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WHY RAIL WILL FAIL:
AN ANALYSIS OF THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY'S LONG RANGE PLAN

by
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In March 1995, the Los Angeles County Metropolitan Transportation Authority adopted a Long Range 20 Year Plan—"A Plan for Los Angeles County: Transportation for the 21st Century." Analysis of the $72 billion plan reveals a multitude of flaws and inconsistencies in predictive models, baseline and scenario results, and against existing data.

Population forecasts—a critical component of planning—are internally inconsistent within the plan. The population forecast for the transportation model used a 33.4 percent population growth forecast from 1990 to 2015. This extremely high growth rate assumption resulted in predictions of high growth of travel and forecasts of extremely low freeway and surface street speeds. The financial model, however, utilized a 19 percent population growth rate which produced low tax revenue forecasts limiting funding for transportation improvements. Changing the key variable in this modeling exercise is an unacceptable methodology.

The plan is heavily skewed toward rail, which is made to look more favorable by highly selective accounting. Only local costs—revenues extracted from Los Angeles County—are considered in evaluations of rail cost-effectiveness. The MTA's year 2015 baseline suggests that about 72 percent of transit passenger miles traveled will be made on bus, and 28 percent on rail. However, close scrutiny of the primary scenario's speed forecasts implies that this proportion would be reversed, with 29 percent of passenger-miles of transit travel being made on bus and 71 percent on rail. According to MTA's transportation model, with all rail lines constructed, the five lines with the highest average weekday boardings per station (nationally) would be in Los Angeles.

While the two top light rail performers predicted by the plan do not satisfy its own nebulous criteria for inclusion in the primary scenario, these same rail projects are funded at 130 percent over original cost estimates. And while total Metrolink ridership is less than any one of several MTA bus lines, the long-term plan effectively calls for a $454.3 million reduction in bus funding over the term of the plan. Under even the plan's most optimistic scenarios, bus revenue service hours would be reduced by over 20 percent relative to 1990. This results in a dramatic funding shift from bus to rail transit in the most crowded urban bus system in the United States. And it's an expensive shift: precursor documents to the plan report public costs *per new transit trip* for the 14 rail projects in the plan will range from a low of $16.31 to a high of $98.38.

With regard to air quality, integrally related to transportation planning, the plan ignores data showing that rail projects rate very poorly on air quality improvements compared to almost anything else, and the MTA's air quality analysis does not consider the possibility that planned reduction of bus service will induce many trips in older, poorly maintained, high-emission automobiles—potentially making air quality worse, not better.

Finally, it does not appear that the plan conforms to even the MTA's own interpretation of the Federal Transit Authority guidelines, nor are literal models of the FTA's guidelines used to establish staff recommendations put forth in the plan.

The MTA proposes to spend $417 million over the next twenty years on *planning* rail projects. It is illustrative to note that at the 1995 proposed operating subsidy of $0.89 per bus passenger, this money could be used to increase bus ridership by 469 million passengers. That is almost as many passengers as the Long-Range Plan indicates would be carried over 20 years if all of the rail lines proposed there were constructed immediately. Of course, given the currently poor quality of bus service in the region, it is doubtful that one could find enough willing riders to provide that many new boardings.

Our analysis concludes that if the MTA's Long-Term Plan is followed, the MTA will find itself committed to construction of rail lines it cannot afford to build or operate. We recommend the MTA convene a panel of independent external experts to review both the planning process and the plan.

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I. INTRODUCTION

In April 1992, the Los Angeles County Transportation Commission (LACTC) adopted a 30-year plan for transportation in Los Angeles County.[1] In 1993, however, the LACTC was merged with the Southern California Rapid Transit District to form the Metropolitan Transportation Authority (MTA).[2] The new agency's Chief Executive Officer, Franklin White, repudiated the LACTC's plan and the MTA formulated a new 20-year Long-Range Plan of its own (the plan) to replace the previous program. The Long-Range Plan process culminated in the adoption of the new plan in 1995 at the MTA Board's March and April meetings.

This study is an analysis of the Los Angeles County Metropolitan Transportation Authority (MTA) Long- Range 20-Year Plan, "A Plan for Los Angeles County: Transportation for the 21st Century."

The list of projects put forward in the plan is limited, and the cornerstone of the plan is rail. The plan, with a budget of $72,476.5 million, recommends completing elements of the rail system under construction at the time the plan was adopted, initiating construction of new lines, and planning still others.[3]

The plan calls for:

1. Continuing:
   - The Metro Green Line
   - The Pasadena Line
2. Initiating:
   - San Fernando Valley East-West to 405 (Board Mandate)
   - Red Line Western Extension to 405
   - Red Line Eastern Extension to Atlantic
3. Further Considering:
   - Crenshaw Corridor
   - Downtown Connector
   - Exposition Line (Downtown to USC)
   - Glendale/Burbank Line
   - San Fernando Valley East-West (405 Fwy to Warner Center)
   - 10/60 Corridor

The plan compares predictions for three scenarios based upon 1990 conditions and baseline predictions for the year 2015.[4] Implicit in the 2015 predictions are the assumed completion of Red Line Segments 2 and 3. Precursor plan documents include an Enhanced 2015 Baseline, but this scenario is not present in the final version of the plan.

Table 1 shows the three alternative scenarios for the year 2015 that MTA staff evaluated, before recommending Scenario 1. The plan scores rail, High Occupancy Vehicle (HOV), Transportation Systems Management (TSM), Transportation Demand Management (TDM), Regional Surface Transportation Improvement (RSTI), bikeway, and other types of projects using MTA criteria, *but does not score bus service separately.* There is no substantive discussion of nonrail guideway systems such as busways, bus malls, bus priority/preference signaling, or related options as alternatives to rail. There is a very limited discussion of High Occupancy/Toll (HOT) lanes.

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1 LACTC, *30 Year Integrated Transportation Plan*, Los Angeles (1992).

2 James Moore II, "Ridership and Cost on the Long Beach-Los Angeles Blue Line Train," *Transportation Research A*, vol. 27A, no. 2, (1993).

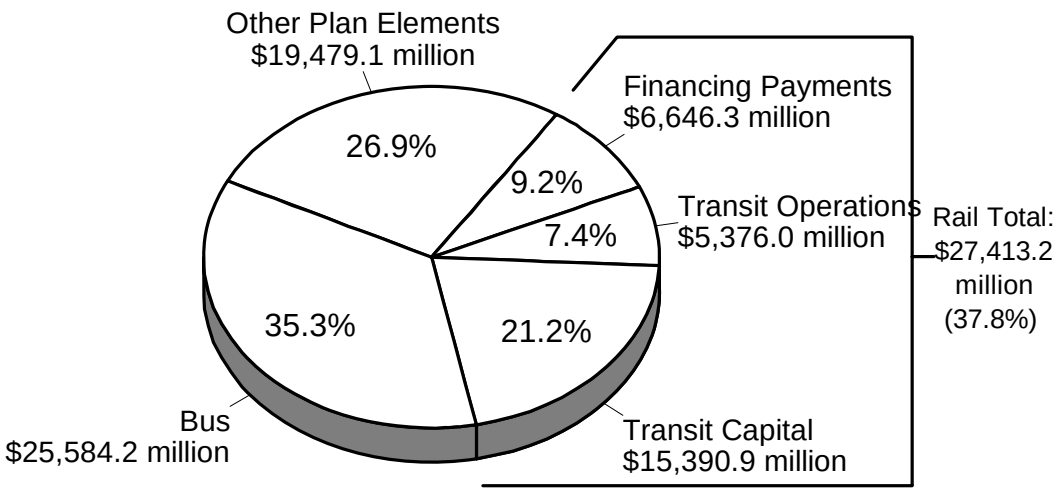
3 LACMTA, *A Plan for Los Angeles County: Transportation for the 21st Century*, Los Angeles, 1995, projects, p. 5; budget, p. 7, rail plan, p. 42.

4 LACMTA, *A Plan for Los Angeles County*, p. 20.

Table 1: Summary of MTA Long Range Planning Scenarios[5]

Feature	Scenario 1	Scenario 2	Scenario 3
Common Rail Segments	Red Line Segments 1, 2, and 3 Blue Line (Long Beach-Los Angeles) Blue Line (Pasadena-Los Angeles) San Fernando Valley Line Metrolink (Full Eight Line System)		
Other Rail Segments	Red Line East Red Line West		Red Line West
Additional Buses Relative to the Unimproved 2015 Baseline	300	627	500
Common HOV Lanes	16 Segments		
Other HOV Lanes	I-5 between Route 134 and I-10		
Projected Transit Ridership (Work trips)	631,167	606,278	616,099

Figure 1: MTA Long-Range Plan Rail Costs[6]



Note: This is a conservative estimate of the rail share. The overwhelming majority of financ-ing payments (95 percent) will be for rail projects, but not all. This is more than offset by rail costs in other categories not listed above, including Union Station Gateway Transit Center ($149.6 million), Park and Ride/Transit Centers/DMU/Other ($363.8 million), Transportation Enhancements ($301.8 million), Reserve Fund ($720.5 million), Local Return ($5,398.1 million), and Administrative Overhead ($983.6 million). These cost values do not account for farebox revenues, which are considerably higher on a percentage basis for bus than for rail.

Figure 1 illustrates the allocation of resources within the plan. *The MTA allocates at least 37.8 percent of the Long-Range plan budget to rail projects, more than any other element.* Bus receives the second largest allocation in the plan, with a 35.3 percent share, while highway and multimodal capital investments receive an allocation of approximately 17.1 percent of total funding. Of this, 4.4 percent of the total Plan budget is allocated for RSTI, TDM, and TSM projects. The budget for local return funds to municipalities is 7.4 percent of the total.

II. METHODOLOGICAL PROBLEMS AND THE LONG RANGE PLAN

5 LACMTA, Office of Planning and Programming, "LACMTA Long Range Transportation Plan: Scenario Performance Evaluations and Development of New Revenues Scenario & Policy Shift Options," January 20, 1995, pp. 4-6.

6 LACMTA, *A Plan for Los Angeles County*, pp. 101–103.

Analysis of the Long-Range Plan is difficult, for several reasons. There is contradictory information in the plan as to which 20-year period the plan covers. Given the date of plan adoption and the requirements of federal law, it is standard practice for the planning period to commence with fiscal year 1995–96, with completion in fiscal year 2014–15.[7] However, the plan includes spending for rail projects completed in previous years, and other elements of the plan refer to other periods. A variety of MTA interim and internal documents regarding the plan show different cash-flow planning periods, most frequently fiscal year 1994 to fiscal year 2013.[8]

What is apparent from an analysis of the plan, however, is that the transportation results for the MTA's various baseline and scenario results are internally inconsistent when compared both to each other and to 1990 data.

