

BUS OVERCROWDING STUDY

TECHNICAL REPORT

March 4, 1991

Joint Board Report to the

**Southern California Rapid Transit District
Los Angeles County Transportation Commission**

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March 5, 1991

MEMO TO: SCRTD BOARD OF DIRECTORS
LACTC MEMBERS

FROM: ALAN F. PEGG, GENERAL MANAGER, SCRTD
NEIL PETERSON, EXECUTIVE DIRECTOR, LACTC

SUBJECT: BUS OVERCROWDING STUDY

ISSUE

Whether to fund the redeployment and/or add additional buses to reduce overcrowding in Los Angeles County.

RECOMMENDATIONS

Given the fact and immediacy of overcrowded buses within Los Angeles County, it is recommended that:

1. Fifteen buses be added by the SCRTD and funded by the LACTC, to include a special circulator demonstration project within the City of Los Angeles; and
2. Five buses be added on the most overcrowded routes operated by the Los Angeles County Municipal Operators and funded by the LACTC. The Executive Director is authorized to work with the operators to determine the highest priority for use of these five buses and report back to the LACTC with the results of his actions.
3. Approve the allocation from the Proposition A Discretionary Interest Account, not to exceed \$750,000 for four months funding to relieve overcrowding as described above.
4. Proposition C funds shall be allocated to repay the \$750,000 advance from the Proposition A Discretionary Interest Account; and
5. Direct the Executive Director to develop county-wide standards defining overcrowding and a process for operators to apply for Proposition C Discretionary Funds to demonstrate that each has taken advantage of all possible intra- and inter-agency service redeployment opportunities;

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6. Authorize the Executive Director to take the necessary administrative steps to implement the actions approved above.

RELATIONSHIP TO LACTC GOALS

Relieving bus overcrowding directly carries out several Commission goals within Los Angeles County. Actual mobility improvement through increasing the number of riders on transit, along with increased constituent and transit riding public satisfaction through increased service quality are achieved. In assuring that transit operators will explore and take every advantage of service redeployment opportunities, the public will realize maximum mobility for each transportation dollar expended.

BUDGET IMPACT

The Commission's current year budget expenses will be increased by the expenditure of some \$750,000 from the Proposition A Discretionary Interest Account to pay for relief of overcrowded SCRTD and Municipal Operator buses. This advance of funds will be repaid by Proposition C funds.

BACKGROUND

At the August 8, 1990 joint LACTC/SCRTD meeting, the respective agency staffs were directed to undertake a review of the efficiency and overcrowding of the bus services offered by the SCRTD and the Los Angeles County bus operators. Results of the first phase of the study dealing primarily with system performance were presented at the December 5, 1990 meeting. The second phase of the analysis dealing primarily with bus overcrowding, which is an issue for both the SCRTD and the municipal operators, has been completed and is summarized below.

The attached analysis demonstrates that there are overcrowded buses within Los Angeles County on both the SCRTD and municipal transit systems. Overcrowding is due to a number of factors: region-wide ridership growth; worsening traffic congestion; escalating fuel costs, reduced seating capacity typical of vehicles acquired over the past 11 years; and, slower bus travel speeds. Given the need to act on this critical mobility problem now, the above recommendations are important initial steps in moving towards longer-term solutions.

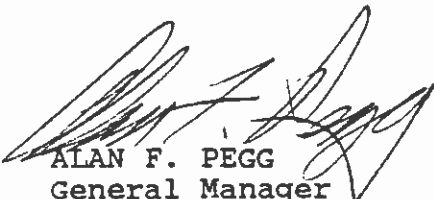
The attached report provides a range of the number of overcrowded buses county-wide. This range reflects the need for better data and standards among the various operators. Key to assuring, in the longer term, that the best and maximum possible transit service be provided through each dollar expended, the attached report also provides a framework for assessing transit service and pinpointing

cost-effective opportunities for redeploying service within each provider's scope of operation, as well as among the various operations within the County. Along with this costing framework, county-wide service and performance standards for both local and express service, and definitions are to be developed in cooperation with the Los Angeles County transit operators.


The overall process within which these overcrowding standards, definitions, and guidelines will be applied will come to the Commission prior to May 6, 1991 when it adopts guidelines for the disbursement of Proposition C funds. Notwithstanding these important actions to be taken by the LACTC, it will be critical for the LACTC to work closely with the respective cities in the region as well as Caltrans, to take the necessary action to improve traffic flows and speeds which have a very direct bearing on bus overcrowding. Also, an examination will be conducted of the potential use of articulated and other high capacity buses to address overcrowding.

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BUS OVERCROWDING STUDY TECHNICAL REPORT

This report presents the findings and recommendations developed through the second phase of a joint study on overcrowding conducted by staff from the SCRTD and LACTC. The study began approximately six months ago in response to a directive from the SCRTD and LACTC policy boards to: 1) study the extent of passenger overcrowding on SCRTD and municipal services operating in Los Angeles County, and 2) develop recommendations to help reduce overcrowding.

The first phase of this effort culminated in a report to the Joint Policy Board in December 1990, which provided a system-level comparison of Los Angeles County operators with major transit systems across the country. This report documented that Los Angeles County transit systems, as a whole, operate with higher than average passenger loads than any of the nation's fifteen largest transit operators. The second phase of the study analyzes the problem of overcrowding on a sketch planning line level of detail and investigates a number of mitigation measures, including:

- o Service augmentation;
- o Redeployment of resources from under-utilized lines and through inter-agency line transfers;
- o Traffic management strategies designed to improve bus travel speeds; and
- o Operator review of services, routes, and schedules to insure adequate coordination.

Listed below are the findings from the second phase analysis as well as specific recommendations which, if implemented, will effectively address the overcrowding issue and improve service quality in both the near and long term.

FINDINGS

Overcrowding is a problem confronting many Los Angeles County public transit operators. Summarized below are findings related to:

- o Data used to assess overcrowding;
- o Summary of current conditions;
- o Changes in factors affecting overcrowding;
- o Estimates of additional vehicles needed to reduce loads in conformance with the benchmark load standards; and
- o Examination of resource redeployment strategies involving under-utilized lines and inter-agency line transfers.

Data Used To Assess Overcrowding

1. The data sets provided by transit operators for use in this study were verified as part of the study effort and found to be reasonable.
 - o Most operators assess overcrowding based on bus load ratios (i.e., passengers per seats available) observed in one-day ride checks conducted on a periodic basis (e.g., one to three year intervals).
 - o Observations conveyed to management by drivers, customers, and road supervisors are also used to assess overcrowding.
 - o Ride checks are sometimes believed to be more accurate than point checks. Both data collection practices are used extensively in the transit industry.
 - o Operator ride check information was reviewed with point checks and found to meet or exceed UMTA statistical accuracy requirements.
 - o Operators provided their most recent ride check information for use in this study. Ridership increases, bus speed decreases due to congestion, and other factors experienced since the conduct of these ride checks were not reflected in our analysis.
2. Los Angeles County transit operators establish their own individual criteria to determine overcrowding, generally defined as passenger loads in excess of the operators' load standard. It is possible for one operator to be "overcrowded" and another to be below standard even though they have equal passenger loads relative to available seats.
 - o Three transit operators do not have load standards (i.e., Commerce, Montebello, Norwalk).
 - o Municipal operators with local service load standards generally use either 140 or 150 percent in conjunction with a duration standard (e.g., consecutive miles or consecutive trips exceeding load ratio standard).
 - o The SCRTD uses load standards ranging from 145 to 75 percent based on headways, service type (i.e., local or express), day of week and time of day (e.g., peak, base).
 - o SCRTD's load standards are similar in application to those of New York and Chicago. As headways increase, SCRTD's load standards tend to be higher than New York's or Chicago's; for the most frequent service they are similar.

Exhibit 1, presented on the following page, provides current Los Angeles County operator standards for determining overcrowding. For purposes of this study, Countywide benchmark load standards (i.e., similar to SCRTD's current standards but based on trips per hour rather than headways) were used to evaluate overcrowding for all operators.

Current Conditions

Findings regarding current conditions are limited to the floating peak hour in the AM and PM peak periods and to the maximum load point along a line, as shown in Exhibit 2.

3. During the floating peak hour AM and PM periods, overcrowding is evident on both the SCRTD and municipal operator systems. Based upon the benchmark methodology utilized in this report, analysis of the information available from operator ride checks shows that:
 - o A maximum of 66 lines are overcrowded in the AM floating peak hour; 70 in the PM. SCRTD has 50 overcrowded lines in both the AM and PM; municipal operators account for the rest, as shown in Exhibit 3.
 - o Overcrowding occurs primarily in the peak direction. In the AM, 24 lines are overcrowded in both directions; 33 in the peak direction only; and 9 in the reverse peak direction. In the PM, 20 lines are overcrowded in both directions; 40 in the peak direction only; and 10 in the reverse peak direction.
 - o The majority of overcrowded lines (i.e., 30 in the AM; 38 in the PM) are demand scheduled services. Multi-stop express services also experience overcrowding (i.e., 17 lines in both the AM and PM).
 - o Exhibit 4 shows that a maximum of 126 additional trips are required in the AM peak to bring passenger loadings into conformance with the benchmark standard (assuming no opportunities for redeployment of under-utilized resources).
 - o It should be noted that the overloading assessment methodology used by some operators would produce estimates higher than those listed above.

Exhibit 4 also shows trips which are potentially under-utilized.

