Influence of the Rail Program on Bus Transit in Los Angeles

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Abstract

In November 1980, voters in Los Angeles County, California, approved Proposition A, which stipulated a one-time, three-year rollback of bus fares to 50¢. Afterwards, at least 35 percent of the revenues had to be used for rail construction and operation (with a stated emphasis on construction). The program moved forward as called for, and by the early 1990s the Blue Line to Long Beach was in operation. The subway and an additional light rail line would both open by 1995.

In the early 1990s, however, opponents of rail began a campaign to discredit the program using premature, distorted, and sometimes simply false information about rail's effectiveness. Embarrassed by construction problems and confused by internal issues, the Metropolitan Transit Authority (MTA) found it difficult to defend the new rail system. In 1994, a suit was filed by the Bus Riders Union, a small group of bus riders. In 1996, even though most of the basic assertions of the suit were proven to have been either premature or false, the MTA agreed to a settlement it is now trying to live up to.

In truth, the MTA fully supported the bus system well after falling ridership would have called for service cutbacks. The number of buses in service stayed high, the bus-miles of service dropped far less than ridership, and the number of empty bus seats actually rose. The bus system lacked for neither operating funds nor subsidies. Even the average fare paid by the transit user (in constant 1999 dollars) changed very little since the early 1980s. Whatever the reasons for the slide in bus ridership, the rail system cannot be blamed.

The new rail system continues to grow in importance. Less than 10 years after the

Blue Line was inaugurated, the two light rail lines, the still incomplete subway, and the Los Angeles portion of the regional Metrolink commuter rail system together carry 11 percent of all MTA transit riders and 22 percent of its passenger-miles. Rail is also proving to be faster than the bus option even including a bus-to-rail transfer. And rail's operating cost effectiveness, already better than that of the bus, keeps improving.

Introduction

This article evaluates certain arguments used in Los Angeles to couch the bus system as a victim of a misguided rail program. It is not to discredit buses. The bus system will continue to be the workhorse transit mode in Los Angeles and nationwide; no other system provides the needed area coverage within a large urbanized area. Two-thirds of its riders rank the bus service as good or very good (MTA Service Planning and Research Program Reports), a strong indication that it is doing its job well. However, the bus system will never be the *single* solution for transit in Los Angeles. Twice in 10 years (1980 and 1990), citizens of Los Angeles agreed and voted funding for a major rail component of the transit system.

Transit in Los Angeles during the Past 20 Years

Twenty years ago, the first major oil crisis broke with events in Iran. Gasoline prices soared to \$2.45 (in 1999 dollars), adding to commuters' ongoing frustrations with increasing traffic congestion. Proposition A went to the voters in November 1980 promising an eventual rail system in specifically-named corridors to motorists and a three-year, one-shot fare reduction with ongoing fare subsidies thereafter to bus riders. To many people's surprise, it passed. The ballot language of Proposition A leaves no doubt it was conceived by its authors and put forth as substantially a rail construction measure. The MTA has no choice whether or not to build rail transit. In essence, it may be criticized for *how* it builds rail lines, not *that* it builds them.

In mid-1982, after a legal challenge, the provisions of the measure were begun with implementation of the mandated three-year rollback of transit fares. Fares went from \$1.43 to 80¢ during this period. (All fares are in 1999 dollars.) MTA's bus ridership, which had been slipping, went up 40 percent. This was a phenomenal achievement. Unfortunately, the three-year fare rollback period

ended in 1985 in conformance with Proposition A, and the base adult fare rose again to \$1.25. Bus ridership fell 10 percent immediately, and continued to slide year-by-year until 1996 when it bottomed out 8 percent below its 1982 level. (It has since climbed above that level.) However, the spin-off of many Southern California Rapid Transit District (SCRTD) San Gabriel Valley bus lines to Foothill Transit and a number of its commuter bus lines to Los Angeles Department of Transportation (LADOT) in the early 1990s caused some of the MTA's bus ridership loss. Obviously, the new rail services diverted some other bus riders to rail as well. MTA transit ridership in 1998 was 17 percent above its 1982 level if one adds back these "lost" riders.² Non-MTA transit ridership in Los Angeles County has grown 23 percent since the early 1980s.