A. Population Forecasts

The plan states that "Los Angeles County population will increase by almost three million people by the year 2015….Without improvements to our current transportation system or changes in the behavior of the traveling public, the projected increase in population and employment would reduce average countywide morning peak period speeds from a current level of 30 to 40 miles per hour to 15 miles per hour or, in some rapidly growing outlying areas, to less than ten miles per hour."[9]

Such a prediction is an unlikely outcome. Experience tells us that residents of Los Angeles will change their travel behavior as travel speeds change. The larger the change in travel speed, the larger the change in behavior. In fact, even while retaining the prediction in the planning process, the plan's authors acknowledge that this prediction is unlikely.[10]

MTA staff maintains that federal law requires them to base their plans on the population projections of the local Metropolitan Planning Organization, in this case the Southern California Association of Governments (SCAG). The Federal Transit Administration's Washington headquarters planning staff, however, purports to be unaware of this requirement.

Rather than using the SCAG model exclusively, however, MTA uses a second population forecast—the UCLA Business Forecasting Project Long Term Forecast—as a basis for its estimate of sales tax revenues. The August 1994 UCLA Forecast[11] shows a 2015 Los Angeles County population of 10,522,300, compared to the SCAG projection of 11,819,655.[12]

It is not clear how to reconcile the MTA's use of these different population forecasts for travel demand and sales tax estimates. This is perhaps the most important of several significant differences between the assumptions underlying the MTA's transportation and financial planning models.

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7 *United States Code Annotated,* Title 49, Sec. 5303 (f) (2).

8 Judith Wilson (then MTA Executive Officer, Planning and Programming), Memorandum to (MTA Board) Planning and Programming Committee and Finance, Budget and Efficiency Committee Re: MTA Long Range Transportation Plan Reassessment of Financial Capacity and Methodology, Attachment E, MTA Long Range Transportation Plan—Baseline Scenario—No New Revenues—*Key Assumptions* (August 1, 1994), p. 2.; also Linda Bohlinger and Mark Bozigian, Memorandum to Terry Matsumoto and Les Porter Re: Review of Long Range Plan Financial Model (November 18, 1994); also LACMTA, *A Plan for Los Angeles: Transportation for the 21st Century--Supporting Cash Flows* (March 22 (adopted), 1995).

9 LACMTA, *A Plan for Los Angeles County*, p. 4.

10 LACMTA, *A Plan for Los Angeles County*, p. 34.

11 University of California, Los Angeles, Business Forecasting Project, *The Long Term Forecast for Los Angeles County* (September, 1994), p. B17.

12 LACMTA, *A Plan for Los Angeles County*, p. 19.

B. Rail Ridership Forecasts

Further inconsistencies appear in the plan's rail ridership forecasts. Were all five rail lines put into service, MTA's transportation model results predict that these lines would show the highest levels of boardings per station in the United States. Forecast ridership is highest for the Exposition Right of Way (ROW) and Santa Monica Boulevard lines. Yet neither of these is recommended in the Long-Range Plan. Apparently, these top two light rail performers do not satisfy the MTA's own nebulous criteria for inclusion.

Figure 2 compares the plan's light rail ridership estimates for MTA light rail lines to ridership on existing U.S. light rail systems.[13]

FIGURE 2: U.S. Largest Light Rail Systems: Daily Boardings per Station

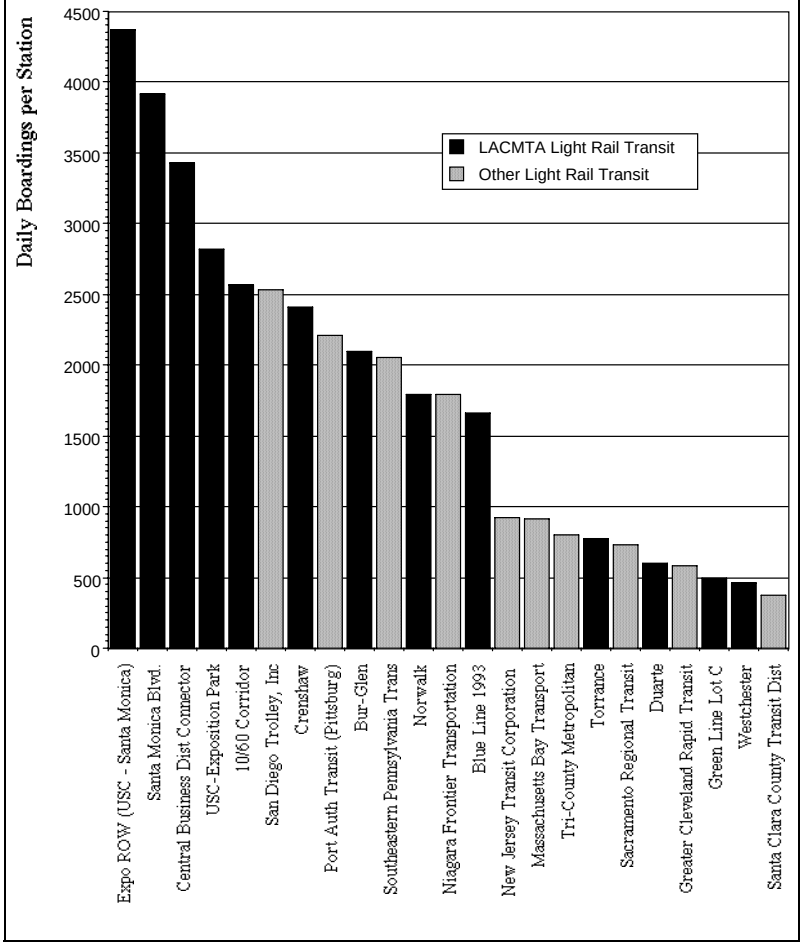

Table 2 reports the most spectacularly inconsistent aspect of the plan's light rail ridership forecasts in which *Total New Daily Transit Trips outnumber the Total Daily Boardings*.[14] It is obviously impossible for the number of new transit passengers on a rail line to exceed the number of total transit passengers on the line.

Perhaps the MTA's modeling procedure includes unreported changes to bus lines coincident with treatment of rail projects. If so, then rail trips caused by the changes in the bus system should not be reported as new rail trips and passengers. This applies to all of the rail lines put forth in the plan, not just the Green Line Extension.

C. Bus Ridership Forecasts

Table 2: Ridership on the MTA Green Line Extensions

Rail Line	Total Daily Boardings	Total New Daily Transit Trips
Green Line Lot C	1,479	2,164
Westchester	1,858	2,117

The plan indicates that "with the increased congestion on arterial streets, bus transit speed will be severely reduced, making transit a less desirable means of travel...If this trend continues, average MTA systemwide speed will be under ten mph by the Year 2015."[15]

Buses usually operate on arterial streets, where they compete with cars. Thus, changes in the relative levels of service are better predictors of mode choice than are changes in absolute values. The plan reports a Bus Line average speed of 12.2 mph in 1990. This is 46 percent of the 1990 arterial lane average speed of 26.7 mph. In the 2015 baseline projection, average speeds for bus lines and arterial lanes are *both* 10.8 mph. This would not make bus transit a less desirable mode. It would make it far more attractive than it was

13 LACMTA, *A Plan for Los Angeles County*, p. 26.

14 LACMTA, *A Plan for Los Angeles County*, pp. 25–26.

15 LACMTA, *A Plan for Los Angeles County*, p. 29.

before. However, the plan's speed projections do not explain why cars operating on arterial streets are predicted to slow down by 60 percent while buses operating primarily on the same right-of-way will slow down only 12 percent.

Scenario 1, the alternative recommended by MTA staff, proposes to increase the Los Angeles County bus fleet by 300 peak buses.[16] In addition, the MTA counts the equivalent of another 140 buses that will be redirected due to introduction of additional rail service. This addition of 440 buses is a 15 percent increase in the current fleet of 2,950. The MTA reports this increase is an improvement to bus transit service.[17]

But comparing the scenarios reveals great variation in the projected productivity of additional buses and further inconsistencies. In some cases, for example, the MTA's results imply that adding buses reduces transit work trips: comparing Scenarios 1 and 3 suggests that the additional 200 buses assumed under Scenario 3 *reduces* bus transit work trips by 9,627 per workday. The MTA argues that the decrease in transit work trips under Scenario 3 is caused by slower bus speeds. Yet relative bus speeds are 7.8 percent higher under Scenario 3 than under Scenario 1—*this should induce a shift toward transit*, not away from it. Similar inconsistencies appear if Scenario 1 is compared to Scenario 2, or Scenario 2 and the improved 2015 baseline are compared relative to the unimproved 2015 baseline.

Attempts to reconcile these inconsistencies produce bizarre results. For example, the increases in average transit speeds predicted for Scenario 1 imply very unrealistic mode shifts. We impute from the speed, time, and other projections in the plan that about 72 percent of transit passenger miles traveled under the 2015 baseline must be made on bus, and 28 percent on rail. But under Scenario 1, the proportions appear to be reversed, with 29 percent of passenger-miles of transit travel being made by bus and 71 percent by rail. This is very unrealistic.

Fleet *size*, however, is only one component of service. It is at best a rough surrogate for the amount of peak service operated. For many years, the SCRTD/MTA has provided proportionally more off-peak service than almost any major bus system in the United States, with unusually large base, evening, owl (late night/early morning), and weekend levels of service. *The plan implies drastic reductions in this off-peak service.*

MTA does not report operating statistics such as revenue vehicle hours and miles, linked and unlinked passenger trips, passenger miles, etc., for its various scenarios. The annual bus operating statistics in Table 3 are obtained from a preliminary MTA modeling exercise completed in early November 1994. We believe that these values are intended to apply to all bus transit systems based in Los Angeles County, not just the MTA. In fiscal year 1991, SCRTD/MTA operated 80 percent of the county's peak bus service, and carried over 85 percent of all passengers.

The November 18 document reports work trips and total trips for the plan's 1990 baseline and improved 2015 baseline scenarios. A substantial decrease in bus service is implicit in both the improved 2015 baseline and Scenario 1. The improved baseline includes elimination of one-quarter of the Los Angeles County bus hours and more than one-third of the county bus miles operated in 1990. Off-peak revenue service hours will be reduced by almost half. Under the Improved Baseline option, total transit trips will drop by more than six percent, and transit use per capita will drop by 30 percent. This reduction in transit use will be concentrated in nonwork trips, which will decline by over 30 percent in absolute numbers due to a planned reduction in off-peak bus service of approximately half. *For transit-dependent minority residents, this translates into a reduction in nonwork trips (to school, to seek work, to doctors, to shopping, and to visit friends and family) per capita of 60 percent.*[18]

Table 3: Projected Bus Performance Under the MTA Long Range Planning Scenarios[19] [20]

	1990 System	Improved 2015 Baseline	Changes

16 LACMTA, *A Plan for Los Angeles County*, p. 49, 54.

17 LACMTA, *A Plan for Los Angeles County*, p. 6.

18 LACMTA, "Long Range Transportation Plan" (November 18, 1994), p. 5, 8, and Appendix III-A.

19 LACMTA, "Estimated Transit System Characteristics—Los Angeles County Operators," November 6, 1994.

20 All minority population statistics are from State of California, Department of Finance, DRU, *2015 Los Angeles County Population Projection*, 1994; and LACMTA, "Long Range Transportation Plan: Performance of Individual Projects and Programs" (November 18, 1994), p. 6, 8.

