	14.59	11.10	7.41	5.46	4.81		4.64	
<b>" Relative to Fwy</b>	%	100%	36%	27%	18%	13%	12%		11%	

Ref 1 is June 1997 MIS Final  
(1) Energy Consumption for Fwy and HOV Corrected for erroneous calculation omitting speed factor.

The various modal alternatives differ in cost by factors of 7 (Rail 2) to 1 (Mixed-flow freeway) so must be cost-normalized to be compared meaningfully. The resulting cost-normalized benefit/cost or benefit per dollar figures are listed in lines 8 -13.

The benefit/cost results are expressed uniformly as percent reduction per \$100 million/year annualized cost. An overall relative benefit measure is taken as the equally weighted sum of the five basic benefit measures.

This chart shows the relative (summed-benefit)/(cost) comparison of alternatives:



In close agreement with the national transportation database results given in the prior Chapter 2 hereof, mixed flow freeway expansion again was found to provide far the most transportation benefit per dollar, followed by bus, HOV and finally, Light Rail at a mere 12 to 13% as much benefit per unit cost. Further, it should

be pointed out that these light rail results, poor as they are, may significantly *overstate* the real net benefits of light rail since they do not take into account the adverse impacts of the light rail guideway on street traffic to be discussed in Chapters 4 and 5.

These were not the results that OCTA expected from the Major Investment Study. The OCTA response was to downplay the quantitative results, comparing the alternatives *without* cost normalization, qualitatively, as indicating that different alternatives were best by different measures, ambiguous, and thereby indicating the need for a *multi-modal* system. On this basis, a “Locally Preferred Strategy”, (LPS), was defined comprising the Bus1 and Rail2 alternatives.

The OCTAM travel model was again invoked to analyze this LPS performance with results reported in the June 1997 Final MIS Report [Ref 1]. Those results are listed here in the furthest right data column of Table 1 and bottom bar of the graph above. As defined, one would expect the LPS cost normalized performance to lie somewhere *between* the Bus1 and the Rail2 cost-normalized performance. The fact that it turned out to be *worse than either* of its two components may be taken as a measure of the irrelevance with which the objective, quantitative results were regarded.

Since the Bus1 alternative had long since been adopted as part of the OCTA long term plan, the ultimate programmatic impact of the MIS study was simply the perfunctory re-endorsement of the 28-mile light rail system which would become CenterLine, —

*not as a result of — but despite, and in direct contradiction to the clear, objective, quantitative findings of the MIS study.*

If this seems hard to believe, I would urge the reader to continue further to Reference 2: [www.urbantransport.org/octamis.pdf](http://www.urbantransport.org/octamis.pdf) . which provides a much more detailed background than is appropriate for this summary.

## References

1. “The Corridor Major Investment Study, Final Evaluation Report”, OCTA/ Parsons- Brinkerhof June 1997.
2. “The Orange County Transportation Authority Major Investment Study”, AJM Engineering, Oct 29, 1999, online at <[www.urbantransport.org/octamis.pdf](http://www.urbantransport.org/octamis.pdf)>
3. “The Corridor Major Investment Study, Draft Evaluation Report”, OCTA/ Parsons- Brinkerhof June 1996.