Although MTA bus ridership kept slipping from 1986 onward, the amount of bus service supplied did not. The operating budgets between 1986 and 1990 averaged 30 percent more (in equivalent dollars) than they had before the roll-back period. Similarly, the maximum number of buses in service and the annual bus-miles of service stayed at their all-time highs. The needed additional subsidies were made available. By the early 1990s, with the generally weak southern California economy, this policy simply became financially untenable, and the MTA started trimming the oversupply of bus service to reflect the far lower demand.

Meanwhile, the MTA started rail construction in 1985. Construction dollars came from the 35 percent Proposition A allocation earmarked for this work. The 22-mile Blue Line between downtown Los Angeles and Long Beach opened in 1990, the Red Line subway opened five stations in 1992 and now extends through downtown Los Angeles to Hollywood, and the 20-mile grade-separated Green Line between Norwalk and El Segundo opened in 1995. The Southern California Regional Rail Authority (SCRRA), which by law is composed of the transportation agencies of all five counties it serves, opened its first lines in 1992 and now operates a six-line, 416-mile system. Because 60 percent of the service is in Los Angeles County, MTA's share of the operating subsidy is also about 60 percent.³ Rail ridership has gone from nothing in 1990 to 46 million annual trips nine years later (1999).

Arguments against Rail

Over the past decade, critics have levied attacks on Los Angeles's rail program. Early on it was an easy target. In 1996, the Reason Foundation printed its *Ten Transit Myths: Misperceptions about Rail Transit in Los Angeles and the Nation*. It used 1993 data to criticize the Los Angeles program and rail, in general, nationwide. The report attacked a six-year-old light rail line based on its performance through its third year in operation, and a three-year-old subway segment based on activity during its first year, and was at the least unfair. But it accomplished its goal of confusion and gave the media the controversy it seems to need. In 1995, after a fare increase, a small group, presumptuously calling itself the Bus Riders Union, filed a suit in federal court alleging the rail system harmed the civil rights of the lower income bus commuters. They wanted to turn Proposition A into a bus-only measure. Yet, ironically, had Proposition A actually been a bus-only measure, it almost certainly would have failed.

The discussion that follows takes six of these anti-rail arguments and evaluates them. The basic source of information comes from the Federal Transit Administration's (FTA) National Transit Database, an annual compilation of transit statistics from FY 1979 through 1997 (the last year published). For 1998 data, the MTA's submission to the FTA is used. Most of the dollar figures used in the report have been converted to 1999 dollars using Bureau of Labor Statistics' conversion factors to make comparisons between years easier.

Argument 1: *Rail was built for and is used by suburban whites.*

Reality: *The rail system was built for and is used overwhelmingly by minority and transit-dependent riders.*

The three MTA rail lines were built, in large measure, to serve the needs of transit-dependent communities. As one would expect from the areas it serves, the rail system is used overwhelmingly by minority, transit-dependent riders. This is confirmed by the results of a series of onboard passenger surveys shown in Table 1. (MTA Service Planning and Research Program Reports: *FY 96-97 MTA On-Board Passenger Survey*; *1998 Blue Line Passenger Survey*; *1998 Green Line Passenger Survey*; and *1998 Red Line Passenger Survey*.)

MTA bus ridership is 88.5 percent minority and rail ridership, 84 percent (weighted). To say the bus system carries a higher percentage of minorities is splitting hairs. While rail passengers do have marginally more household income and slightly higher access to an automobile, they by no means approach affluent. (Now that the Red Line serves the Vermont Avenue corridor, the rail percentage will probably be higher than 84%.)

As is typical of commuter rail serving outlying areas, Metrolink's household incomes average \$65,000 and car availability 86 percent, both clearly separating its ridership economically from other rail riders. Its ridership is 40 percent minority. Like the other lines, however, Metrolink's ridership generally reflects the demographics of the corridors it serves, and the outlying counties have lower minority populations. Those counties also pay all costs for their lines.