	Quantity	Percent	Quantity	Percent	Quantity	Percent
Raw Data						
Peak Buses	2,333		2,471			+5.9%
Annual Boardings	453,242,445		484,043,994			+6.3%
Annual Revenue Miles	107,781,596		71,029,582			-34.1%
Annual Vehicle Hours	8,435,040		6,367,591			-24.5%
Operating Statistics						
Boardings Per Hour	54.0		76.0			+40.1%
Average Speed (MPH)*	12.8		11.2			-12.5%
Hours Per Peak Bus	3,616		2,577			-28.7%
Peak Bus Hours	3,555,492		3,765,804			+5.9%
Off-Peak Bus Hours	4,879,548		2,601,787			-46.7%
Peak: Base Hours Split	42% / 58%		59% / 41%			
Population						+33.4%
Non-Minority Population						-16.9%
Minority Population		59.0%		75.0%		+73.4%
Work Trips	419,610	40.4%	554,384	56.8%	137,774	+32.1%
Non-Work Trips	619,673	59.6%	422,162	43.2%	(197,511)	-31.8%
Total Trips	1,039,283	100%	976,546	100%	(62,737)	-6.0%

* - Revenue vehicle miles / revenue vehicle hours. This includes layover times at the ends of runs.

Under the improved baseline, boardings per hour increase by 41 percent on a bus transit system that is by far the most crowded of major U.S. urban bus operators. *The 76 boardings per hour forecast under the improved baseline is an extraordinarily high value by any standard.* In 1992, the weighted average boardings per hour for the 20 largest bus transit operators in the nation was 47.2. As is commonly the case, SCRTD/MTA reported the highest at 58.8. The highest systemwide boardings for the SCRTD/MTA's post-World War II system was 70.6. This value was recorded in 1985, the last year of 50¢ bus fares. *While a few other operators have individual lines that average above 70 boardings per hour, no other major urban transit operator in the United States has reported a system-wide average close to 70 since the end of World War II.* This includes the 20 largest transit bus operators.
Subsequent plan documents show only work trips, eliminating any data that might be used to analyze total or nonwork Los Angeles County transit trips. Scenario 1 adds 150 peak period buses relative to the Improved 2015 Baseline, an increase of five percent. There is no information provided on the quantity of service provided or the number of riders predicted. *However, even if these buses are operated eight hours per day for 254 out of 255 weekdays per year, bus revenue service hours would still be reduced by over 20 percent relative to 1990.*

The plan indicates that Scenario 1 provides a 26-percent improvement in the mobility index relative to the Baseline Scenario, but does not report which elements of Scenario 1 lead to these improvements.[21] Since Scenario 1 predicts lower transit ridership in 2015 than existed in fiscal year 1985, we conclude the HOV lanes and other *nontransit* elements must provide the majority of the improvement.[22]

Reductions in bus service are only slightly offset by the rail system expansion called for in the plan. Rail service will be concentrated in a very few corridors and offers very little utility for the local neighborhood trips (school, church, medical,

21 LACMTA, *A Plan for Los Angeles County*, p. 84.

22 Calculation by Rubin based on the values reported in SCRTD, *Annual Section 15 Report to Urban Mass Transportation Administration*, 406MBDO, 1985; LACMTA, *A Plan for Los Angeles County*, Technical Appendix, p. 24; and LACMTA, "Long Range Transportation Plan" (November 18, 1994).

shopping, many work trips) that are such a large component of travel in Los Angeles. The plan *projects the largest increases in travel will be from: "the North County to the basin, from suburb to suburb, and to and from the Alameda Corridor cities."*[23] *However, none of the new rail lines proposed in the plan actually serves this demand.*

D. Comparing Projects

The plan classifies transportation investment options into three categories: transit (including bus and rail projects), highway, and multimodal options, which consist mostly of interjurisdictional projects proposed by other local governments but funded by the MTA. The MTA scores rail transit, highway projects, and multimodal alternatives in terms of improvement to the mobility index, mobility cost effectiveness, improvement to the air quality index, and air quality cost effectiveness.[24] The plan *does not score bus options separately, avoiding direct bus versus rail comparisons.* And because much of the data needed to perform calculations are not available, most of the index scores presented in the plan or in predecessor documents cannot even be modeled for the purpose of making such direct comparisons. Finally, plan documents are sparse with respect to details: it appears that many key scenario elements were never modeled at all.

The Federal Transit Administration is the principal federal grant funding agency for public transit projects. The FTA's requirements for the transportation planning process have not been finalized, but the agency has issued guidelines describing its current working standards.[25] The FTA evaluation criteria for funding new rail starts (new rail systems or significant extensions of existing lines of recent vintage) include: cost effectiveness, mobility improvements, and operating efficiencies, as compared to Transportation System Management (TSM) alternatives.[26] The FTA guidelines also suggest a set of 15 qualitative Metropolitan Planning Factors. The FTA guidelines apply to all federally funded surface transportation programs,[27] and the federal government, in general, will not fund new projects that are not evaluated using these measures. Yet, it does not appear that either the MTA's interpretation of the FTA guidelines or literal models of the FTA's guidelines were used to establish staff recommendations put forth in the plan. The four quantitative MTA performance measures used in MTA computer models are the:

- Mobility Index (change in the average speed of travel in the county);
- Air Quality Index (reduction in emissions);
- Mobility Cost-Effectiveness Index (the cost per unit of speed improvement); and
- Air Quality Cost-Effectiveness Index (the cost per unit of air quality improvement).

Rather than using aggregate value of travel time savings, as required by the FTA, MTA uses change in average regional travel speed. The MTA measure also captures, in part, the information in the FTA's change in passengers per vehicle service-hour measure. MTA's cost-effectiveness factor is a financial measure that corresponds to FTA's total incremental cost per incremental transit passenger trip. The two sets of measures address similar concepts, but they are likely to produce very different results.

The plan[28] indicates air quality improvements associated with Scenario 1 are due to changes in technology, and to shifts from single-occupant vehicles to transit and carpools, *but the plan does not identify how the different elements of the scenarios contribute to this result.*

1. Cost-Effectiveness

The understanding of how MTA measures cost-effectiveness for the purposes of project ranking is hampered by the plan's definition of costs—MTA does not count nonlocal dollars spent on capital projects as costs. This violates both logic and federal standards. It doesn't matter whether local or nonlocal taxpayers generate the funds committed to a project: Cost is

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23 LACMTA, A Plan for Los Angeles County, p. 29.

24 The MTA mobility index is basically the predicted countywide speed of travel under alternative transportation scenarios.

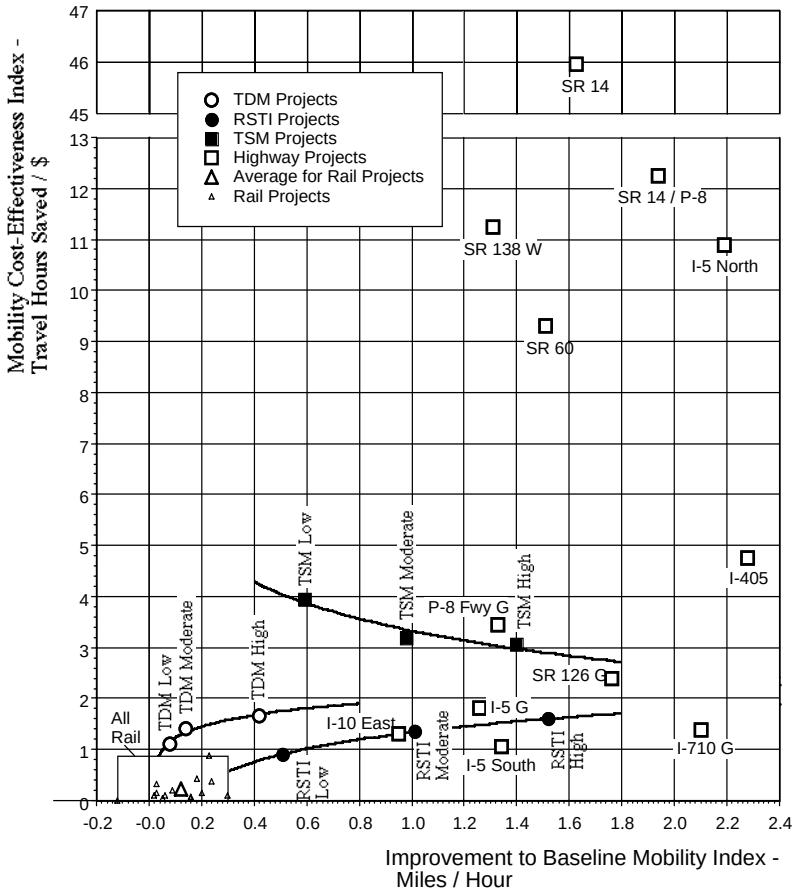
25 Federal Transit Administration (FTA), "Revised Measures for Assessing Major Investments: A Discussion Draft," FTA Policy Paper (Washington D.C., September 23, 1994).

26 A Transportation System Management alternative is defined as a low-capital strategy focusing on operational improvements.

27 *United States Code Annotated,* Title 45, Sec.. 5309 (m) (3).

28 LACMTA, *A Plan for Los Angeles County*, p. 86.

FIGURE 3: MTA Mobility Cost-Effectiveness Cost for Rail Transit, Multimodal, and Highway Projects.[31]



cost. It is inappropriate and self-defeating for the agency to exclude nonlocal costs from local decision criteria, because local decisions will ultimately have to be explained to federal and state partners. Precursor documents show both MTA cost per new transit trip and public cost per new transit trip, but the cost-effectiveness indices on graphs in the plan Appendix include only local costs.[29]

The plan is unclear about how farebox receipts and other operating revenues such as advertising are treated in cost-effectiveness computations, nor does the definition of user benefits account for the traditional role of public transit as the disadvantaged's carrier of last resort. Quite the opposite: if MTA reduces bus service, it is possible that these indices will register improvement.

2. Mobility

Figure 3 summarizes the mobility impacts predicted by the MTA for the three classes of projects in the plan. The horizontal axis is the separate impact each project has on the Mobility Index. This increment is computed relative to the plan's 2015 Improved Baseline Scenario. If no projects are implemented, the average county-wide speed is projected to be 24.4 mph.[30] The vertical axis shows cost-effectiveness, excluding air quality benefits, which the plan treats separately.