Exhibit 1

OPERATOR SERVICE PLANNING PASSENGER LOAD STANDARDS

COMMERCE	No standard.		
CULVER CITY	Not to exceed 150% of seating capacity on more than 2 trips per line per peak period.		
GARDENA	Not to exceed 140% of seating capacity on 3 consecutive trips.		
FOOTHILL	Not to exceed 140% of seating capacity on 3 consecutive trips.		
LADOT	No standard reported.		
LONG BEACH	Not to exceed 140% of seating capacity on 3 consecutive trips.		
MONTEBELLO	No standard.		
NORWALK	No standard.		
SANTA MONICA	Not to exceed 150% of seating capacity for a distance of 2 or more miles.		
TORRANCE	Not to exceed 140% of seating capacity on 3 consecutive trips.		
SCRTD	<u>Line Headway</u>	<u>Weekday Peak Loading Standards</u>	
		<u>Local</u>	<u>Express</u>
	1-10 min.	145%	100%
	11-20 min.	140%	100%
	21-30 min.	120%	90%
31-60 min.	100%	75%	

Exhibit 2

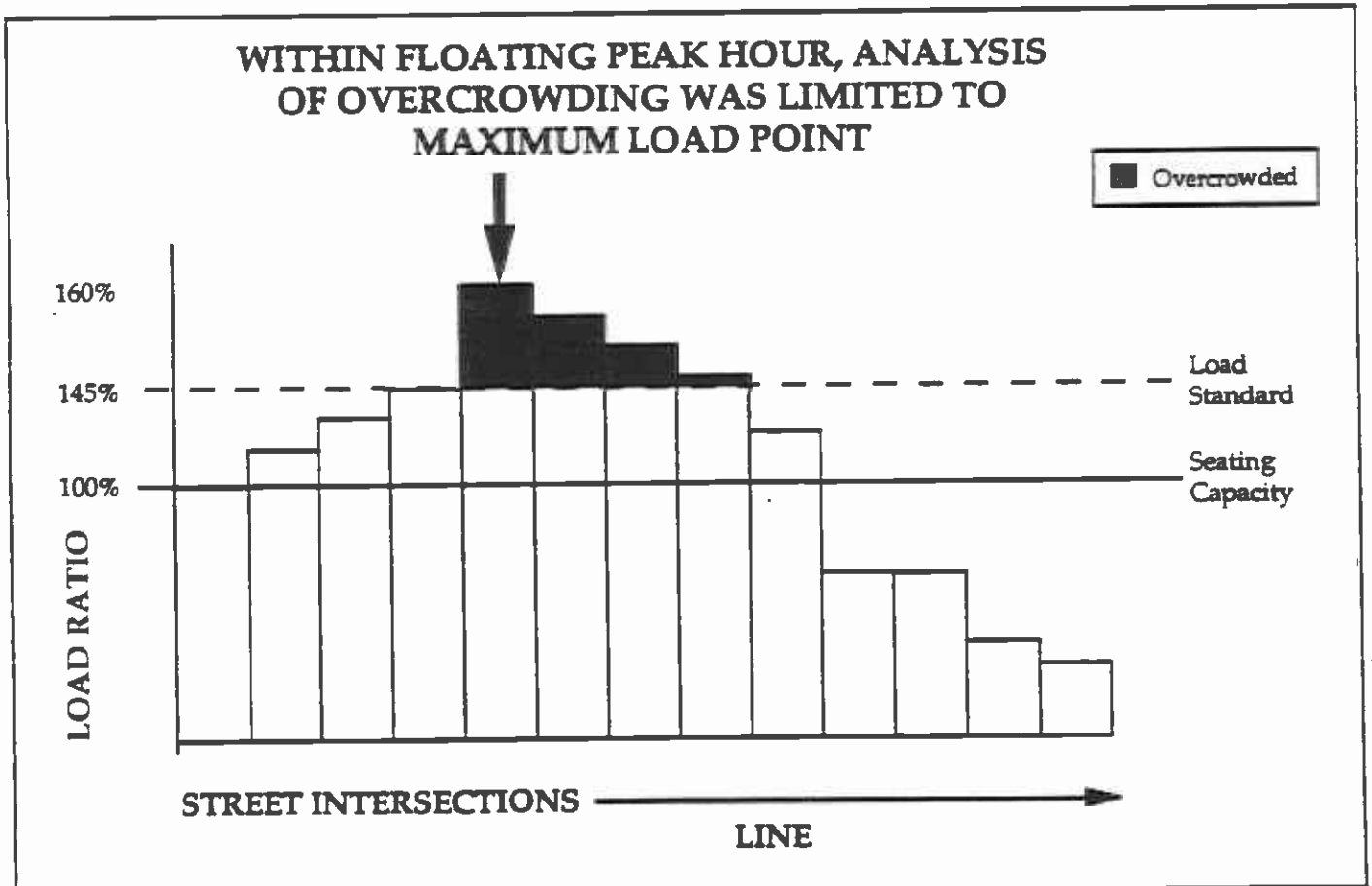
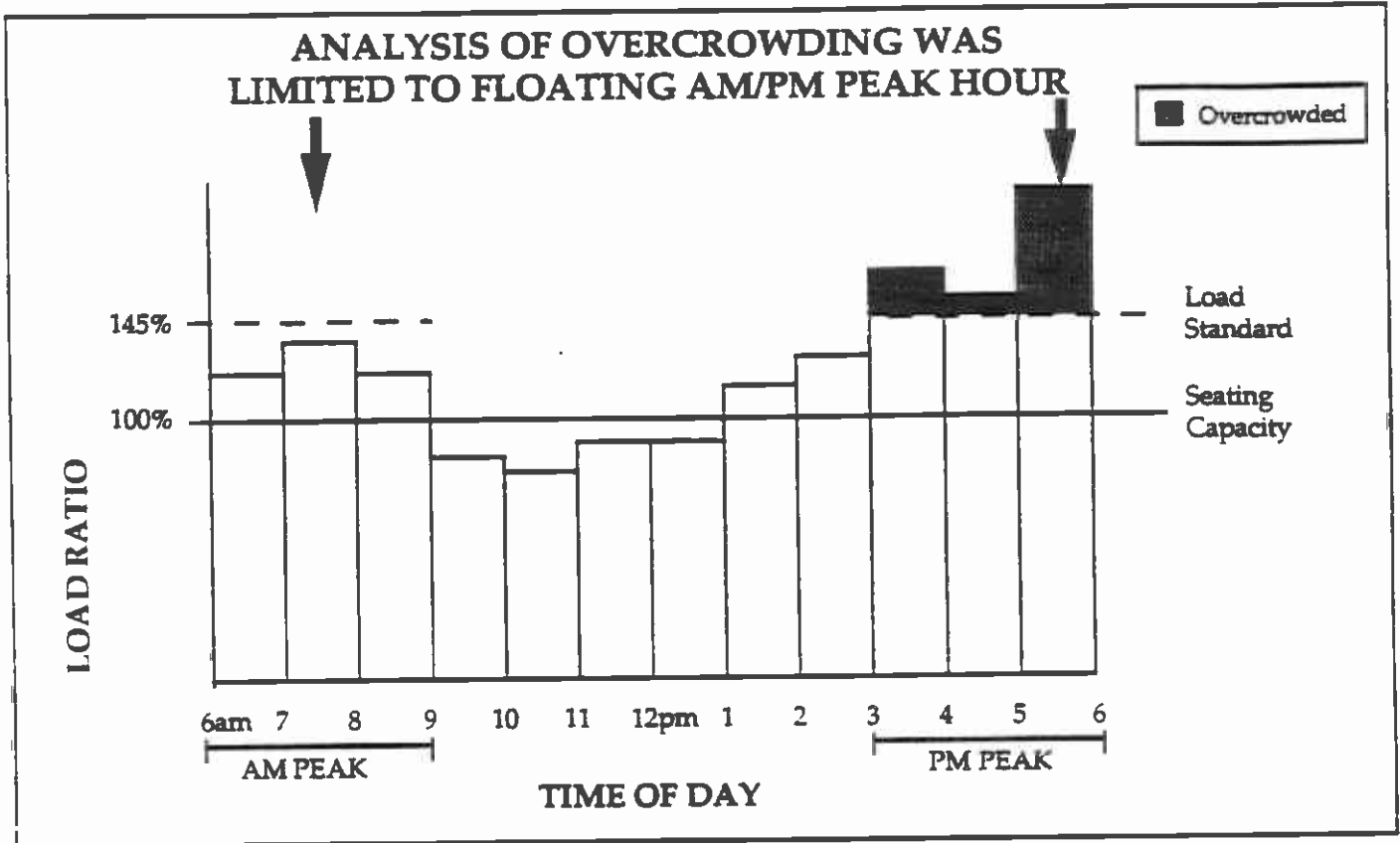


Exhibit 3

NUMBER OF LINES OVER BENCHMARK LOAD STANDARD BY DIRECTION

AM FLOATING PEAK HOUR MAXIMUM LOAD POINT

OPERATOR	Peak Direction Only	Peak & Reverse Peak Directions	Reverse Peak Direction Only	TOTAL
Culver City	4	-	-	4
Foothill	1	-	-	1
Gardena	-	4	-	4
LADOT	1	-	-	1
Long Beach	2	-	-	2
Montebello	1	1	-	2
SCR TD	22	19	9	50
Torrance	2	-	-	2
TOTAL	33	24	9	66

PM FLOATING PEAK HOUR MAXIMUM LOAD POINT

OPERATOR	Peak Direction Only	Peak & Reverse Peak Directions	Reverse Peak Direction Only	TOTAL
Commerce	2	-	-	2
Culver City	4	-	-	4
Foothill	3	-	-	3
Gardena	-	4	-	4
LADOT	1	-	-	1
Montebello	1	1	-	2
Santa Monica	2	-	-	2
SCR TD	25	15	10	50
Torrance	2	-	-	2
TOTAL	40	20	10	70

Exhibit 4

**OVER-/ UNDER-UTILIZATION BASED ON
BENCHMARK LOAD STANDARDS -- AM FLOATING PEAK
HOUR MAXIMUM LOAD POINT**

	TOTAL FOR PEAK AND REVERSE PEAK DIRECTIONS	
	Over-Utilized	Under-Utilized
OPERATOR	Additional Trips Needed	# Trips
Commerce*	-	-
Culver City *	4	-
Foothill*	0-1	0-9
Gardena	13-14	-
LADOT*	1-2	0-1
Long Beach	0-2	0-32
Montebello	4-5	0-5
Norwalk	-	0-5
SCR TD	49-96**	0-79
SMMBL	-	0-28
Torrance*	0-2	NA
TOTAL	71-126	0-159

NA: Information not available.