Table 1
Results of 1997 MTA Passenger Surveys (%)

<i>Question</i>	<i>Category</i>	<i>Blue Line</i>	<i>Green Line</i>	<i>Red Line</i>	<i>Bus System</i>
1. Gender	Male	50.1	52.5	52.7	44.3
	Female	49.9	47.5	47.3	55.7
2. Ethnicity	White	11.0	14.1	25.1	12.5
	African American	31.3	32.9	20.2	22.1
	Hispanic	47.9	38.9	39.6	52.2
	Asian	5.7	8.8	11.3	8.6
	American Indian	1.4	2.2	1.2	1.1
	Other	2.6	3.1	2.7	3.5
3. Income	<\$15,000	52.0	40.1	33.0	69.2
	\$15,000–\$35,000	27.8	19.5	24.6	20.6
	\$35,001–\$75,000	15.9	21.2	26.8	8.8
4. Was a vehicle available?	>\$75,000	4.3	9.2	15.6	1.4
		33.1	36.7	41.8	20.2

Source: CATS (1999).

Argument 2: *The increases in MTA transit fares caused by the rail program have hurt the poorer and minority bus riders disproportionately.*

Reality: *In 1999 dollars, the average bus fare has changed very little since 1979.*

Much has been made of the assumed rise in transit fares over the last two decades. Although the adult base fare has increased from 50¢ in 1985 to \$1.35 today, less than one-quarter of all riders pay this full fare (MTA Service Planning and Research Program Reports). The average fare collected per passenger is typically far less because of the discounts inherent in the monthly pass, school fares, elderly, and handicapped passes, and now weekly passes and token discounts. Figure 1 plots in 1999 dollars both the adult base fare (upper line) and the average revenue per passenger (lower line). Several things are clear. First, the average revenue per passenger is far less than the adult base fare, averaging about half as much. Second, the three-year fare rollback period shows up as the anomaly it was. (The sharp jumps in the chart are *base* fare adjustments, for example, to \$1.10 in 1988 and to \$1.35 in 1995.)

Figure 1. Adult base fares and average fares in 1999 dollars

The chart also shows that the average revenue per rider has been very consistent over the past 20 years. By design or luck, MTA fare increases have tracked inflation over the last 20 years, just above and below 60¢. The periodic fare increases have surprisingly not added to the burden of the lower income transit rider.

Argument 3: *The rail system has diverted needed financial resources from the bus system.*

Reality: *The financial needs of the bus system were not compromised by the rail program and were being met well after they should have been reduced.*

Figure 2 depicts annual bus operating expenditures (upper line) and corresponding subsidies required to cover what fare revenues do not (lower line), both in 1999 dollars. The chart clearly shows that the level of bus operating dollars dropped very slightly after the fare rollback ended in 1985 and held amazingly steady until 1995. But the needed subsidies to fund this level of operations were also available well into the 1990s. In fact, the subsidy levels for bus operations increased steadily from 1989 to 1994 to make up for the dropping fare revenues. Bus service levels also remained high during this period.

Figure 2. Bus operating costs and subsidies

The gap between the level of service being supplied and the service being consumed, however, continued to widen. Figure 3 shows the MTA bus ridership over time. In spite of heavy funding, ridership steadily slipped from 450 million annual bus trips in 1986 to 378 million in 1994, a 16 percent drop. By this time, with sales tax revenues falling with the weak southern California economy, the MTA had no choice but to bring expenses and subsidies more in line with ridership. If anything, it could be faulted for not having done so sooner.

The rail construction effort began in earnest in 1985 and continued thereafter, especially until 1995 while the light rail lines were being built. Both were 100 percent locally funded. There is nothing to suggest that, during this heaviest period of capital outlay for the rail program, funding for the bus system was in any way compromised.

Figure 3. Annual bus ridership

Argument 4: *The diversion of money to rail has led to less bus service, falling ridership, and crowding of buses.*

Reality: *The overall quality of bus service increased with the rail program.*

This section addresses key indicators of bus service quality: maximum number of buses in revenue service, total revenue bus-miles, and average bus passenger loads.

The maximum number of buses in revenue service is usually the total number of buses in the afternoon peak. While not a definitive indicator of service quality, it is an important and recognized one. During the fare rollback period, the number of buses in revenue service increased to 2,073 to carry increasing ridership. The maximum number of buses dropped slightly after 1989, but the MTA has fielded a very consistent number of buses since. Recently, the number of buses approached the number in service during the fare rollback period when bus ridership was 40 percent higher!