Note that:

- Transportation Systems Management (TSM) cost-effectiveness values are the highest non-highway values on the chart, producing significant improvements in the mobility index. Since the cost-effectiveness values for all TSM options exceed the values for all other (nonhighway) projects, we conclude that additional funds spent on TSM are more productive than funds spent on alternative projects.

- Larger Transportation Demand Management (TDM) expenditures produce improvements in both mobility and cost-effectiveness. Spending $12 million on TDM produces a county-wide average speed of approximately 25.08 mph. Spending $20 million delivers approximately 25.13 mph, and $40 million delivers approximately 25.42 mph. Thus, the return per unit invested is projected to increase with each new expenditure. If so, why stop at $40 million?

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29 LACMTA, "Long Range Transportation Plan," Appendix, Attachment 8 (December 16, 1994).

30 LACMTA, *A Plan for Los Angeles County*, Appendix, p. 27.

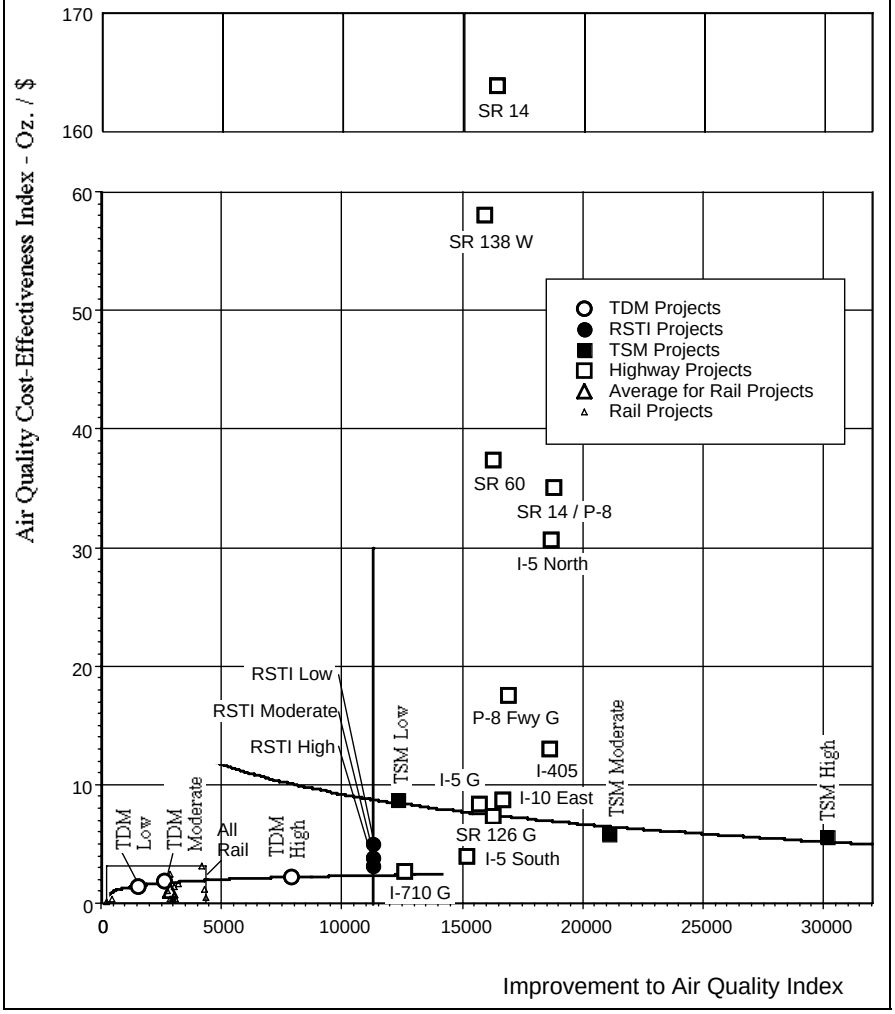
31 LACMTA, *A Plan for Los Angeles*, Appendix, p. 12; LACMTA, "Long Range Transportation Plan," p. 22.

- The Regional Surface Transportation Improvements (RSTI) curve is similar to the TDM curve. The more spent, the better the results. The additional $15 million per year needed to shift from the RSTI-Low option to the RSTI-High category increases county-wide average speed by slightly over one mile per hour.

- The greatest increase available from any of the fourteen rail projects identified in the plan is about 0.30 mph. All 14 combined show an increase of about 1.95 mph. By comparison, the annual operating budget of almost any one rail line exceeds the additional $15 million per year needed to fund the RSTI-High category.

- *Highway projects are clearly the most cost-effective measures available, with time savings and mobility improvements from one to two orders of magnitude higher than rail projects which are the least cost-effective.*

FIGURE 4: MTA Air Quality Cost-Effectiveness for Rail Transit, Multimodal, and Highway Projects.[33]



Comparing annualized funding levels to the base year dollar values shown in the plan Appendix[32] indicates that any of the three alternatives to rail—TSM, TDM or RSTI—are more cost-effective and produce far higher results than do the rail lines studied by MTA.

3. Air Quality

Figure 4 summarizes the air quality impacts predicted by the MTA for the three classes of projects in the plan. *All rail transit projects rate very poorly on air quality compared to almost anything else, according to the MTA's own evaluation.*

But the picture is even more bleak for air quality. MTA's planned reduction in off-peak transit service suggests that a large number of off-peak and nonwork trips taken by marginally transit-dependent individuals will be shifted from transit to automobiles. The plan fails to recognize the negative impact this shift will have on air quality in Los Angeles. Many of these displaced trips will be the very short trips discussed above. Displaced transit riders who are forced to buy automobiles will be low-income individuals who will not be able to afford newer, cleaner vehicles, nor possibly even to keep their automobiles in tune. The implications of this shift are substantial, because a new car can run hundreds of times cleaner than an old car. Best available data indicate that the dirtiest 10 percent of cars may be responsible for more than 60

32 LACMTA, *A Plan for Los Angeles County*, Appendix, p. 50.

33 LACMTA, *A Plan for Los Angeles County*, Appendix, p. 14; LACMTA, "Long Range Transportation Plan," p. 23.

percent of both carbon monoxide and hydrocarbon emissions while the cleanest 80 percent of vehicles account for less than 12 percent of emissions.[34]

Based on the information provided in the plan, we conclude that most of the measures proposed in the plan are irrelevant to improving air quality, because most local air quality improvements during the plan period will follow from compliance with federal mobile source emissions requirements imposed on automobiles. *Unfortunately, some of the measures identified in the plan are likely to have a pronounced negative impact on air quality.*

MTA's discussion of air quality impacts is simplistic. It appears that MTA applied a simple formula for emissions that is a linear function of vehicle miles traveled. If so, this is inadequate. Most U.S. automobiles are now equipped with catalytic converters. These devices have resulted in significant reductions in mobile source emissions, but require approximately 90 seconds after engine start-up to reach effective operating temperature. During this start-up period, engine emissions are very high. As a result, cars used for short trips have far higher emissions per mile than cars used for longer trips. In addition, internal combustion engines generally operate most cleanly under constant load, with minimal starts and stops. Operating on a freeway, even a heavily traveled freeway, usually results in fewer emissions per mile than driving on arterial roads.

The plan provides a single expression for a cost-effectiveness index but presents separate cost-effectiveness indices for mobility and air quality.[35] The MTA's formula for the air quality index[36] does not include particulate matter (PM), a major public health concern. Gasoline engines produce relatively little PM, and electric transit produces almost none in the South Coast Air Quality Basin because the additional electricity to operate the trains is produced mostly by fossil fuel plants located outside of the basin. Diesel engines are currently the dominant mobile source generators of PM. MTA may have developed this formula from Environmental Protection Agency (EPA)/California Air Resources Board (CARB)/South Coast Air Quality Management District (SCAQMD) measures that do not include PM, or MTA may be assuming that by the year 2015 there will not be any diesel buses left in Los Angeles.

The MTA's air quality predictions align closely with the agency's mobility chart, except that the RSTI-Low-, Medium-, and -High-options all produce the same Air Quality Cost Effectiveness index values. This is because all three RSTI options include the Alameda Corridor project, which tends to dominate the index value.

4. Rail at Any Cost

The body of the plan provides considerable discussion of how the 14 proposed projects compare to each other, but does not attend to comparisons between rail and other alternatives.[37] Two of the MTA's key findings are buried in the plan's Technical Appendix: *"The lowest performing category (for mobility improvements) was generally the rail projects where the small market of transit does not provide a substantial overall contribution to countrywide mobility....The rail projects did not do well (in improving air quality) largely due to the fact that most of the rail ridership is composed of people who were already transit users."*[38]

The MTA's air quality criteria score rail projects poorly relative to all other projects, with the exception of bikeways. Some rail projects score better than some bikeway projects on some criterion.

The scores generated by the MTA's analysis of rail alternatives provide no substantive insight into how the rail projects put forward in the plan were selected for recommendation. Table 4 summarizes scores from the November plan document.[39]

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34 Douglas R. Lawson, et al., "Emissions from In-use Motor Vehicles in Los Angeles: A Pilot Study of Remote Sensing and the Inspection and Maintenance Program," *Journal of Air and Waste Management Association*, vol. 40, (1990).

35 LACMTA, *A Plan for Los Angeles County*, Appendix, p. 6.

36 LACMTA, *A Plan for Los Angeles County*, Appendix, p. 8.

37 LACMTA, *A Plan for Los Angeles County*, p. 13.

38 LACMTA, *A Plan for Los Angeles County*, Technical Appendix, p. 18.

39 LACMTA, "Long Range Transportation Plan: Performance of Individual Projects and Programs" (November 18, 1994).

Table 4: Summary of MTA Rail Project Criteria Scores[40]

Project	Improvement		Cost-Effectiveness	
	Mobility	Air Quality	Mobility	Air Quality
Red Line East	.18	212	.43	.07
Red Line West	.16	2,885	.05	.39
Blue Line Downtown Connector	.24	444	.38	.35
Green Line - Lot C	.03	3,019	.15	1.44
Green Line - Westchester	-.12	2,755	.00	1.05
Green Line - Torrance	.02	3,044	.11	.64
Exposition Line - USC	.23	2,839	.89	2.48
Exposition Line - Santa Monica	.20	4,370	.15	.49
Blue Line - Burbank/Glendale	.06	4,318	.10	1.14
Blue Line - Duarte	.03	4,194	.33	3.14
Route 10/60	.16	2,957	.08	.41
Green Line - Norwalk	.09	3,210	.21	1.66
Crenshaw Corridor	.05	3,118	.04	.38
Santa Monica Blvd.	.30	2,967	.11	.28
Simple Averages for the 14 Rail Projects	**.12**	**2,881**	**.22**	**.99**

The Red Line East and the Red Line West are proposed for construction as part of Scenario 1. Neither of these scores well in terms of the MTA criteria. The Red Line West ranks sixth (tie), tenth, twelfth, and ties for tenth on the mobility, air quality, mobility cost-effectiveness, and air quality cost-effectiveness criteria, respectively. The Red Line East scores better on the mobility and mobility cost-effectiveness indices, ranking fifth and second, respectively; but ranks last on both air quality indices. The Santa Monica Line outperforms the Red Line West on three of four criteria, returning the highest score in the mobility index, and is close on the fourth—but is not recommended for construction. It is not even included in the plan's "also eligible" list of six projects for construction if there is funding This list does, however, include some of the worst performing projects among the fourteen, and one project—the extension of the San Fernando Valley line to Warner Center—evidently did not make the MTA staff's preliminary list of projects worth evaluating.