* Based on peak direction only

**SCR TD analysis (relative to existing SCR TD Standards) indicates an additional 120 trips are needed.

4. During the floating peak hour AM period, some services are potentially under-utilized for both the SCRTD and municipal operator systems. Analysis of the information available from operator ride checks shows that:

- o 54 lines are potentially under-utilized in the AM peak direction floating peak hour. SCRTD has 34 of these lines; municipal operators account for the rest.
- o In the AM reverse peak direction, 59 lines are potentially under-utilized; 31 of these are SCRTD lines; the remainder are municipal operator lines. It should be noted that peak vehicle requirements are usually defined as peak flow needs not revenue flow needs.

Exhibit 5 illustrates findings based on AM floating peak hour statistics for both peak and reverse peak directions. A benchmark standard (i.e., very similar to that of the SCRTD but based on trips per hour rather than headways) was used to identify over- and under-utilized lines. A range is provided in Exhibits 4 and 5, reflecting different philosophies regarding the application of loading standards for overcrowding review. The following explains the range of values provided.

Over-Utilization (Overcrowding) -- If one defines the benchmark standard as an absolute ceiling and assumes that ridership estimates are absolutely correct, then the higher end of the ranges are reasonable. This definition is embraced by the SCRTD. It implies that a given bus line is considered overcrowded if the average number of passengers exceed the benchmark standard by at least one person. An alternative perspective is to consider a bus line overcrowded if it requires at least an additional half trip per hour. Lower values represent this alternative perspective.

Under-Utilization -- For the under-utilized variables, Exhibits 4 and 5 also display value ranges. The number of under-utilized trips that can be subtracted from a given line without causing the load ratio to exceed the benchmark standard at any point on the route at any time represents potential opportunities for redeployment. However, some of those opportunities may not be politically or operationally feasible. The high range specifies that all redeployment opportunities identified are feasible. On the low side, SCRTD believes that implied trip savings in all likelihood will not result in many bus savings. The reasons for this are:

- o The methodology for identifying under-utilized lines is not consistent with the application of the District's adopted loading standards (i.e., study used Countywide benchmark standard similar to SCRTD's standards except that trips per peak hour rather than headways were used the application);

**OVER-/ UNDER-UTILIZATION BASED ON
BENCHMARK LOAD STANDARDS -- AM FLOATING PEAK
HOUR MAXIMUM LOAD POINT**

OPERATOR	PEAK DIRECTION				REVERSE PEAK DIRECTION			
	Over-Utilized		Under-Utilized		Over-Utilized		Under-Utilized	
	# Lines	Additional Trips Needed	# Lines	# Trips Below Standard	# Lines	Additional Trips Needed	# Lines	# Trips
Commerce	-	-	-	-	NA	NA	NA	NA
Culver City	4	4	-	-	NA	NA	NA	NA
Foothill	0-1	0-1	0-2	0-9	NA	NA	NA	NA
Gardena	4	7	-	-	4	6-7	-	-
LADOT	1	1-2	0-1	0-1	NA	NA	NA	NA
Long Beach	0-2	0-2	0-7	0-11	-	-	0-12	0-21
Montebello	2	2-3	0-2	0-2	1	2	0-3	0-3
Norwalk	-	-	0-2	0-2	-	-	0-3	0-3
SCR TD	30-41	41-65*	0-34	0-42	7-28	8-31*	0-31	0-37
SMMBL	-	-	0-6	0-8	-	-	0-10	0-20
Torrance	0-2	0-2	-	-	NA	NA	NA	NA
TOTAL	41-57	55-86	0-54	0-75	12-33	16-40	0-59	0-84

NA: Information not available.

*SCR TD analysis (relative to existing SCR TD standards) indicates an additional 83 trips are needed in the peak direction; 37 reverse peak.

- o 24 of the 34 lines listed as over-served have been subject to the normal schedule evaluation process and service levels have been adjusted as required;
- o In several cases, reducing service would not permit a savings in vehicles; and
- o Four of the 34 lines already operate on 40 minute headways or worse.

Changes in Factors Affecting Overcrowding

5. Changes in passenger miles per bus mile and average speed are factors influencing current overcrowding, as documented in the December 1990 Joint Policy Board Report On Overcrowding. Specific findings from this report include:
- o Passenger miles per bus mile (i.e., measures average passenger load) has increased from 18.1 in FY88 to 19 in the last quarter of FY90.
 - o SCRTD system average speed has declined due to worsening traffic congestion with additional resources required to maintain a given level of service, assuming current scheduling practices. System average speed was 13.2 mph in 1984 and has declined by five percent to 12.5 mph in 1990. For the last three months of FY90, the system average speed was 12.3 mph.
 - o SCRTD has estimated that a one percent decrease in average speed equates to a need for an additional 20 buses. An increase in speed would have the reverse effect.

Estimated Vehicle Needs

It is important at this point to distinguish between the number of trips and number of buses:

- o Trips do not necessarily equate to vehicles. For most lines, a trip may equate to a bus. However, for short routes, two or three trips per hour may equate to only one bus. In addition, if buses on a certain route could operate faster, the number of trips per hour would increase without additional vehicles deployed. Early turnbacks, or shortlining, limited stop service, would likewise increase trips without adding buses (i.e., having some buses drive the most heavily traveled portion of the route rather than the total route). All of these strategies are currently considered by some operators during service planning activities.

- o Vehicles added to the fleet traveling in the peak direction may alleviate some of the overcrowded conditions in the reverse peak direction at the same time. The extent of the effect requires line by line schedule analysis, which is beyond the scope of this study.
- o This analysis was conducted without taking into account any potential increase in ridership in the future or since the most recent ride check. It is possible that as a consequence of reducing overcrowding, ridership will increase.

Redeployment Strategies

6. Under-utilized trips represent potential opportunities to immediately redeploy resources to address the overcrowding problem and reduce the number of vehicles required. Findings include:
 - o A maximum of 94 trips (i.e., 47 each in the peak and reverse peak direction) are potential candidates for redeployment.
 - o Some or all of these opportunities may not be operationally feasible. Hence, the low end of redeployment opportunities signifies that none of the redeployment opportunities are operationally feasible.
 - o SCRTD analysis of 60 lines that provide service at intervals of 20 minutes or more indicates that only one trip can be removed without violating current loading standards.

Redeployment strategies also include opportunities to transfer under-utilized bus routes to another carrier so that buses and/or operating resources may be made available to relieve overcrowding.

In order to evaluate the feasibility of inter-agency line transfers, SCRTD staff reviewed the cost, service and equipment factors which might impact such an action for the line transfer proposals sponsored by the Los Angeles Department of Transportation (LADOT). Results of the SCRTD analysis show that:

- o Actual vehicle savings would be far less than originally assumed (i.e., five as opposed to 26) due to extensive interlining used on the services examined.

- o Because of lost "economies of scale," to transfer lines based on the LADOT proposal would actually increase overall vehicle requirements Countywide by 26 (assuming the SCRTD deploys five buses to relieve overcrowding) and raise the overall Countywide operating cost to provide essentially the same service currently operated by the District.

It is important to note that, in addition to equipment considerations, there are a variety of cost, legal, institutional, funding and contractual factors which might impact inter-agency redeployment strategies. These were not analyzed as part of this study.

RECOMMENDATIONS

Overcrowding is caused by a variety of factors, including ridership growth, worsening traffic congestion, fuel costs, slower travel speeds, and reduced seating capacity typical of vehicles acquired over the past 11 years. Unless steps are taken to address these problems, transit system access and service quality will worsen as demand is further stimulated by rising fuel costs, population growth and South Coast Air Quality Management District (SCAQMD) mandates.

Listed below are recommendations, offered by the staff of the LACTC and the SCRTD to the policy boards, to address overcrowding and improve service quality in both the near and long terms.

1. Adopt Countywide service standards, for funding purposes, based on peak period headways, duration of overcrowding, and service type. The LACTC, SCRTD, the Municipal operators, and other transit operators should work cooperatively to accomplish this goal.

Countywide service standards should be included in the Proposition C project funding guidelines for LACTC approval in May, 1991. Such standards would provide a common basis from which the LACTC could evaluate requests for funding to relieve overcrowding. Countywide service standards would be used by operators and the LACTC to determine the degree of overcrowding. The methodology used in this study can be applied to future evaluations of overcrowding, using the adopted Countywide standards.

SCRTD and the municipal operators all have different approaches to service standard specification. A common basis from which to assess overcrowding is needed. LACTC should combine the best attributes of each agency's practice, including type of service, frequency of service and duration of overloading.

SCRTD Perspective

The SCRTD proposes the following Countywide standards:

- | <u>Headways</u> | <u>Local Service</u> | <u>Express Service</u> |
|-----------------|----------------------|------------------------|
| 1-10 min. | 135% | 100% |
| 11-19 min. | 135% | 100% |
| 20-29 min. | 120% | 85% |
| 30-60 min. | 100% | 75% |
- o Duration of \pm five minutes from peak load location -- the load factor would be 125% for headways 1-10 minutes.
 - o Additional trips will be added for the 1-10 minute range when at least one-half of an additional trip per hour is needed.
 - o For the range from 11-19 minutes, a trip will be added when at least one-fourth of an additional trip is needed.

The SCRTD standard would not result in a significant increase in loads compared to present conditions. In addition, standees on express lines should be avoided.