Similarly, revenue bus-miles averaged 91 million per year during the fare rollback period. They actually rose slightly between 1986 and 1989, then

dipped in stages to 79 million by 1995. (Some of those “lost” bus-miles resulted from the spin-off of bus lines to Foothill Transit and LADOT in the early to mid-1990s.) The drop in bus-miles was less than 15 percent from what it averaged during the fare rollback period, one-third the drop in ridership.

Figure 4 plots the average number of passengers per bus for the 1979–1998 period. Buses usually start their routes with few people and end with few people. In the middle of the route, there may be times when the bus is crowded. Fewer passengers means it is probable that there would be fewer of those crowded times. Lower average loads indicate that such loading conditions have decreased. The typical bus has about 44 seats; a loading of 22 means that, on average, half of the seats are occupied.

Figure 4. Average bus loading

During the 1983–1985 period, the number of passengers per bus rose to just under 26, but over the next 10 years the average dropped to 20, which is substantial. Contrary to what has been assumed by the Bus Riders Union, the number of seats available on the bus system *increased* during the period of maximum rail capital expenditures. Can the rail system take credit for less crowded buses? Probably not entirely—but the rail system cannot be blamed for increased crowding that did not occur on the bus system.

These three indicators of the amount and quality of the bus service supplied paint a picture of a bus system that, in spite of falling ridership, kept buses and service levels high, which resulted in fewer passengers carried per bus. But if the amount of service being provided was holding steady while bus ridership was falling, what was happening to the cost of carrying each passenger? It climbed in the 10 years after 1986, from \$1.58 to \$1.92. The cost to carry one passenger one mile rose from 37¢ to 51¢ over the same period (again, all figures in 1999 dollars).

Argument 5: *The rail system is underutilized, not cost effective, and takes more than its share of funding.*

Reality: *The rail system is well used, is more cost effective than the bus system, and takes its fair share of subsidies.*

Although the rail system in Los Angeles is still limited, unfinished, and new, it has done a remarkable job attracting riders. The Blue Line, which at 10 years is the oldest rail line in the region, attracts 59,000 daily riders, the most of any single light rail line in the country. The Green Line carries 25,000 riders each day after 4 years of operations. Its ridership is greater than the combined ridership of all buses on the El Monte Busway after 25 years of that service. The Red Line, which has only begun to assert its potential since its June 1999 extension to Hollywood and Vine, carries 59,000 riders each day. And Metrolink, the 416-mile, five-county commuter rail system carries 29,000 trips each day, 90 percent of whom travel within or to and from Los Angeles County. Together, the system carries 165,000 daily trips or 11 percent of all MTA trips and over 22 percent of all transit passenger-miles of travel.⁴

But comparing just the number of trips does not give the full picture because many bus trips are 2 to 5 miles long, the average being 3.7 miles. While on the rail lines, the average trips can be much longer. The average trip length on the light rail system is 7.1 miles, on Metrolink it is 35 miles.⁵ A 3-mile trip is quite different from a 35-mile trip. For example, it obviously costs more to take a passenger 35 miles than 3.7 miles. Comparing only the cost per trip for these two trips is very misleading. The use of "passenger-mile"—one passenger transported 1 mile—is a better way to compare these quite different trip lengths.

“Passenger-mile” is also useful in assessing the importance of the transport mode. Consider all the local trips cars make each day on Los Angeles’s surface streets, add them all up, and this number swamps the number of trips cars make each day on freeways. Based on number of trips, clearly surface streets are more important than freeways. But if you look at vehicle-miles (passenger-miles), the freeway carries 43 percent of all vehicle-miles of travel each day within Los Angeles County (Federal Highway Administration, 1998). Now which is more important? (The answer, of course, is neither. Surface streets handle very many short trips well, the freeways fewer long trips well.)

That the rail transit system, as skeletal as it is, carries 22.4 percent of the MTA’s total passenger-miles of travel is quite an accomplishment. The freeway system carries about 20 percent of all auto trips and 43 percent of all vehicle-miles of travel; the new rail system carries 10 percent of the transit trips and 22 percent of the transit passenger-miles of travel. In short, it is already half as important to Los Angeles’s transit system as the region’s freeway system is to its streets and roads system.