The MTA states that the Red Line East and West were selected because they did well on other criterion, which remain largely unspecified. The plan reports that "The Metro Red Line Extensions to the west and east, when run individually, were among the top three in all categories of rail ridership per mile of line…"[41] But this is meaningless—*these are the only two heavy rail projects under consideration*, and heavy rail has a carrying capacity several times that of light rail. The outcome the plan refers to is a foregone conclusion, and thus has no utility as a decision criterion.

The plan exempts San Fernando Valley and Pasadena rail lines from scoring. These projects are treated as Board mandates even though there are presently insufficient or have no currently programmed funds to build either one. Both rail projects will have to withstand scrutiny from federal and state funding agencies before they can be funded, so it is inappropriate to exempt them from the long-range planning process.

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40 LACMTA, "Long Range Transportation Plan," Appendix II, "Performance of Individual Rail Projects," [Table] (November 18, 1994).

41 LACMTA, *A Plan for Los Angeles County*, p. 23.

The MTA predicts that the Green Line-Westchester extension slows down the countywide average speed. It is unclear why the project remains under consideration.

5. Giving Lip-Service to Federal Standards

The MTA decision process conform to the letter of existing or proposed Federal Transit Administration (FTA) planning requirements, though clearly not to the spirit. It is highly unlikely the rail systems the MTA is proposing will meet federal criteria for funding. (One of the key measures the FTA uses to evaluate rail new starts is the cost per new passenger: "To progress from the 'system planning' phase to the 'alternatives analysis' phase, the preliminary estimate of the cost per new trip should not exceed $10; to move from alternatives analysis to 'preliminary engineering,' the estimated cost per new trip should not exceed $6.)"[42]

The MTA has computed these values for Los Angeles rail projects, but the plan does not include these estimates. Precursor documents report public costs per new transit trip for the 14-rail projects in the plan range from a low of $16.31 to a high of $98.38.[43]

The three-rail lines the plan proposes for federal new-start funding do not rank well. No cost per new trip is provided for the San Fernando Valley line. For the Red Line West and East lines, the public costs per new transit trip are $28.36 and $60.83, respectively. In contrast, most bus trips can be added at costs well under $5 per new passenger, with many opportunities costing under $2.50.

The plan is fully responsive to the FTA's qualitative Metropolitan Planning Factors, although these responses are highly subjective and appear questionable.[44] It is unclear why the MTA responded so carefully to this set of secondary FTA planning requirements while ignoring the FTA's primary criteria.

E. Other Plan Elements

1. Railbus

The plan suggests the MTA: "*Make use of existing rights-of-way by enhancing commuter rail service and exploring the option of using Railbus (DMU) technology to provide a lower cost alternative to light rail systems…*"[45]

Railbus technologies have been studied by many U.S. metropolitan areas, though none has been operated in recent years other than as short-term demonstration projects.[46] We presume the lines recommended for evaluation in the plan's Railbus Corridor map are listed because the rail lines already exist.[47]

The investment required to make Railbus work in Los Angeles should not be minimized. The candidate alignments will interfere with existing surface traffic patterns. Some of the current rail rights-of-way will require extensive upgrading to be used for passenger rail. Stations must be built, signals must be changed radically, and crossing protection will be required. It will also be necessary to designate storage and light maintenance facilities for each line, and at least one heavy maintenance facility.

The Plan proposes to establish Railbus service the same way Metrolink commuter train service was established: use existing rights-of-way. And the Metrolink experience is instructive. Metrolink's fiscal year 1995 operating subsidy per passenger was almost $9.00, more than double the value forecast when the service was proposed. The capital subsidy per passenger is many times the operating subsidy. Even with such subsidization, *total Metrolink ridership is less than any one of several MTA bus lines.*

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42 FTA, "Revised Measures," FTA Policy Paper, p. 13.

43 "Cost Effectiveness Indices," *Year 2015 Rail Ridership Estimates: Cost Effectiveness Indices*, Attachment 8 to Exhibit K.

44 LACMTA, *A Plan for Los Angeles County*, Appendix, p. 41.

45 LACMTA, *A Plan for Los Angeles County*, p. 7.

46 Field experiences of Tom Rubin with projects examining the utility of railbus.

47 LACMTA, *A Plan for Los Angeles County*, p. 63.

2. Bus Priority Corridors

The Plan refers to creation of "… transit priority corridors on streets predominantly used by buses, including a combination of bus-only lanes, signal priority for buses and enhanced bus stops—*and*—parallel auto priority corridors, where both bus and auto traffic are speeded through creation of areawide coordinated signal systems and smart corridors."[48]

But assessing the feasibility of this plan element is hampered since the plan does not identify the bus lines and streets to be improved. The City of Los Angeles must approve and coordinate such projects, but this is often difficult. There have been some interagency successes of this sort, such as the Spring Street counterflow lane; but the politics associated with converting city streets from traffic lanes to exclusive bus or HOV lanes may preclude implementing these elements of the plan.

3. Freeway Service Patrol

The plan proposes to continue providing Freeway Service Patrol (FSP) services at no charge to stranded motorists.[49] The joint MTA/Caltrans/CHP Freeway Service Patrol is a showcase of interagency cooperation, and probably one of the most cost-effective TSM investments the MTA or anyone else has ever made. The MTA contends that free assistance is important because motorists might decline service if they had to pay a fee. The MTA maintains it is more important to mitigate congestion by removing the incident from the guideway than to recover the cost of service.

Given the magnitude of the aggregate delay associated with freeway incidents, the MTA is correct.[50] However, there is an opportunity for MTA to charge back for FSP services. The MTA could enter into an arrangement with the Automobile Club of Southern California (ACSC) and similar organizations to allow MTA to charge ACSC and other providers for services rendered to their members. These additional revenues could be used to expand the coverage of FSP or to reduce the subsidy from Proposition C's 25 percent Transit Related Highway Improvement funds currently used to support the program. With changes in law, MTA could gain the authority to move all stalled vehicles, and to bill all motorists served. Like parking fines, not all of these charges would be collectable.

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48 LACMTA, *A Plan for Los Angeles County*, p. 40.

49 LACMTA, *A Plan for Los Angeles County*, p. 71.

50 Genevieve Giuliano, "Incident Characteristics, Frequency and Duration on a High Volume Urban Freeway," *Transportation Research A*, 23A (1989); see also Skabardonis, Noeimi, et al., "Freeway Service Patrol Evaluation, California" PATH Research Report, UCB-ITS-PRR-95-5 (1995).

4. Market-Based Policy Alternatives

The plan calls for creating "...financial allowances, through the Mobility Allowance program, to fund flexible transit options such as smart shuttles, vans, community-based transit, neighborhood collectors, shared taxis for off-peak service and other alternative service delivery strategies," but provides few particulars.[51]

The plan's Technical Appendix summarizes analyses of several other policy options intended to encourage a shift away from use of single occupancy vehicles for work trips.[52] In each case, these policy alternatives are combined with an assumption that 10.4 percent of all commute trips will be replaced by telecommuting, which removes about 440,000 work trips from the network. However, a value of 4.3 percent is assumed for all other modeling exercises. This change in assumptions has significant effect on the results produced by the MTA transportation model, making it difficult to meaningfully evaluate the MTA's policy options. The policy changes appear to produce impressive improvements. However, we conclude that the assumed shift to telecommuting is responsible for virtually all of the improvement. Yet it is unclear from the plan if any action is being proposed to raise the telecommute share of work trips from 4.3 percent to 10.4 percent. If not, the policy evaluations are of no value, which is unfortunate because the market-based policies put forward by the MTA merit serious consideration.

III. COSTS

Every MTA rail project has had significant cost overruns, with some final costs running as high as four to six times original planning estimates.

A. Red Line

The Full Funding Grant Agreement for the Red Line Segment 1 includes a budget of $1,249.9 million, with a federal share of $699 million. The federal share includes flexible federal Section 9 grants allocated to the region by formula. Cost overruns pushed the total cost to $1,417.9 million. *None of this nearly $168 million overrun was funded by the federal or state governments. All must be absorbed by MTA and the City of Los Angeles.*

We conclude that certain costs of construction of Red Line Segment 1 are not accounted for in the plan, including force account costs (the costs of MTA employees dedicating time to Red Line construction), general and administrative costs, and capitalized interest costs (interest accrued on funds borrowed for construction of capital projects, net of interest earnings on such funds, from the time of borrowing to the commencement of operations). MTA also segregates certain rail costs into separate line items, such as "Red Line Construction Mitigation." It is not possible to estimate these additional costs from available data, but they are not trivial—in fact, they may be as high as $100 million.

The plan[53] shows federal funding of $666.9 million out of a total cost of $1,446.3 million for the Red Line Segment 2, and a federal share of $1,582.6 million out of a total cost of $2,782.0 million for Segment 3. $166.3 million of these Segment 3 federal funds are Surface Transportation Program and Congestion Mitigation and Air Quality Improvement Program funds that, unlike federal Section 3 capital funds, are not dedicated at their source for specific projects. These funds could be used for other (nonrail) purposes.

The Red Line Segment 2 is already subject to tens and possibly hundreds of millions of dollars in cost overruns, exclusive of costs associated with the Hollywood tunnel collapse and attendant damages to local real estate. MTA is facing claims of $1 billion for these damages. A civil RICO finding might triple these costs.

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51 LACMTA, *A Plan for Los Angeles County*, p. 6.