LACTC Perspective

A potential standard, which allows for less crowded service than any operator's current standard for local services, follows:

- o Duration of ten to 20 minutes
- | <u>Headways</u> | <u>Local Service</u> | <u>Express Service</u> |
|-----------------|----------------------|------------------------|
| 1-10 min. | 135% | 110% |
| 11-20 min. | 135% | 100% |
| 21-30 min. | 120% | 100% |
| 31-60 min. | 100% | 100% |

Operators are free to adopt other service load standards for scheduling purposes. Proposition C funding, however, would not be provided to an operator if overcrowding was a factor of operator service standards being lower than the Countywide standard (e.g., express service standards less than 100 percent).

Analysis of a possible Countywide load standard, excluding duration of overcrowding condition, was conducted as part of this study. When applying this standard, additional trips were not deemed necessary until at least one-half of an additional trip was needed. Conversely, opportunities for saving a trip did not occur at one half of a trip requirement, but rather occurred at an entire trip. This is a conservative approach in that trips are added much faster than deleted under these rules. Based on this potential standard 117 additional AM peak trips are required (i.e., 86 in the

peak direction, 31 reverse peak), assuming no opportunities for redeployment. Under-utilized trips totalled 187 (i.e., 90 peak direction, 97 reverse peak direction).

2. **Develop, for adoption, minimum performance standards, based on passengers and costs, for new and expanded services.**

SCRTD Perspective

The SCRTD supports the request for minimum performance standards for new services. These standards should encourage new service when it is reasonable to expect that the service will be well utilized and cost effective.

New service must be distinguished from the need to add service to existing lines that are overcrowded. The operator must have the capability to respond quickly to overcrowded conditions. The process outlined within this document would require many months, if not years.

The SCRTD believes that a funding process should be developed to permit an expeditious response to overcrowding. This may be accomplished through the establishment of a contingency fund.

LACTC Perspective

Proposed new and expanded services should provide a reasonable "return" on the transit dollar invested. Toward this end, a system for evaluating new and expanded services, shown conceptually in Exhibit 6, should be included in Proposition C project funding guidelines scheduled for LACTC approval in May, 1991.

Transit operators would use the adopted minimum performance standards as a threshold for determining if the proposed service expansion project (including additional service to relieve overcrowding) is eligible for Proposition C funding. Projects proposed for funding cannot fall in the high cost, low mobility quadrant. Projects falling in the low cost, high mobility quadrant would definitely meet the threshold requirements. Projects falling in either the high cost, high mobility or low cost, low mobility quadrants may meet the threshold depending on their relationship to the Countywide average.

3. **Adopt a process for review and approval of service expansion funding requests.**

SCRTD Perspective

The process, as outlined on the following page, would require excessive time, data collection and staff time. This process likely would require at least one year to respond to overcrowding and two to three years to add a new bus route. This is clearly

non-responsive to the growing need for more bus service in Los Angeles County.

Standards and procedures that permit timely responses to overcrowding and new travel demands need to be developed.

LACTC Perspective

It is LACTC's responsibility to ensure maximum mobility delivered for each Proposition C dollar expended, as shown conceptually in Exhibit 6. The process described below is designed to encourage operators to complete comprehensive service plans and maximize the effectiveness of existing transit resources prior to seeking funds for expansion. A consistent basis for LACTC's timely review of operator requests for expansion funding is also included.

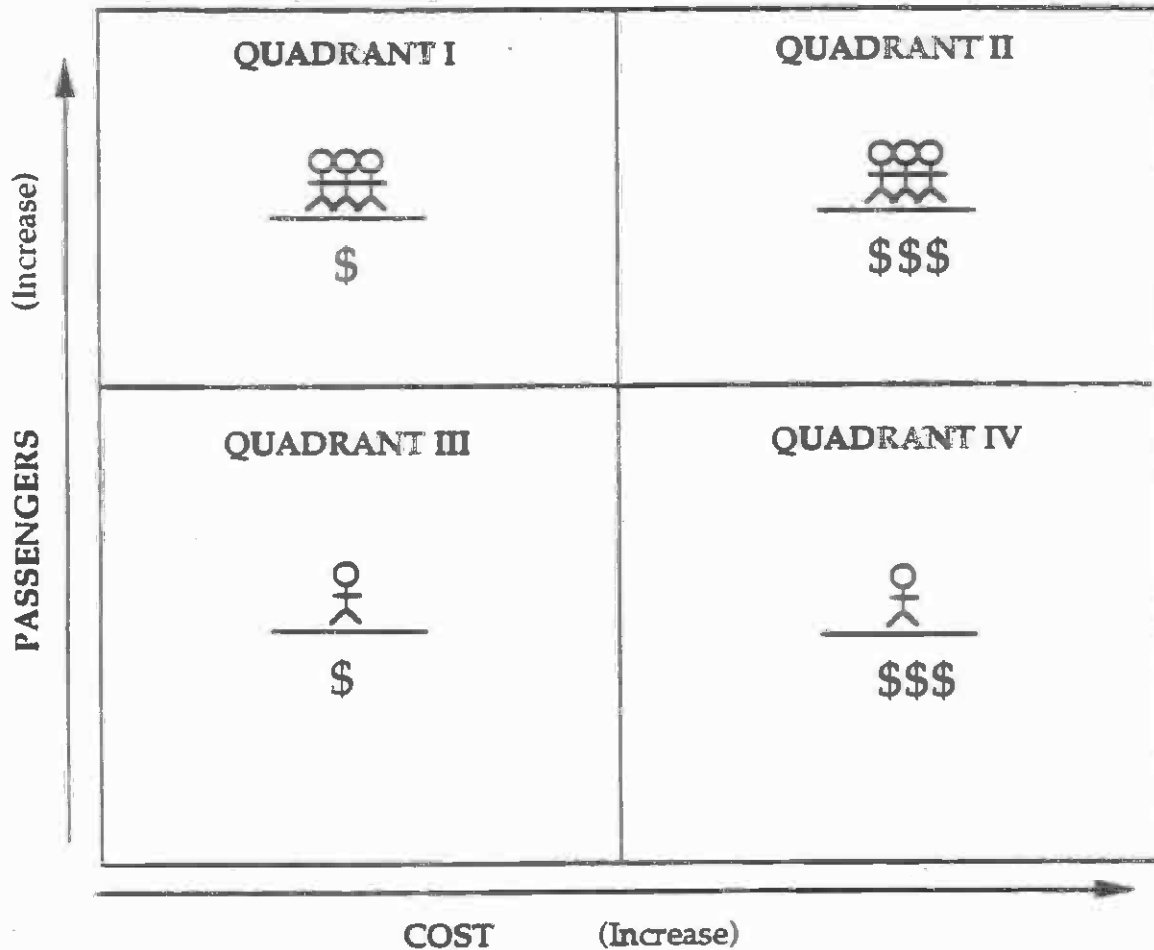
The LACTC recently revised the Proposition A Discretionary Program to guarantee operators a 95 percent share of available funds. Transit operators are responsible for managing their systems within these additional and guaranteed funds. Transit operators develop detailed service plans (e.g., routes, equipment, headways) and operating costs on an annual basis. Based on these detailed plans, transit operators determine the funds needed to operate their systems. If operators identify funding requirements beyond their guaranteed funding base, they would be expected to adhere to the following process when requesting additional and new funds:

- o Identify the amount of funding need that can be met from internal redeployment of existing resources, as shown in Exhibit 7, page 1;
- o Identify the amount of funding need that can be met through inter-agency redeployment (e.g., transferring of service while keeping the residual resources), as shown in Exhibit 7, page 2;
- o Identify the need for additional capital equipment (e.g., vehicles) that can be met from deployment of spare vehicles and energy contingency fleets; and
- o Determine the need for new funding and vehicles given the impacts of the above actions.

Transit operators would document the results of the above process, including detailed service expansion plans (e.g., routes, schedules, equipment, costs) and submit these as part of their application for additional and new expansion funds. It is important to note that transit operators may respond to overcrowding issues using their base subsidy guarantee from Proposition A Discretionary Program funds, in which case there would be no need to apply for expansion funds and the above process would not apply.

Exhibit 6

MOBILITY DELIVERED PER DOLLAR EXPENDED



SUPPORTS LACTC GOAL TO MAXIMIZE MOBILITY FOR EACH DOLLAR EXPENDED.