Does the rail system consume more than its “fair share” of operating subsidies? The answer is a qualified “no,” as can be seen in Table 2. Overall, the rail system carries fewer passengers than its percentage of subsidy, but more passenger-miles than its share. The Metrolink commuter rail system especially requires far less subsidy than its contribution to total passenger-miles of travel. The light rail component of the system (made up of the Blue and Green Lines) carries more passenger-miles than its percentage of subsidy, but less ridership. The Red Line is not yet carrying its own, but that is understandable since this will be its first year to Hollywood and does not yet reach the San Fernando Valley. Within the next several years, it will be carrying more passengers and passenger-miles of travel than its share of subsidies.

Is the rail system more cost effective than the buses? Figures 5 and 6 look at indicators of operating cost effectiveness⁶ over the past decade. They show that the light rail system has steadily improved in cost effectiveness while the bus system has slipped. The cost per passenger-mile reflects the large difference in average trip lengths between the two modes. The figures also show a linear, computer-generated trend line to smooth out the year-to-year variations

Table 2
Operating Expenses by Mode (1998)

<i>Mode</i>	<i>Budgeted Operating Subsidy</i>	<i>% of Subsidy</i>	<i>Annual Boardings</i>		<i>Annual Passenger-Miles</i>	
			<i>Number</i>	<i>%</i>	<i>Number</i>	<i>%</i>
Bus	\$448,900,000	83.1	359,579,855	89.5	1,355,913,000	77.6
Light Rail	\$45,800,000	8.5	23,883,883	5.9	68,900,000	9.7
Subway	\$24,900,000	4.6	12,269,205	3.1	59,800,000	3.4
Metrolink	\$20,500,000	3.8	6,014,000	1.5	162,100,000	9.3
Total Rail	\$91,200,000	16.9	42,723,088	10.5	390,800,000	22.4
Total	\$540,100,000	100.0	402,167,088	100.0	1,746,713,000	100.0

in operating costs. These trend lines show light rail's cost effectiveness steadily improving as bus costs steadily worsen. The cost per trip for each mode is now almost equal, the cost per passenger-mile is now lower for the light rail system and is one-third less than that of the bus system.

In FY 2000, the operating cost per passenger of the Red Line will be almost the same as for the bus (\$2.06 for the subway versus \$2.03 for bus), although the cost per passenger-trip is still higher for the subway. The main reason for the latter is because the average Red Line trip is still two-thirds the length of the bus (2.6 miles versus 3.7 miles). Both Red Line indicators will drop significantly when the line opens to North Hollywood in June 2000 and a large number of longer trips floods the line.

Figure 5. Operating cost per passenger trip

Figure 6. Operating cost per passenger-mile

Bus advocates take the rail capital costs and calculate what each passenger-trip should be charged. This compares apples with oranges: the capital cost of a faster, higher capacity, cost-efficient system versus a system designed to provide many short trips at slower speeds over many “free” streets. While the arithmetic may be faultless in such a comparison, the understanding of the value obtained is lacking. For example, a car moving over a new freeway could be calculated as having a much worse cost effectiveness than a car making the same trip over existing “free” streets. One could even argue the freeway is a waste of money by comparison, if the value of the freeway—its higher speed, capacity, and safety—is ignored.

There have been studies in the past comparing equivalent systems—busways and rail lines serving similar areas—which clearly demonstrate the better value of the rail service. The earliest one was in 1972 and compared the Shirley Busway with the Lindenwold Rail Line (Vuchic and Stanger 1972). A good candidate for another such comparison would be the \$800-million, 10-mile Harbor Freeway Transitway. It is 3 miles west of the Blue Line and also serves south-central Los Angeles and communities to the south. Operating now for five years, the Harbor Freeway Transitway carries about 2,000 transit riders a day, 3.5 percent of the Blue Line total.

Argument 6: *The rail system is not convenient and is slower than the bus to use, and forcing a transfer is unfair.*

Reality: *The rail system is faster than taking the bus, even with a transfer.*

There is a continuing misperception that the MTA's rail system is slower than the bus system. It is not. The National Transit Database's summary on the MTA shows that average revenue speeds of rail modes are far more than that of the bus fleet (National Transit Database 1997). (See Figure 7.)