52 LACMTA, *A Plan for Los Angeles County*, p. 32.

53 LACMTA, *A Plan for Los Angeles County*, p. 95.

Table 5: Blue Line Cost Estimates[54]

Year	Source	Cost Estimate
1981	Caltrans feasibility study	$146.6 million
1982	Parsons Brinkerhoff study	$194 million
1982	Commission gives "go-ahead for the proposed $194 million train," *Long Beach Press-Telegram*, 4/15/82	$194 million
1983	*Los Angeles Times*, 10/20/85	$350-400 million
1984	Draft Environmental Impact Report	$393-561 million
1984	*Los Angeles Times*, 11/11/84	$500-600 million
1985	"The Rail Way," LACTC, 6/85	$595 million
1995	LACMTA 20-Year Long Range Plan	$877 million

B. Blue Line

To date, the $200 million (16 percent) cost overrun on the Red Line Segment 1 project is the smallest of any MTA rail project. Richmond documents the details of Blue Line cost estimates in Table 5. The LACTC finalized the $877 million cost estimate for the Blue Line in 1989 and this has remained the official cost estimate ever since. A review of project costs reported by Neil Peterson shows, as in the case of the Red Line Segment 1, no costs for many items necessary for the construction of rail lines.[55] These omissions include capitalized interest costs during the period of construction, and LACTC force account and general and administrative costs. It is not possible to calculate these costs from the data available, but the capitalized interest costs alone may be sufficient to increase total Blue Line construction costs to over $1 billion. Also, the MTA cost figures do not include interest expense after the Blue Line went into operation. Again, it is not possible to calculate these interest costs from available data, but they are on the order of several hundred million additional dollars.

C. Green Line and Pasadena Line

We consider the Green Line and Pasadena Line together due to the way the MTA treats the costs for these lines. The MTA does not currently show the costs of rail cars as part of the costs of the Green Line nor of the Pasadena Line. Instead, there is a separate line item in the rail budget for the LA Car, an order originally valued by the plan at $257.6 million, that will supply most of the rail cars used on these two lines. This order was later reduced. Prior to the delivery of the LA Cars, Green Line operations will be conducted with Blue Line cars provided under a separate order for 15 additional cars at over $3 million each.

Table 6: Green And Pasadena Line Cost Estimates[56]

Year	Source	Cost Estimate
Green Line		

54 Jonathan Richmond, *Transport of Delight—The Mythical Conception of Rail Transit in Los Angeles*, Ph. D. Dissertation (Massachusetts Institute of Technology: Cambridge, MA, 1991), pp. 64–65 . This extensively documents the details of Blue Line cost estimates.

55 Neil Peterson, "The Future is Here," *Passenger Transport* (July 16, 1990), p. 5.

56 LACTC, *30-Year Plan Detailed Cash Flows*, March 1992 (Adopted April 1992), Capital Planning & Programming.

1986	LACTC Official Statement for Bond Issuance	$178 million[a]
1988	Green Line Fact Sheet	$368 million[b]
1992	30-Year Plan	$763.6 million[c]
1995	Long Range Plan	$722.4 million
Pasadena Line		
1988	Undocumented Early Estimate	$581 million
1992	LACTC 30-Year Plan	$689.7 million
1993	LACMTA Budget	$841 million
1995	LACMTA 20-Year Long Range Plan	$998.0 million

Notes:
a - This cost projection is for the 16.5 mile section of the Green Line in the median of the Glen Anderson (105) Freeway, including rail cars, train control, signaling, maintenance, and related facilities. The 3.5 mile North-South section at the Eastern end of the line is not included. This shorter section was constructed on an elevated alignment at a higher cost per mile than the at-grade segment.
b - "Los Angeles County will have first fully automated transit line in the U.S., running from Norwalk to El Segundo."
c - This total includes cars. The nonvehicle portion is $650.6 million.

Table 6 summarizes the progression of cost estimates for the Green and Pasadena lines. Assuming an approximate cost of $30 million per mile in 1986 dollars for the elevated section of the Green Line, and accounting for the cost of the L.A. Car order, the total cost becomes $1,978 million, an increase of $1,119 million (130 percent) over original estimates. As with the other rail lines, the costs of rail construction, including capitalized interest costs during construction, force account, and general and administrative expenses have been excluded. Neither are these costs final. The Green Line is open, but the Pasadena Line has only recently commenced construction, and the L.A. Car order is far from complete.

D. Labor Costs

A little-known rail construction decision made a decade ago by the LACTC has led to major increases in the costs of locally funded rail construction projects in Los Angeles. The federal Davis-Bacon Act requires that all laborers on federally funded construction projects be paid the local prevailing wage. *LACTC entered into an agreement with the Los Angeles labor community to pay the federal Davis-Bacon labor rates for work performed on all rail construction projects, even those with no federal funding.* These locally funded rail lines include the Blue Line; the Green Line; the Pasadena Line; and (possibly) Metrolink with the exception of the Palmdale extension to the Santa Clarita Line, which was financed by the Federal Emergency Management Agency (FEMA). In return, MTA received a no-strike agreement. Because the Department of Labor interprets the prevailing wage as the top rates paid to unionized workers, the MTA labor agreement negates any cost reductions MTA might have otherwise achieved by making use of either nonunion construction workers or union workers paid wages lower than the Bacon-Davis rates.

Labor costs including employee benefits have historically amounted to approximately three-quarters of MTA bus operating costs, which is typical of large urban transit operators. Still it is unusual that MTA does not project any reduction in its labor costs. The plan refers to "implementing cost reduction measures," but includes no elaboration.

The information in the plan suggests the MTA does not understand its operating costs. The January 1995 plan document states that $230 million per year in fiscal year 1994 revenues would fund the purchase and operation of approximately 350–400 buses.[57] This corresponds to an annualized capital and operating subsidy of approximately $575,000 to $657,000 per bus. The actual MTA bus subsidy for fiscal year 1994 is well under $200,000.

IV. REVENUES

57 LACMTA, *A Plan for Los Angeles County*, p. 135.

It is difficult to comment on many components of the financial element of the Long-Range Plan because so little detail is provided in the plan. What details exist introduce contradictions. For example, the plan includes at least three different estimates of the sales tax revenues.

With the exception of sales taxes, which constitute the MTA's most important local source of funds, the plan *significantly overstates almost every major revenue source*. These include federal Section 9 capital and operating funds, federal Intermodal Surface Transportation Efficiency Act (ISTEA) funds, federal Section 3 new rail start funds, Red Line Segments 2 and 3 Benefit Assessment District (BAD) funds, senior lien bonds, joint development funds, City of Los Angeles funds, State Transportation Improvement Program (STIP) fund, State rail bond funds, other State of California funds, bus fares, and rail fares.

A. Rail Construction

The plan is particularly optimistic with respect to revenues that can be programmed for new capital projects. The plan assumes that federal Section 9 operating assistance subsidies will be held constant, while congressional action has already led to a reduction of almost 50 percent in the first year of the plan period.[58] In fact, Congress appears to favor a total elimination of federal operating assistance within a few years.[59] Federal ISTEA funds may be significantly decreased. Future ISTEA funds may be routed through Sacramento in a statewide block grant program, making it likely that the state will take a larger share to offset shortfalls in state transportation funds.

Historically, federal Section 3 new start funds have been 100 percent specified by Congress. MTA has received by far the largest allocation of these funds for many years. For fiscal year 1995, Congress allocated $397.0 million in Section 3 funding, with $184.3 million, or 46 percent, recommended for Los Angeles. For fiscal year 1996, the US DOT recommended $158.85 million in funding for the MTA.[60] Section 3 new start projects and capital costs are summarized in Table 7.

Dozens of other regions are seeking access to these funds. In fiscal year 1996, the House allocated $125 million to the MTA for the Red Line. One of Sen. Robert Packwood's (R-Ore.) last major actions was to shift a large share of Section 3 new starts funds to Portland's Westside light rail project. As a result, the Senate allocated $60 million to Portland, and only $45 million to the MTA. The Congressional Budget Conference Committee split the difference by finally allocating the Red Line $85 million.

Table 7: Status Of Rail New Starts Projects In The United States[61]

	All Projects		Projects with cost per new passenger under $28.36		Projects with cost per new passenger under $60.83	
Project Phase	Projects	Capital Costs (millions)	Projects	Capital Costs (millions)	Projects	Capital Costs (millions)
Final Design	4	$1,756	3	$1,276	4	$1,756
Preliminary Engineering	17	9,122	17	9,122	17	9,122
Alternatives Analysis						
• with reported costs	7	5,143	6	4,562	7	5,143
• without reported costs	13	8,771				
System Planning						

58 LACMTA, *A Plan for Los Angeles County*, p. 118.

59 American Public Transit Association (APTA), *Legislative Alert* (October 23, 1995).

60 U.S. Department of Transportation (DOT), "Report on Funding Levels and Allocations of Funds: Report of the Secretary of Transportation to the United States Congress," Pursuant to 49 USC 5309(m)(3) (Formerly Section 3(j) of the Federal Transit Act), Washington, D.C., (May 1995), p. 2.

61 FTA, "1994 Federal Transit Administration Report on Funding Levels and Allocation of Funds" (April 1994).

• with reported costs	2	4,100	2	4,100	2	4,100
• without reported costs	22	12,653				
Totals	**65**	**$41,545**	**28**	**$19,060**	**30**	**$20,121**

Note: Twelve of the projects in System Planning have not yet had capital cost projections performed. Four of the projects, totaling $4,538 million, are in Los Angeles. "Reported costs" in column one refer to reported cost per new passenger, as reported to the FTA.

Still, MTA is proposing 50 percent federal funding for the three Red Line extensions identified in the plan (San Fernando Valley, Eastside, and Westside), and is asking for a total federal commitment of $2,932.7 million.[62] *All future federal funding for rail construction is questionable.* The House Budget Committee fiscal year 1996 budget resolution calls for the elimination of all fixed guideway new starts not already subject to a Full Funding Grant Agreement. Despite the committee's resolution, Congress has continued to fund some new rail starts. Future federal funding for new rail starts is questionable.

The MTA has not achieved 50 percent federal participation in its existing rail plan. Construction of the Blue Line was financed completely by local sales taxes. There are no federal funds planned for the Pasadena or Green Lines. With the exception of $55 million in FEMA funds, there has been almost no-federal participation in the Metrolink system.

The plan assumes a high level of funding from the State of California, even though the last three statewide rail transit funding/bonding proposals were rejected by the voters by increasingly wide margins.[63] The Pasadena Line, which is under construction, is not fully funded. MTA is planning on $346.1 million from other state funding to replace $316.6 million in state rail bond funds.[64] The California Transportation Commission (CTC) allocates state transportation funding, including STIP funds. The CTC has committed to replacing the approximately $800 million in rail bond funds that would have been generated for the Pasadena Blue Line and the San Fernando Valley East/West Line by failed Propositions 156 and 181. However, the CTC does not create funding. It is subject to acts of the state legislature. Still, MTA is proceeding with construction of the Pasadena Line. The delay in external funding lengthens the construction period and increases costs.