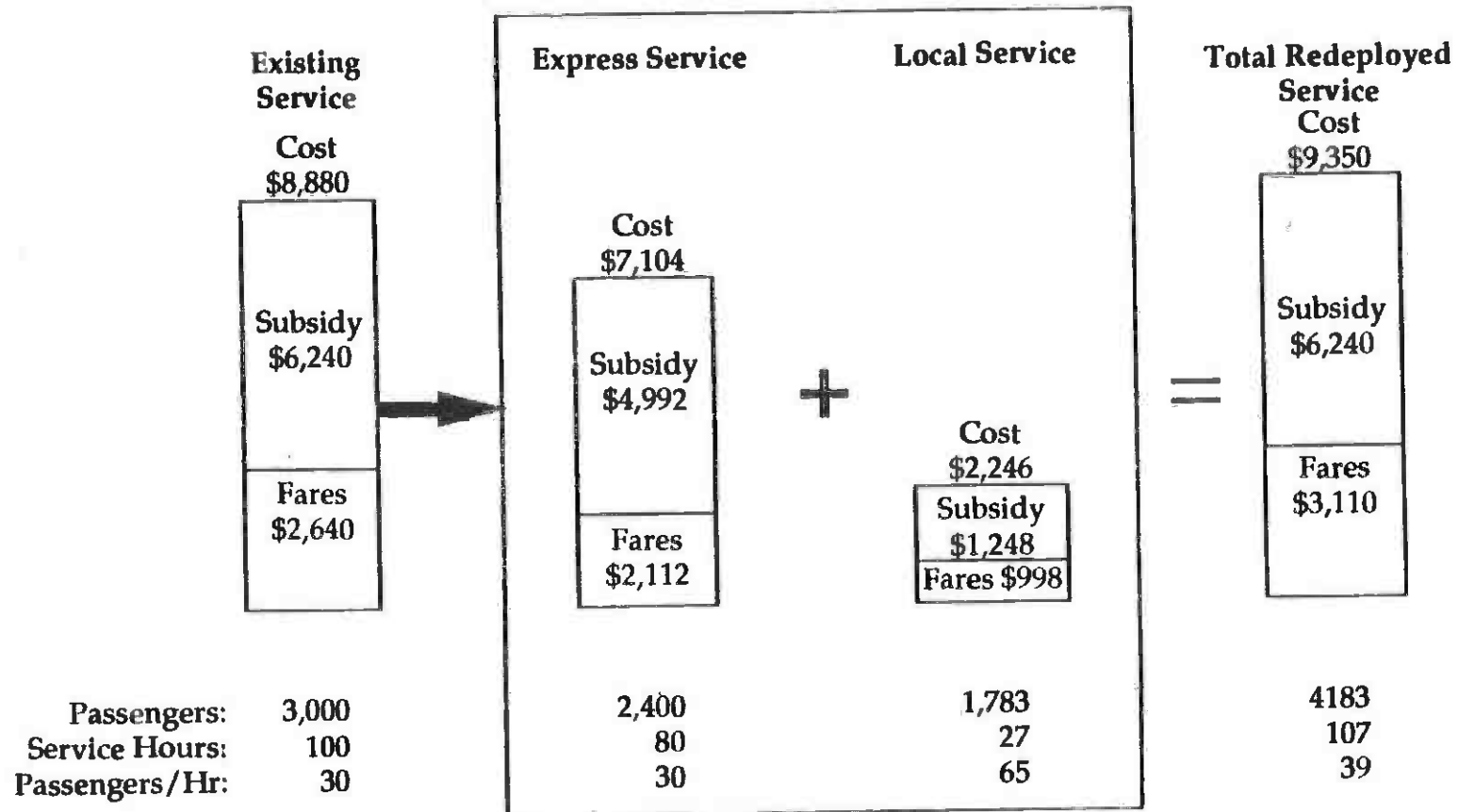
QUADRANT I - low cost, high mobility

QUADRANTS II & III - low cost, low mobility or high cost, high mobility

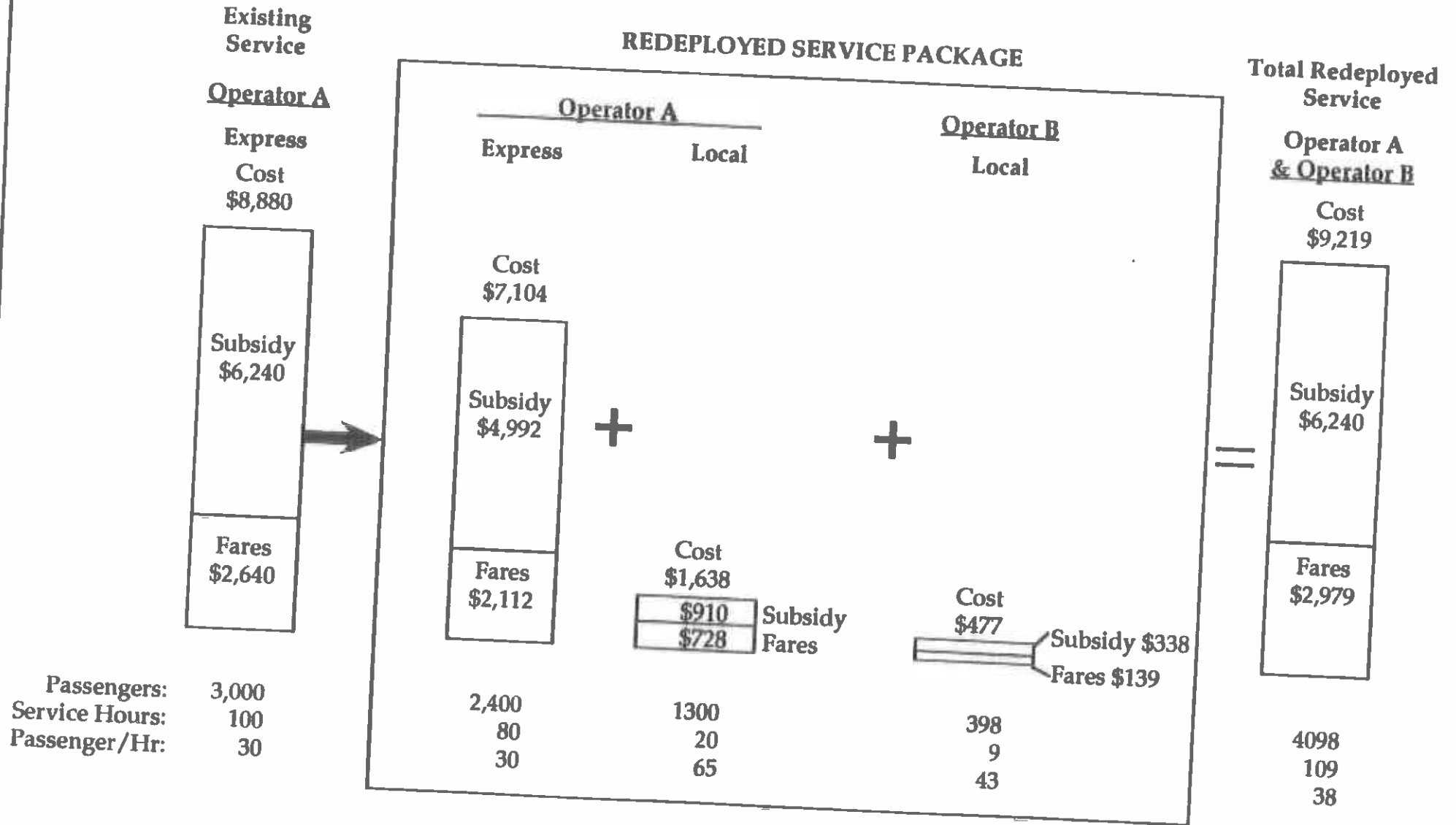
QUADRANT IV - high cost, low mobility

REDEPLOYMENT APPLICATION INTERNAL OPPORTUNITIES

REDEPLOYED SERVICE PACKAGE



REDEPLOYMENT APPLICATION INTERNAL AND EXTERNAL OPPORTUNITIES



All service expansion projects, including projects to relieve overcrowding where funds beyond an operator's base are being requested, would compete for funds based on project merit relative to other project proposals. The basis for evaluating the merits of project proposals would be mobility delivered per dollar expended.

As part of the approval process, a time period would be set for future evaluation of actual results. Actual results would be used to evaluate continued project funding. Once again, the mobility delivered per dollar expended would be the primary basis for evaluation.

In subsequent years (i.e., FY92 for FY93 funding approval), proposals to expand the Countywide bus fleet would be included in operators' annual Short Range Transit Plans (SRTPs). Evaluations of actual results would also be done as part of the SRTTP approval process.

4. **Improve system average speed with preferential treatment strategies for transit.**

Preferential treatment for transit could improve travel speeds. Noteworthy examples include the El Monte Busway and Spring Street Contra-Flow Lane. Additionally, the Harbor Freeway Transitway is under construction and scheduled to be completed in 1994. A list of candidate projects for preferential bus treatments, developed by SCAG, includes:

- o Olive Street northbound between Olympic Boulevard and First Street;
- o Vermont Avenue both directions, between Olympic Boulevard and Santa Monica Boulevard;
- o Hill Street southbound between Temple Street and Olympic Boulevard.

Preliminary observation indicates that transit speeds could increase from approximately one to five miles per hour depending upon the corridor and time of day (e.g., AM or PM peak). This translates into increased travel speeds in the area of eight to 50 percent and the potential to relieve overcrowding in these corridors without increasing equipment.

Other potential projects for preferential bus treatment have been suggested by staff from both the SCRTD and LACTC and were included in preliminary analyses by SCAG. Continued SCAG analysis, however, will focus upon the areas specified above. It may be appropriate for staff from the SCRTD and LACTC to work with the responsible local and State agencies for implementation of other HOV corridors, such as Sunset Boulevard (Echo Park - Hollywood - West Hollywood), Santa Monica Boulevard (Hollywood - West Hollywood)

- Beverly Hills), Venice Boulevard, Western Avenue, Hollywood Boulevard, Vine Street, and East First Street (Boyle Heights - East Los Angeles).

5. Deploy additional vehicles to reduce overcrowding.

SCRTD Perspective

It has been determined that the District needs at least 100 to 125 determined additional peak buses to relieve chronic overcrowding. It is recommended that the LACTC provide funding to support 50 additional buses to relieve overcrowding on SCRTD lines during peak periods. These additional buses will be procured from those vehicles that would otherwise be retired. Additionally, SCRTD will initiate a special analysis of existing services that have been identified in this study as being over-serviced. The aim of this analysis will be to identify those buses that can be redeployed.

Those vehicles that can be redeployed will then be rescheduled to provide service as part of the second phase of the program; the balance of the vehicles will be funded by the LACTC.

LACTC Perspective

Service scheduling and decisions on vehicle deployment and subsequent operating costs are the responsibility of transit operators. The LACTC is not involved in such decisions. If a transit operator requires additional funding beyond the Proposition A Discretionary Program 95 percent guarantee, then the transit operator is expected to follow the process outlined above. Part of the recommended process for new funding involves deployment of vehicles from an operator's existing fleet.

6. Commit to a new capital improvement plan designed to reduce overcrowding and improve loading standards to those comparable to other major transit systems.

SCRTD Perspective

The SCRTD has developed a five year plan to respond to the needs to reduce overcrowding and establish new services. Ridership is projected to grow by 250,000 boardings per day over the next five years. In order to accommodate this increase in patronage while maintaining loading standards, a consistent and steady expansion of the SCRTD bus fleet must be supported.