Figure 7. Average Speed in Revenue Service

But what happens if a transit rider must transfer to the rail system? Is the full trip still faster than staying on the bus? The sense that transferring to Red Line is slower comes from three assumptions. The first is that, in downtown, getting to a station, descending to the platform, and waiting for the train to arrive takes longer than simply taking a bus. Outside downtown, the time spent transferring from a connecting bus to the train is assumed to take too long to be attractive. The final assumption is that the Red Line takes longer because the Red Line alignment is not direct.

How do these assumptions stack up in the real world? To find out, sample door-to-door trips were field-tested starting west of Vermont Avenue (the street under which the Red Line travels toward Hollywood) and ending at 6th and Broadway in downtown Los Angeles. This is a logical trip for a typical transit-

dependent rider living in the mid-Wilshire area who works or shops downtown. One alternative trip requires the user to board a bus, transfer to the Red Line, then walk to the eventual destination. In the other alternative, the rider boards the bus, continues downtown, then walks to work. Depending on where one lives, bus routes #20, #21, and #22 are available on Wilshire; #14 on Beverly; #4 on Santa Monica; and #2 on Sunset. Each of these bus routes proceeds directly downtown. Most of the trips taken were midday trips, which gives the bus trip an advantage.

None of the above assumptions proved valid. Heading toward downtown, the time to transfer to the Red Line is long—up to 15 minutes in the worst case. But the speed of the train makes up for any time spent waiting. Returning from downtown, one realizes that buses also have headways; walking to the right bus stop and waiting for the bus to arrive often is as long or longer than walking to the closest subway entrance and waiting for the train. This wait time hurts the slower bus trip. The average extra time it took the bus to make the trip in the eastbound direction was 4.25 minutes, or 16 percent. In the westbound direction, the average extra time for the bus trip was 17 minutes, or 55 percent. While this survey is not scientific, its results are consistent among the trips and consistent with what one could derive from timetables and standard wait times, and should not be surprising.

Conclusions

It is not clear why the MTA's bus system continued to lose ridership even after the end of the fare rollback period of 1983–1985. The MTA actually had more buses in revenue service during the peak periods. Those buses ran the same number of revenue bus-miles through the 1980s and the eventual drop in revenue service miles was one-third that of bus ridership. The number of empty seats in buses overall actually rose between 1986 and 1995, which almost certainly meant less crowding. Operating expenses continued high as did the subsidies needed to keep all this extra service continuing. And most amazingly, the average transit rider paid almost the same fare in spite of periodic fare increases. Other, smaller operators in Los Angeles County gained substantial bus ridership during this same period.

Nothing in the record supports the contention that the financial needs of the rail system caused the quality of bus service to deteriorate. It would have been nice if the lower fare in the 1983–1985 period could have been sustained, but it could not have under the rules of Proposition A approved by the voters.

Nor can one defend the contentions that the fledgling rail system is used only by affluent suburbanites, is little used, or is not carrying its fair share of the transit load. In 2000, it will carry more than 11 percent of all MTA transit trips and more than 22 percent of all its passenger-miles of travel. And it is doing so more cost effectively than are the buses with no more than its fair share of operating subsidies.

Endnotes

1. Until 1992, the agencies involved were the SCRTD and the Los Angeles County Transportation Commission. In 1992, they merged to the LACMTA. In most cases, it is easier to use the MTA as the generic label.
2. This assumes that ridership on the lines spun off the Foothill Transit and LADOT would have increased as much under MTA operations.
3. Unless otherwise noted, Metrolink figures presented in this article are only for Los Angeles County.
4. The SCRRA Fiscal Year 1999/00 Approved Budget assumes that a conservative 60 percent of total passenger-miles are in Los Angeles County (page 31). See also the LACMTA Adopted Budget for Fiscal Year ending June 30, 2000 (page 39). The Blue Line now has 10 years of operations under its belt and can be fairly assessed; it is, however, too early to give a fair assessment of the Red Line's performance. The Green Line is also still growing. However, Green Line and Blue Line statistics are combined in the National Transit Database statistics, making it difficult to keep them separately.
5. Because the Red Line is still relatively short, its average trip length is only 2.6 miles.
6. Bus advocates often state that not only is rail more expensive to build, but is also more expensive (less cost effective) to operate. This article looks only at the latter contention.

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