The plan also refers to City of Los Angeles contributions to be furnished by Certificates of Participation to be issued to the city.[65] The plan does not define how much the city will be asked to contribute over the plan period. The plan requires the receipt of large amounts of funds from the city at an early date for rail construction purposes, but the city has resisted agreeing to the MTA plan for many years. The city is currently using a large share of its Proposition A and C local return funds for continued expansion of its Commuter Express and DASH bus services, which would be significantly curtailed if these funds were redirected for rail construction.

Agreements require the city to pay half of rail construction cost overruns. The city share of the Red Line Segment 1 cost overrun is approximately seven percent of the segment's total cost. Segment 2 also has large cost overruns. It is unclear that the city will continue to cover its share of the cost overruns on Red Line construction. To the best of our knowledge, the city has not yet signed off on its portion of Segment 3 costs. If the city caps its total contribution to rail construction, the MTA will be forced to bear the risk of overruns, which will make it much more difficult for MTA to retain the funding provided by federal and state partners.

If MTA and the city elect to issue bonds against the city's local-return funds to cover the city's contribution to cost overruns, then a large portion of the city's local-return funds will go for debt service. In recent years, MTA has resorted to capitalizing interest, and borrowing enough additional funds to cover the debt service payments for two years. The trade-off is far higher payments once debt service payments begin.

The plan language evades the inevitability of a funding shortfall and leaves the impression that MTA could have over $16 billion to use for new rail projects over the next 20 years. *If the plan is followed, the MTA will find itself committed to*

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62 LACMTA, *A Plan for Los Angeles County* , p. 109.

63 LACMTA, *A Plan for Los Angeles County,* p. 109, 114.

64 LACMTA, *A Plan for Los Angeles County* p. 104.

65 LACMTA, *A Plan for Los Angeles County* , p. 115.

construction of rail lines it cannot afford to build or operate, while simultaneously being forced to significantly increase fares and reduce service across all modes.

B. Changes in Bus Funds

Proposition C 40 percent Discretionary funds constitute almost the sole remaining source of unspecified discretionary funding available to the MTA. In the supporting cash flows, these funds are forecast to be $5,115.3 million.[66] Over 80 percent of this funding is dedicated to rail. This is separate from transfers from Proposition C 25 percent Transit Related Highway Improvement funds that MTA has succeeded in programming for rail construction.

The plan identifies $530.2 million in Proposition C 40 percent discretionary funds (9.8 percent) as dedicated to bus. The plan is also diverting approximately 15 percent of Transportation Development Act (TDA) Article 4 funds traditionally used for bus operations and capital purposes to rail.[67] The plan dedicates $230.0 million in TDA funds to "Misc. Rail/Rehabilitation" and $754.5 million to "MTA Rail Operations and Metrolink." Taking these shifts into account, the net impact of adding the Proposition C half-cent sales tax on bus funding appears *to reduce funding for bus by $454.3 million over the plan period in order to finance rail expenditures.* The plan narrative is silent on this shift.

66 *LACTMA, A Plan for Los Angeles County, Supporting Cash Flows*, p. 68.

67 LACMTA, *A Plan for Los Angeles County*, p. 104.

V. RECOMMENDATIONS

A. The Plan Elements

1. Bus vs. Rail

The plan promotes expansive construction of rail lines to address the transportation needs of Los Angeles County, even though these rail projects score very poorly on MTA's own quantitative decision criteria. In many cases, individual board members are actively championing these rail proposals.

In Los Angeles County, as in most of North America, rail is an expensive, ineffective use of scarce resources that would be better used to support more cost-effective means of transportation. This includes expansion of the Los Angeles County bus system; improvement in the quality of bus service; reduction in bus fares to meet the mobility requirements of the transit dependent; new TSM and TDM measures; support of multi-passenger automobile travel, such as expansion of the HOV system and busways; and implementation of peak-period pricing strategies, such as introduction of HOT lanes.

Currently, MTA is allocating approximately 70 percent of both local and total transit subsidies to rail. This share is about 60 percent over the entire Plan period. The inevitable result is a reduction in the overall level of service provided to the public, and a decrease in transit ridership.[68] MTA commenced significant rail construction around fiscal year 1986. Since then, total transit use in Los Angeles County has dropped by well over 20 percent.[69] The total population of the county has increased by over 13 percent, and the transit-dependent population of the county has increased far more rapidly. This outcome has a negative impact on regional transportation and equity goals, including reducing freeway and street congestion and improving air quality.

Rail construction is widely promoted as a means of creating local jobs, but in fact, rail compares poorly in this criterion. Bus operations create at least five times as many local jobs as rail construction, and bus operations jobs are largely concentrated among members of local minority communities. The SCRTD's minority employment share was just over 75 percent of all agency positions in 1993.[70]

Los Angeles has never had a problem attracting passengers to transit. MTA's buses are the most crowded of any major transit operator in the United States. However, bus overcrowding and other factors have made bus travel socially unacceptable to the middle class. Transit use can be greatly increased by providing buses that don't pass up waiting riders due to lack of space; buses with available seating; safe, clean vehicles operating on a more frequent schedule and longer hours; and routes connecting where people are to where they want to go.

Our calculations suggest that bus is extremely competitive with rail, even under the MTA's scoring system. The following comparison places the relative magnitudes of the MTA's rail and bus expenditures in perspective. According to the plan, the MTA has budgeted $417 million for environmental clearance studies, staff support, overhead, and board-directed studies during the plan period.[71] Dividing the MTA's $314.6 million bus subsidy for fiscal year 1994–95 by approximately 352.4 million riders produces a subsidy per bus passenger of $0.89.[72] Note that MTA intends to spend significantly more on *planning* rail service over the next twenty years than it planned to spend on actually moving people on buses during fiscal year 1995. MTA's estimated new daily transit trips[73] and total project costs[74] for the 14 rail lines studied in the plan are listed in Table 8. Operating all 14 lines for 20 years given MTA's current weekday to annual ridership ratio produces

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68 Moore II, "Ridership and Cost," *Transportation Research A*, vol. 27A, no. 2. (1993).

69 Estimated based on the numbers in SCRTD, *Annual Section 15 Report*, 406MBDO, 1985; and LACMTA, *Annual Section 15 Report,* 406 MBDO (1993).

70 SCRTD, EEO-1 Report (March 1993).

71 LACMTA, *A Plan for Los Angeles County*, p. 132.

72 LACMTA, "Fiscal Year 1994-1995 Budget (Proposed): Summary of Enterprise Fund Revenues and Expenses" (1994), p. 18., and LACMTA, *Section 15 Report* (1993).

73 LACMTA, *A Plan for Los Angeles County*, Appendix, Table entitled "Estimated Rail Project Costs," p. 25.

74 LACMTA, "Long Range Transportation Plan, Appendix," Table entitled "Estimated Rail Project Costs" (November 18, 1994).

an estimate of approximately 510,788,040 new rail transit trips.[75] *If the $417 million the MTA proposes to spend over the next 20 years on planning rail projects were instead spent on providing bus service; then, given the fiscal year 1995 proposed operating subsidy, the agency might expect to serve 469 million bus passengers.*

Table 8: Rail Cost And Ridership Estimates

Rail Project	New Daily Transit Trips	Total Project Costs (Millions)
Red Line West	20,881	$1,821.4
Red Line East	5,441	729.0
(Green Line) Lot C (Extension)	2,164	241.5
Santa Monica Blvd.	7,855	1,396.3
Exposition ROW (USC-Santa Monica)	11,752	983.1
Burbank-Glendale	9,841	559.6
(Green Line) Westchester (Extension)	2,117	71.7
(Blue Line) Central Business District (Downtown Subway Connection)	1,499	599.0
(Blue Line) USC-Exposition Park	1,271	135.0
Crenshaw	5,844	1,334.2
(Green Line) Torrance (Extension)	3,687	654.2
(Green Line) Norwalk (Extension)	1,132	245.1
10/60 Corridor	4,928	889.6
(Pasadena Blue Line) Duarte (Extension)	1,150	47.5
Totals	**79,562**	**$9,707.2**

This is almost as many passengers as the Long-Range Plan indicates would be carried over 20 years if all of the rail lines proposed there were constructed immediately. How many passengers might be carried for the more than $9.7 billion in rail construction costs shown in the plan, not to mention the roughly comparable cost of operating such a system?

2. Learning From the Past

In 1980, the voters of Los Angeles passed Proposition A, a one-half cent sales tax dedicated to transit, and began the most successful transit ridership experiment in U.S. history. SCRTD ridership had fallen from 396.6 million in fiscal year 1980 to 354.1 million in fiscal year 1982 *as base fares were increased from $0.55 to $0.85*. Beginning in fiscal year 1983, an allocation of approximately 20 percent of Proposition A tax receipts was used to reduce the SCRTD base fare at $0.50.

By the simple expedient of reducing fares from $0.85 to $0.50 for a three-year period, SCRTD and the other Los Angeles County transit operators were able to induce a transit modal split that is almost 14 percent higher than the mode split projected for Scenario 1.
Over the three years of the $0.50 fare program, District transit ridership rose over 40 percent, and was still increasing in the last month of the experiment. Very little about the bus system was changed except the fare. Revenue service miles increased only 1.5 percent, including special service added for the 1984 Los Angeles Olympics.

Beginning in fiscal year 1986, the Proposition A funds that had been used to subsidize $0.50 bus fare were reallocated to rail construction. Fares were increased to $0.85 in fiscal year 1986 and then to $1.10 in fiscal year 1989. By fiscal year 1990, ridership had decreased by over 96 million passenger boardings per year, or 19.3 percent.

The decline in bus ridership coincides exactly with the beginning of the Los Angeles County rail transit construction program. The funds transferred away from the fare subsidy program paid for about thirty-five to forty percent of the reported construction costs of the Blue Line. In FY95, Blue Line ridership hit 12 million passenger boardings, each at a

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75 Using a daily-to-annual conversion factor obtained from LACMTA, Section 15 Report, 406MBDO (1993).

public sector operating subsidy more than three times higher than that of the average bus passenger.[76] *Thus the money that had been used to move people on buses was used to build rail projects that will never be able to move more than a small fraction of the number of passengers already lost from the bus system.*

3. Busways

Busways are more productive than MTA indicates. According to the plan, "the El Monte Busway now carries as many people as three regular traffic lanes."[77]

The El Monte Busway is now an HOV lane, not a pure busway. As Table 9 shows, the busway provides the capacity of about 5.7 standard freeway lanes. Buses produce approximately 27 percent of the throughput index value, or about 55 percent more than a standard freeway lane. The remaining 73 percent is due to HOV use, but this is not necessarily typical. Houston's 46.5 mile transitway system serves 60,000 person trips daily, 41 percent of which are carried by transitway buses.[78] The MTA plans to evaluate existing freight rail alignments for Railbus. Alternative guideway options should also be considered. For example, could these rail right of ways be converted to busways?