A commitment to support the Transit Service Improvement Plan would enable the District to significantly improve service quality in the longer term by reducing our current loading standards. Peer group comparisons with other major operators in the United States show that current actual SCRTD loads are the highest in the nation.

LACTC Perspective

All transit operator capital plans are submitted along with Short Range Transit Plans for LACTC review in April and action in May.

Loading standards for service scheduling purposes are the sole responsibility of transit operators. LACTC's involvement is limited to those circumstance when an operator requests new funding beyond their guaranteed funding base to address problems of overcrowding. In these circumstances, the Countywide standard recommended above would be applied to determine if services qualified as overcrowded for new funding purposes. Transit operators requesting funds beyond their guaranteed base would be required to follow the process described above (i.e., recommendation 3).

7. Proceed with the sector studies cycle to be funded by LACTC.

SCRTD Perspective

To ensure optimal interface with emerging rail projects and to respond to evolving community needs, transit in Los Angeles County should be carefully studied. Near term and longer term plans need to be developed to support continued growth and development and to ensure effective and efficient use of limited resources. Each transit operator should be responsible for evaluating their system's effectiveness on a periodic basis.

The growing interest in public transit within Los Angeles County has been accompanied by a steadily increasing demand for expedited services as evidenced by: 1) requests from the general public; 2) recent voter approval of transit sales tax measures; and 3) data showing that the average trip length is increasing on the District's bus system. New expedited services such as express lines and limited stop services should be developed and implemented as soon as possible since near-term demand precludes waiting until the Countywide rail network is in place. Expedited bus services have greater appeal for auto users; they play a significant role in improving travel speeds; and they can be integrated to provide optimal access to the Metro Blue Line and other rail services in development.

LACTC Perspective

The LACTC does not wish to preclude any operator from any planning effort which could lead to improved mobility for Los Angeles County residents while delivering cost effective and efficient service. SCRTD will have sufficient funds in next year's budget to accommodate this activity.

LACTC supports operator initiatives which maximize mobility for the dollar expended, as noted above in recommendation 3. LACTC does not get involved in transit operator service decisions except when an operator requests new service expansion funds. When new and additional funds are requested, LACTC will evaluate project plans and subsequent actual results relative to mobility delivered per dollar expended.

8. **Develop an Action Plan to improve service coordination between agencies.**

Overcrowding and growing rider demand affect all county transit operators. As resources are finite, it makes sense to maximize service coordination to the extent possible. Strategies range from improved scheduling between carriers to a careful review of institutional barriers that constrain opportunities to improve coordination.

9. **Make SCRTD scheduling techniques available to other carriers.**

SCRTD Perspective

The scheduling techniques employed by the District are highly sophisticated. Tight budgetary constraints over the years have dictated that service be scheduled in the most efficient manner possible. Extensive use of shortlining and vehicle interlining are among the practices commonly used to ensure that rider demand is served as well as it can be and that a limited resources are used as efficiently as possible. The District should make this expertise available to other carriers through training and/or contracting for schedule development and production.

LACTC Perspective

There is much expertise and talent among Los Angeles County operators. The Bus Operations Subcommittee (BOS) would be an appropriate arena to share information and to request assistance from fellow transit professionals.

**LACTC OVERCROWDING STUDY
OPERATOR PEAK AM TRIP REQUIREMENTS**

OPERATOR	LINE	COUNTYWIDE BENCHMARK	LOAD RATIO	DIFF. CNTY WIDE BENCHMARK & LOAD RATIO	TRIP REQUIREMENTS	LINE CLASS. PER TPM
Commerce	-	100%	89%	-11%	-0.11	3
Commerce	-	0%	NA	NA	NA	3
Commerce	-	100%	80%	-20%	-0.20	3
Commerce	-	100%	73%	-27%	-0.27	3
Culver City	1	140%	174%	34%	0.98	1
Culver City	2	100%	174%	74%	0.74	3
Culver City	3	140%	0%	-140%	-3.00	1
Culver City	3	140%	0%	-140%	-3.00	1
Culver City	4	100%	0%	-100%	-1.00	3
Culver City	4	100%	0%	-100%	-1.00	3
Culver City	5	100%	163%	63%	0.63	3
Culver City	6	140%	174%	34%	0.98	1
Foothill	178	140%	129%	-11%	-0.41	2
Foothill	185	145%	56%	-89%	-3.74	2
Foothill	274/6	140%	85%	-55%	-0.45	2
Foothill	280	145%	48%	-98%	-6.61	2
Foothill	495	110%	113%	2%	0.14	4 or 5
Foothill	498	100%	95%	-5%	-0.18	4 or 5
Gardena	1	110%	159%	49%	3.57	NA
Gardena	2	145%	159%	14%	0.58	NA
Gardena	3	140%	159%	19%	0.68	NA
Gardena	4	145%	159%	14%	0.58	NA
LADOT	413	100%	144%	44%	1.33	4 or 5
LADOT	419	100%	82%	-18%	-0.26	4 or 5
LADOT	423	110%	79%	-31%	-1.26	4 or 5
LADOT	430	90%	56%	-34%	-0.51	4 or 5
LADOT	431	100%	59%	-41%	-0.64	4 or 5
LADOT	437	90%	72%	-18%	-0.08	4 or 5
LADOT	438	100%	75%	-25%	-0.49	4 or 5
LADOT	448	100%	63%	-37%	-0.49	4 or 5
Long Beach	1	100%	127%	27%	0.27	NA
Long Beach	7	140%	77%	-63%	-0.68	NA
Long Beach	12	100%	65%	-35%	-0.52	NA
Long Beach	15	120%	63%	-57%	-0.75	NA
Long Beach	20	140%	49%	-91%	-2.02	NA
Long Beach	40	140%	83%	-57%	-1.34	NA
Long Beach	50	140%	79%	-61%	-1.37	NA
Long Beach	60	145%	64%	-81%	-2.82	NA
Long Beach	80	120%	66%	-54%	-0.68	NA
Long Beach	90	145%	75%	-70%	-2.79	NA
Long Beach	100	140%	95%	-45%	-0.61	NA
Long Beach	110	140%	51%	-89%	-1.95	NA
Long Beach	140	140%	49%	-91%	-2.54	NA
Long Beach	160	100%	128%	28%	0.19	NA

**LACTC OVERCROWDING STUDY
OPERATOR PEAK AM TRIP REQUIREMENTS**

OPERATOR	LINE	COUNTYWIDE BENCHMARK	LOAD RATIO	DIFF. CNTYWIDE BENCHMARK & LOAD RATIO	TRIP REQUIREMENTS	LINE CLASS. PER TPM
Long Beach	170	140%	91%	-49%	-0.97	NA
Long Beach	180	100%	32%	-68%	-0.68	NA
Montebello	10	145%	106%	-39%	-1.45	NA
Montebello	20	90%	102%	12%	0.27	NA
Montebello	30	100%	34%	-66%	-0.66	NA
Montebello	30	120%	32%	-88%	-1.36	NA
Montebello	40	100%	155%	55%	1.64	NA
Montebello	45	100%	52%	-48%	-0.48	NA
Montebello	50	100%	25%	-75%	-0.75	NA
Montebello	60	100%	70%	-30%	-0.30	NA
Montebello	70	140%	74%	-66%	-0.77	NA
Norwalk	1	120%	53%	-67%	-0.95	NA
Norwalk	2	120%	28%	-92%	-1.43	NA
Norwalk	3	120%	26%	-94%	-1.48	NA
SCR TD	1	145%	163%	18%	1.01	1
SCR TD	2	145%	151%	6%	0.56	1
SCR TD	4	145%	159%	14%	1.79	1
SCR TD	10	145%	106%	-39%	-3.19	1
SCR TD	14	145%	122%	-23%	-1.94	1
SCR TD	16	145%	157%	12%	1.27	1
SCR TD	18	145%	159%	14%	1.33	1
SCR TD	20	145%	149%	4%	1.00	1
SCR TD	26	145%	145%	-0%	-0.04	1
SCR TD	28	145%	122%	-23%	-4.79	1
SCR TD	30	145%	145%	-0%	-0.04	1
SCR TD	33	145%	162%	17%	2.01	1
SCR TD	38	145%	158%	13%	0.54	1
SCR TD	40	145%	139%	-6%	-0.74	1
SCR TD	45	145%	168%	23%	2.57	1
SCR TD	53	145%	158%	13%	1.08	1
SCR TD	55	145%	146%	1%	0.07	1
SCR TD	56	140%	162%	22%	0.62	1
SCR TD	60	145%	140%	-5%	-0.83	1
SCR TD	65	145%	105%	-40%	-1.73	1
SCR TD	66	145%	151%	6%	0.89	1
SCR TD	68	145%	142%	-3%	-0.18	1
SCR TD	70	145%	161%	16%	0.88	1
SCR TD	76	145%	147%	2%	0.10	1
SCR TD	78	145%	126%	-19%	-1.34	1
SCR TD	81	145%	126%	-19%	-1.34	1
SCR TD	90	145%	111%	-34%	-1.26	1
SCR TD	92	145%	102%	-43%	-3.25	1
SCR TD	94	145%	149%	4%	0.21	1
SCR TD	96	145%	93%	-52%	-2.00	1

**LACTC OVERCROWDING STUDY
OPERATOR PEAK AM TRIP REQUIREMENTS**

OPERATOR	LINE	COUNTYWIDE BENCHMARK	LOAD RATIO	DIFF. CNTYWIDE BENCHMARK & LOAD RATIO	TRIP REQUIREMENTS	LINE CLASS. PER TPM
SCR TD	102	140%	130%	-10%	0.00	1
SCR TD	104	140%	99%	-41%	-0.53	2
SCR TD	105	145%	164%	19%	0.79	1
SCR TD	107	120%	98%	-22%	-0.05	1
SCR TD	108	145%	145%	0%	0.01	1
SCR TD	110	145%	130%	-15%	-0.45	1
SCR TD	111	145%	164%	19%	0.79	1
SCR TD	115	145%	132%	-13%	-1.05	1
SCR TD	117	145%	136%	-9%	-0.17	1
SCR TD	119	100%	37%	-63%	-0.63	2
SCR TD	120	140%	143%	3%	0.10	1
SCR TD	124	120%	107%	-13%	0.00	2
SCR TD	125	145%	145%	-0%	0.00	1
SCR TD	127	120%	98%	-22%	-0.05	2
SCR TD	128	120%	54%	-66%	-0.91	2
SCR TD	130	140%	74%	-66%	-0.79	2
SCR TD	152	140%	122%	-18%	-0.53	1
SCR TD	154	120%	93%	-27%	-0.13	2
SCR TD	161	140%	160%	20%	0.44	2
SCR TD	163	140%	143%	3%	0.12	1
SCR TD	165	140%	189%	49%	1.40	1
SCR TD	167	140%	105%	-35%	-1.25	2
SCR TD	168	140%	130%	-10%	-0.35	2
SCR TD	169	140%	88%	-52%	-1.07	2
SCR TD	170	100%	93%	-7%	-0.07	2
SCR TD	175	145%	80%	-65%	-3.42	3
SCR TD	176	140%	84%	-56%	-0.48	2
SCR TD	177	120%	119%	-1%	0.00	2
SCR TD	180	145%	141%	-4%	-0.21	1
SCR TD	187	140%	98%	-42%	-0.56	2
SCR TD	188	140%	100%	-40%	-0.50	1
SCR TD	200	145%	144%	-1%	-0.08	1
SCR TD	201	140%	106%	-34%	-0.34	2
SCR TD	204	145%	165%	20%	2.47	1
SCR TD	205	120%	129%	9%	0.15	2
SCR TD	206	145%	168%	23%	1.13	1
SCR TD	207	145%	146%	1%	0.09	1
SCR TD	208	140%	22%	-118%	-2.33	3
SCR TD	209	140%	95%	-45%	-0.62	1
SCR TD	210	145%	159%	14%	0.88	1
SCR TD	211	140%	116%	-24%	-0.11	2
SCR TD	212	145%	134%	-11%	-0.61	1
SCR TD	220	120%	80%	-40%	-0.40	2
SCR TD	225	140%	106%	-34%	-0.96	2

**LACTC OVERCROWDING STUDY
OPERATOR PEAK AM TRIP REQUIREMENTS**

OPERATOR	LINE	COUNTYWIDE BENCHMARK	LOAD RATIO	DIFF. CNTYWIDE BENCHMARK & LOAD RATIO	TRIP REQUIREMENTS	LINE CLASS. PER TPM
SCRTD	228	140%	110%	-30%	-0.85	2
SCRTD	230	145%	116%	-29%	-1.02	1
SCRTD	232	140%	164%	24%	0.70	1
SCRTD	234	140%	177%	37%	1.07	1
SCRTD	236	140%	91%	-49%	-0.26	2
SCRTD	240	140%	88%	-52%	-1.85	1
SCRTD	243	140%	94%	-46%	-0.85	2
SCRTD	245	140%	104%	-36%	-1.28	2
SCRTD	250	120%	60%	-60%	-0.81	3
SCRTD	251	145%	135%	-10%	-0.73	1
SCRTD	254	140%	86%	-54%	-1.12	2
SCRTD	255	120%	86%	-34%	-0.28	1
SCRTD	256	140%	116%	-24%	-0.11	2
SCRTD	259	140%	101%	-39%	-0.64	1
SCRTD	260	145%	114%	-31%	-1.13	1
SCRTD	262	140%	91%	-49%	-0.28	1
SCRTD	264	140%	60%	-80%	-1.60	2
SCRTD	265	120%	57%	-63%	-0.85	2
SCRTD	266	120%	130%	10%	0.17	2
SCRTD	267	140%	85%	-55%	-1.17	1
SCRTD	268	145%	121%	-24%	-0.94	2
SCRTD	270	140%	67%	-73%	-0.98	2
SCRTD	358	120%	103%	-17%	0.00	1
SCRTD	401	110%	87%	-23%	-1.67	4
SCRTD	418	100%	68%	-32%	-1.62	4
SCRTD	420	110%	134%	24%	2.87	4
SCRTD	424	110%	121%	11%	2.24	4
SCRTD	426	100%	111%	11%	0.45	4
SCRTD	427	90%	57%	-33%	-0.49	5
SCRTD	429	100%	65%	-35%	-1.11	4
SCRTD	434	100%	144%	44%	1.55	4
SCRTD	436	100%	63%	-37%	-1.18	4
SCRTD	439	90%	121%	31%	0.69	4
SCRTD	442	110%	82%	-28%	-1.07	4
SCRTD	443	90%	64%	-26%	-0.29	4
SCRTD	444	100%	145%	45%	1.35	4
SCRTD	445	100%	65%	-35%	-0.39	5
SCRTD	446	100%	140%	40%	1.20	4
SCRTD	456	110%	75%	-35%	-1.49	4
SCRTD	457	100%	48%	-52%	-1.44	5
SCRTD	460	140%	95%	-45%	-1.60	6
SCRTD	462	100%	90%	-10%	0.00	4
SCRTD	466	100%	64%	-36%	-0.45	5
SCRTD	470	110%	80%	-30%	-1.39	4

LACTC OVERCROWDING STUDY OPERATOR PEAK AM TRIP REQUIREMENTS

OPERATOR	LINE	COUNTYWIDE BENCHMARK	LOAD RATIO	DIFF. CNTYWIDE BENCHMARK & LOAD RATIO	TRIP REQUIREMENTS	LINE CLASS. PER TPM
SCRTD	480	110%	97%	-13%	-1.31	4
SCRTD	482	100%	84%	-16%	-0.63	4
SCRTD	483	110%	100%	-10%	-0.75	4
SCRTD	484	100%	137%	37%	1.25	4
SCRTD	486	100%	109%	9%	0.46	4
SCRTD	487	110%	94%	-16%	-1.45	4
SCRTD	488	100%	98%	-2%	-0.09	4
SCRTD	490	100%	125%	25%	1.00	4
SCRTD	497	110%	84%	-26%	-2.34	5
SCRTD	560	110%	166%	56%	3.05	4
SCRTD	576	100%	83%	-17%	-0.24	4
SMMBL10C	10	100%	88%	-12%	-0.49	5
SMMBL11A	11	140%	39%	-101%	-1.84	3
SMMBL12C	12	145%	90%	-55%	-2.50	1
SMMBL13C	13	140%	93%	-47%	-0.22	2
SMMBL14C	14	140%	62%	-78%	-1.14	1
SMMBL1A	1	145%	87%	-58%	-2.63	1
SMMBL2C	2	140%	81%	-59%	-1.29	1
SMMBL3A	3	140%	131%	-9%	-0.25	1
SMMBL5C	5	140%	107%	-33%	-0.93	1
SMMBL7C	7	145%	141%	-4%	-0.32	1
SMMBL8A	8	140%	88%	-52%	-1.85	1
SMMBL9A	9	140%	94%	-46%	-0.65	1
Torrance	1	90%	105%	15%	0.34	4
Torrance	2	75%	110%	35%	0.47	4
Torrance	3	140%	133%	-7%	0.00	2
Torrance	4	100%	44%	-56%	-0.56	2
Torrance	5	100%	100%	0%	0.00	2
Torrance	7	120%	66%	-54%	-0.69	2
Torrance	8	140%	72%	-68%	-0.83	2
Torrance	9	100%	78%	-22%	-0.22	2

NA: Not Available

Line Classification Codes

- 1: Local Service - Demand
- 2: Local Service - Demand
- 3: Local Service - Intra-Community
- 4: Express Service - Multi-Stop
- 5: Express Service - Few-Stops

**LACTC OVERCROWDING STUDY
OPERATOR OFFPEAK AM TRIP REQUIREMENTS**

OPERATOR	LINE	COUNTYWIDE BENCHMARK	LOAD RATIO	DIFF. CNTYWIDE BENCHMARK & LOAD RATIO	TRIP REQUIREMENTS	LINE CLASS. PER TPM
Gardena	1	110%	159%	49%	3.12	NA
Gardena	2	145%	159%	14%	0.58	NA
Gardena	3	145%	159%	14%	0.68	NA
Gardena	4	140%	159%	19%	0.68	NA
Long Beach	1	100%	43%	-57%	-0.57	NA
Long Beach	7	120%	53%	-67%	-0.93	NA
Long Beach	12	100%	16%	-84%	-1.26	NA
Long Beach	15	120%	38%	-83%	-1.25	NA
Long Beach	20	140%	50%	-90%	-2.17	NA
Long Beach	40	140%	69%	-71%	-1.25	NA
Long Beach	50	140%	75%	-65%	-1.50	NA
Long Beach	60	145%	49%	-96%	-3.73	NA
Long Beach	80	120%	45%	-75%	-1.09	NA
Long Beach	90	145%	53%	-92%	-3.35	NA
Long Beach	100	140%	31%	-109%	-2.07	NA
Long Beach	110	140%	39%	-101%	-2.64	NA
Long Beach	140	140%	16%	-124%	-3.38	NA
Long Beach	160	100%	45%	-55%	-0.36	NA
Long Beach	170	140%	52%	-88%	-1.92	NA
Long Beach	180	100%	18%	-82%	-0.82	NA
Montebello	10	145%	85%	-60%	-2.36	NA
Montebello	20	100%	41%	-59%	-1.36	NA
Montebello	40	100%	143%	43%	1.73	NA
Montebello	45	100%	7%	-93%	-0.93	NA
Montebello	50	100%	18%	-82%	-0.82	NA
Montebello	60	100%	70%	-30%	-0.30	NA
Montebello	70	120%	16%	-104%	-1.68	NA
Norwalk	1	120%	38%	-82%	-1.23	NA
Norwalk	2	120%	22%	-98%	-1.57	NA
Norwalk	3	120%	17%	-103%	-1.66	NA
SCR TD	1	145%	141%	-4%	-0.24	1
SCR TD	2	145%	136%	-9%	-0.51	1
SCR TD	4	145%	139%	-6%	-0.52	1
SCR TD	10	145%	144%	-1%	-0.05	1
SCR TD	14	145%	130%	-15%	-1.03	1
SCR TD	16	145%	147%	2%	0.12	1
SCR TD	18	145%	155%	10%	0.70	1
SCR TD	20	145%	125%	-20%	-2.69	1
SCR TD	26	145%	145%	0%	0.01	1
SCR TD	28	145%	127%	-18%	-1.94	1
SCR TD	30	145%	130%	-15%	-1.95	1
SCR TD	33	145%	130%	-15%	-1.03	1
SCR TD	38	145%	122%	-23%	-0.75	1
SCR TD	40	145%	135%	-10%	-1.22	1