Table 9: Performance of the El Monte Busway[79]

	Freeway Lane	Buses	Car / Vanpools	Busway Total
Vehicles / Hour	1,700	49	1,213	1,262
Average Occupancy / Vehicle	1.12	31.2	3.2	4.3
Passengers Past A Point	1,904	1,529	3,882	5,410
Average Speed	27	52	55	54.88
Throughput Index[a]	51,408	79,498	213,488	292,986
Freeway Lane Index	1.00	1.55	4.15	5.70

a - Throughput Index is computed as (vehicles/hour) x (average occupancy/vehicle) x (average speed) and has units of passenger-miles per hour, peak hour, peak direction. Busway Total is (Buses + Carpools/Vanpools).

4. High Occupancy/Toll (HOT) Lanes

High Occupancy/Toll (HOT) lanes are HOV/bus lanes that can also be used by solo drivers or two-person carpools willing to pay a fee for the privilege. The objective of HOT operation is to make use of HOV lane capacity not being used by car- and vanpools. If demand for HOT lanes exceeds supply, then the standard economic response would be to increase supply, or raise price if this was not feasible.[80]

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76 Tom Rubin, *A Look at the Los Angeles County Metropolitan Transportation Authority* (1992).

77 LACMTA, *A Plan for Los Angeles County*, p. 65.

78 Texas Transportation Institute, "The Status and Effectiveness of the Houston Transit System," Department of Transportation Research Report 1146-2, Federal Highway Administration (1989).

79 Caltrans District 7 (Los Angeles) peak hour traffic counts, 1992, as per SCRTD Scheduling and Operations Planning Department. See also: Peter Gordon and Harry W. Richardson, "The Counterplan for Transportation in Southern California: Spend Less, Serve More," Reason Foundation (February, 1994), p. 13.

80 Gordon J. Fielding and Daniel B. Klein, "The Facts About Gridlock in Southern California," Reason Foundation Policy Study No. 170 (November 1993).

HOT lanes have the potential to be at least partially self-financing. HOT revenues can be pledged against bonds to cover part or all of the cost of HOT lane construction. Table 10 provides a conservative estimate of the revenue a HOT lane might generate in a year.

Table 10: Estimated Hot Lane Toll Revenues	
Hours of Operation / Day	3
Users / Hour	500
Price / User	$ 2.50
Non-Holiday Weekdays / Year	254
Annual Revenues	$925,500

HOT lanes will be operated electronically, not like conventional toll lanes. Consequently these revenues must be adjusted by:

- the annualized cost of the capital equipment to operate the lane,
- the additional cost of enforcement of a HOV/HOT lane beyond the cost of enforcement of a conventional HOV lane, and
- the net fines assessed from violators.

The plan suggests at least two HOT lane demonstration projects be considered.[81] We suggest HOT lanes be given much higher priority. There are 17 HOV projects in the plan.[82] If MTA only tries one or two demonstrations, they may lose the opportunity to implement HOT operations on the remaining facilities. At the minimum, several years of revenue will be foregone. The Los Angeles Santa Monica Freeway Diamond Lane episode of two decades ago turned public opinion and law against conversion of standard lanes to HOV lanes.[83] It may ultimately prove to be as difficult to convert an existing HOV lane to HOT service as it is to convert a standard lane to HOV service. The 279 miles of new HOV lanes identified in the plan should, at a minimum, all be reviewed for implementation as HOT lanes.[84] These could also serve as pilot sites for refining peak load pricing schemes such as is implemented on Orange County's State Route 91 toll lanes.

There are important questions of technology, enforcement, and equity that must be answered before HOT lanes can be implemented on the scale we suggest. However, there are compelling economic arguments for implementing tolls, and none of the problems associated with this alternative are insurmountable.

5. Other Market-Based Approaches

More flexible modes of transit have the potential to attract nontransit riders. Peter Gordon and Harry Richardson at University of California suggest metropolitan-wide shuttle services as the most cost-effective complement to automobiles.[85] Jitneys and vans are already subject to substantial use by low-income travelers despite regulations that disable competitive pricing and provision of service.[86]

The paratransit and nontraditional transit options included under the MTA's "Mobility Allowance" label should be the basis of experiments and demonstrations including:

- areas and lines where low utilization and/or low frequency of fixed-route bus service makes conventional 35- to 40-foot bus service uneconomical;

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81 LACMTA, *A Plan for Los Angeles County*, p. 59, 67.

82 LACMTA, *A Plan for Los Angeles County*, p. 68.

83 Joan Didion, *The White Album* (The Noonday Press, 1995).

84 LACMTA, *A Plan for Los Angeles County*, p. 7.

85 Gordon and Richardson, "Counterplan," p. 15.

86 U. S. Department of Transportation, Federal Highway Administration, *New Perspectives in Commuting* (1992).

- hill and canyon regions where the road, sidewalk, and related physical conditions makes the use of large buses and/or fixed route transit difficult or impossible;

- expansion of transit services to disadvantaged travelers who find the use of fixed route service difficult or impossible;

- expansion of the conventional transit market to attract potential riders who are not attracted to or cannot use conventional fixed route transit;

- to augment MTA peak service; and

- as a replacement for full-sized buses during off-peak periods.

The MTA's definition of a "Mobility Allowance" does not appear to include privatization or increased competition in the provision of transit services. This is unfortunate. Given the current high cost of providing MTA bus service, the best opportunity for expansion of transit services in Los Angeles may be reduction of MTA operating costs. Increased competition might place the MTA in a more cost conscious posture.

6. Modeling

Since the MTA staff does not believe that the SCAG population projections are credible, MTA and SCAG should collaborate and produce a reconciled population/demographics projection to serve as a basis for the MTA's Long Range Plan models. Alternatively, MTA might produce two sets of results, the "legally required" set based on the SCAG projections, and an alternative set the MTA believes.

B. The Plan Document

The plan includes very little explanation of many of the most important concepts underlying the MTA planning process or the indicators the process generates. Fundamental assumptions, relationships, costs, and benefits are largely unexplained. Calculations involving important quantitative data are not shown. Much data included in precursor documents are eliminated from the staff recommendation document and the final plan. Changes are made with no explanation, or disclosure. This lack of documentation makes it very difficult to understand the details and implications of the plan. Graphs showing how projects score on MTA's decision criteria do not match the values shown in the narrative portions of the report, nor are these indices consistent with the inputs reported in the plan's precursor documents. Consequently, it is difficult to disassemble the MTA scores used to describe and compare the various projects.

Replication of the MTA's findings requires the following data by year for all rail lines; including those already in service, those in construction, those that have been approved, and those not yet approved or evaluated.

- Capital Costs
- Operating Costs
- Capital Renewal and Replacement Costs
- Sources of Funding for Capital, Operating, and Capital Renewal and Replacement Costs
- Ridership
- Passenger Miles
- Passenger Fares
- New Ridership
- How many rail passengers are former bus passengers?
- Cost and Subsidy Per Rail Passenger
- Cost and Subsidy Per Rail Passenger Mile
- Cost and Subsidy Per Linked Rail Trip
- Cost and Subsidy Per Passenger Mile for Linked Rail Trips
- Cost and Subsidy Per New Rail Passenger
- Cost and Subsidy Per New Rail Passenger Mile
- Cost and Subsidy Per New Linked Rail Trip

- Cost and Subsidy Per New Passenger Mile for Linked Rail Trips
- Mode of Access and Distribution for Linked Rail Trips

A subset of these data is available in the plan's precursor documents or from other interim sources. Most data are not available. Data for costs and subsidies should include all funding sources, not just the cost to the MTA. Identifying sources of funds dedicated to rail is important because the opportunity to use funds for alternative purposes varies by source.

C. The Plan Process

The process used to develop the MTA's Long-Range Plan has been almost exclusively internal. No independent experts are substantively involved. We recommend the MTA open its planning process to external participation and review. The plan reports a partial review by a group of transportation planners that appraised "...the travel forecasting procedures being used for the Red Line Eastside studies [and] revised methodologies developed by your staff for the Long Range Transportation Plan Development."[87] This exercise is useful but is limited to specific changes made in the modeling process. It is not a substantial exercise and does not constitute a comprehensive review of either the plan or the MTA planning process.

The quality of the MTA's planning process is extremely important, because the agency has a tendency to treat plans as mandates. The MTA asserts that:

> *"The Long Range Plan was designed to provide a flexible policy framework and planning tool for the evaluation of complex transportation policy choices and funding decisions within the 20-year planning horizon."*[88] ***While the plan provides a framework and overall policy direction for these other plans and processes, it is not a substitute for separate, specific MTA Board action on these documents.*** *In addition, the fact that a project is included in the Long Range Plan is not a substitute for Board action on the project. All review, approval, and regulatory requirements related to each specific project are performed independently of the Long Range Plan."*

We do not believe this is true. The best counter example is the decision to build the Pasadena Line. This rail project was included in the LACTC 30-Year Plan at the top of the rail implementation list. When the fiscal year 1994 budget was up for adoption in May through August of 1993, the 30-Year Plan was repudiated by the MTA Chief Executive Officer, Franklin White, who was subsequently removed by the Board. The finances of MTA made it obvious that there was insufficient funding to complete the Pasadena Line. During this period, Board members consistently made the argument that the time for decision was over, that the MTA had committed to start construction on the Pasadena Line when the 30-Year Plan was adopted, and that MTA was obligated to begin construction. The proponents of this argument prevailed to such an extent that the Board made the legally innovative decision to cover a funding shortfall for the Green Line, *and to begin work on the Pasadena Line*, with bonds issued against Proposition C Transit-Related Highway Improvement funds. The Board's argument was that a rail line down the center of a freeway is a transit-related highway improvement. This same funding source was used to begin construction of the Pasadena Line. More creativity was required in this case, because the Pasadena Line merely *crosses* a highway.

The desired end result of transportation planning and engineering exercises should be a superior transportation system. The MTA's emphasis on rail suggests the agency is confusing ends and means. The plan reports that MTA's vision is "to develop a multimodal system that better serves the needs of transit dependent riders, while also providing a network that will attract solo drivers out of their cars, primarily through faster transit speeds, improved quality of services and more commute choices."[89]

The agency uses the term "multimodal" as an euphemism for construction of an expansive urban and commuter rail system. Our view is different from the MTA's—we prefer to initiate transportation plans by asking, "Where do people live and where do they want to go?" Whether the answer to this question is a single or multimodal system is a function of resources, tastes, and technology. Multimodalism is a means, not an end. It is an outcome, not a starting point. The MTA should not begin its analysis with a specific technology in mind. Rather, the agency should evaluate a variety of workable alternatives to determine which one provides the best results.

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87 LACMTA, *A Plan for Los Angeles County*, Appendix, p. 40.

88 LACMTA, *A Plan for Los Angeles County*, p. 17.

89 LACMTA, *A Plan for Los Angeles County*, p. 6.

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