**LACTC OVERCROWDING STUDY
OPERATOR OFFPEAK AM TRIP REQUIREMENTS**

OPERATOR	LINE	COUNTYWIDE BENCHMARK	LOAD RATIO	DIFF. CNTYWIDE BENCHMARK & LOAD RATIO	TRIP REQUIREMENTS	LINE CLASS. PER TPM
SCRTD	45	145%	152%	7%	0.43	1
SCRTD	53	140%	142%	2%	0.07	1
SCRTD	55	140%	122%	-18%	-0.51	1
SCRTD	56	140%	107%	-33%	-0.94	1
SCRTD	60	145%	132%	-13%	-1.04	1
SCRTD	65	140%	103%	-37%	-1.33	1
SCRTD	66	145%	145%	-0%	-0.00	1
SCRTD	68	145%	128%	-17%	-0.83	1
SCRTD	70	145%	136%	-9%	-0.18	1
SCRTD	76	140%	117%	-23%	-0.83	1
SCRTD	78	145%	148%	3%	0.13	1
SCRTD	81	145%	153%	8%	0.44	1
SCRTD	90	140%	119%	-21%	-0.60	1
SCRTD	92	140%	130%	-10%	-0.37	1
SCRTD	94	140%	127%	-13%	-0.45	1
SCRTD	96	140%	70%	-70%	-2.08	1
SCRTD	102	140%	84%	-56%	-1.19	1
SCRTD	104	140%	69%	-71%	-0.93	2
SCRTD	105	140%	178%	38%	1.13	1
SCRTD	107	120%	65%	-55%	-0.70	1
SCRTD	108	140%	141%	1%	0.03	1
SCRTD	110	140%	121%	-19%	0.00	1
SCRTD	111	140%	140%	-0%	-0.01	1
SCRTD	115	145%	141%	-4%	0.00	1
SCRTD	117	140%	88%	-52%	-1.06	1
SCRTD	119	100%	16%	-84%	-0.84	2
SCRTD	120	140%	142%	2%	0.07	1
SCRTD	124	120%	80%	-40%	-0.40	2
SCRTD	125	140%	92%	-48%	-0.23	1
SCRTD	127	100%	30%	-70%	-0.70	2
SCRTD	128	100%	47%	-53%	-0.53	2
SCRTD	130	120%	86%	-34%	-0.28	2
SCRTD	152	140%	98%	-42%	-0.55	1
SCRTD	154	120%	55%	-65%	-0.90	2
SCRTD	161	120%	41%	-79%	-1.19	2
SCRTD	163	140%	136%	-4%	0.00	1
SCRTD	165	140%	151%	11%	0.40	1
SCRTD	167	140%	24%	-116%	-2.28	2
SCRTD	168	140%	81%	-59%	-0.56	2
SCRTD	169	140%	55%	-85%	-1.35	2
SCRTD	170	100%	87%	-13%	-0.13	2
SCRTD	175	140%	128%	-12%	-0.33	3
SCRTD	176	120%	128%	8%	0.13	2
SCRTD	177	120%	64%	-56%	-0.72	2

**LACTC OVERCROWDING STUDY
OPERATOR OFFPEAK AM TRIP REQUIREMENTS**

OPERATOR	LINE	COUNTYWIDE BENCHMARK	LOAD RATIO	DIFF. CNTYWIDE BENCHMARK & LOAD RATIO	TRIP REQUIREMENTS	LINE CLASS. PER TPM
SCRTD	180	145%	115%	-30%	-1.05	1
SCRTD	187	140%	121%	-19%	0.00	2
SCRTD	188	120%	60%	-60%	-0.80	1
SCRTD	200	145%	138%	-7%	-0.37	1
SCRTD	201	120%	75%	-45%	-0.50	2
SCRTD	204	145%	133%	-12%	-1.51	1
SCRTD	205	120%	132%	12%	0.20	2
SCRTD	206	145%	149%	4%	0.17	1
SCRTD	207	145%	152%	7%	0.56	1
SCRTD	208	140%	15%	-125%	-2.56	3
SCRTD	209	140%	82%	-58%	-0.54	1
SCRTD	210	145%	143%	-2%	0.00	1
SCRTD	211	120%	53%	-67%	-0.93	2
SCRTD	212	140%	149%	9%	0.25	1
SCRTD	220	120%	56%	-64%	-0.87	2
SCRTD	225	140%	61%	-79%	-1.16	2
SCRTD	228	140%	105%	-35%	-0.36	2
SCRTD	230	140%	131%	-9%	-0.25	1
SCRTD	232	140%	130%	-10%	0.00	1
SCRTD	234	140%	157%	17%	0.36	1
SCRTD	236	120%	79%	-41%	-0.42	2
SCRTD	240	140%	115%	-25%	-0.72	1
SCRTD	243	120%	81%	-39%	-0.37	2
SCRTD	245	140%	86%	-54%	-1.14	2
SCRTD	250	120%	61%	-59%	-0.78	3
SCRTD	251	145%	144%	-1%	-0.05	1
SCRTD	254	120%	84%	-36%	-0.33	2
SCRTD	255	120%	128%	8%	0.13	1
SCRTD	256	140%	73%	-67%	-1.57	2
SCRTD	259	140%	88%	-52%	-0.37	1
SCRTD	260	140%	128%	-12%	-0.43	1
SCRTD	262	140%	60%	-80%	-2.48	1
SCRTD	264	120%	45%	-75%	-1.10	2
SCRTD	265	100%	64%	-36%	-0.36	2
SCRTD	266	120%	123%	3%	0.05	2
SCRTD	267	140%	77%	-63%	-1.42	1
SCRTD	268	140%	83%	-57%	-0.50	2
SCRTD	270	120%	73%	-47%	-0.54	2
SCRTD	358	120%	44%	-76%	-1.12	1
SCRTD	401	100%	79%	-21%	-1.07	4
SCRTD	420	110%	125%	15%	0.95	4
SCRTD	424	110%	116%	6%	0.41	4
SCRTD	426	90%	63%	-27%	-0.33	4
SCRTD	427	75%	104%	29%	0.39	5

LACTC OVERCROWDING STUDY OPERATOR OFFPEAK AM TRIP REQUIREMENTS

OPERATOR	LINE	COUNTYWIDE BENCHMARK	LOAD RATIO	DIFF. CNTYWIDE BENCHMARK & LOAD RATIO	TRIP REQUIREMENTS	LINE CLASS. PER TPM
SCRTD	429	100%	74%	-26%	-0.53	4
SCRTD	434	90%	38%	-52%	-0.98	4
SCRTD	439	90%	117%	27%	0.61	4
SCRTD	443	90%	30%	-60%	-1.19	4
SCRTD	444	100%	45%	-55%	-1.22	4
SCRTD	446	100%	146%	46%	1.39	4
SCRTD	456	90%	82%	-8%	0.00	4
SCRTD	460	120%	90%	-30%	-0.19	6
SCRTD	462	100%	86%	-14%	-0.57	4
SCRTD	470	100%	101%	1%	0.04	4
SCRTD	480	100%	72%	-28%	-0.58	4
SCRTD	482	90%	97%	7%	0.15	4
SCRTD	483	100%	84%	-16%	-0.63	4
SCRTD	484	100%	109%	9%	0.43	4
SCRTD	486	100%	45%	-55%	-1.20	4
SCRTD	487	110%	50%	-60%	-3.99	4
SCRTD	488	90%	81%	-9%	0.00	4
SCRTD	490	100%	74%	-26%	-0.73	4
SCRTD	560	100%	148%	48%	1.93	4
SCRTD	576	90%	43%	-47%	-0.85	4
SMMBL10A	10	100%	89%	-11%	-0.45	5
SMMBL12A	12	140%	53%	-87%	-1.41	1
SMMBL13A	13	140%	12%	-128%	-2.65	2
SMMBL14A	14	145%	90%	-55%	-2.15	1
SMMBL1C	1	145%	68%	-77%	-3.58	1
SMMBL2A	2	145%	76%	-69%	-2.74	1
SMMBL3C	3	140%	75%	-65%	-1.50	1
SMMBL5A	5	140%	42%	-98%	-2.33	1
SMMBL7A	7	145%	61%	-84%	-3.45	1
SMMBL8C	8	140%	47%	-93%	-2.63	1
SMMBL9C	9	140%	32%	-108%	-2.04	1

NA: Not Available

Line Classification Codes

- 1: Local Service - Demand
- 2: Local Service - Demand
- 3: Local Service - Intra-Community
- 4: Express Service - Multi-Stop
- 5: Express Service - Few-Stops

LACTC OVERCROWDING STUDY OPERATOR PEAK PM TRIP REQUIREMENTS

OPERATOR	LINE	COUNTYWIDE BENCHMARK	LOAD RATIO	DIFF. CNTYWIDE BENCHMARK & LOAD RATIO	TRIP REQUIREMENTS	LINE CLASS. PER TPM
Commerce	-	100%	107%	7%	0.07	3
Commerce	-	100%	105%	5%	0.05	3
Commerce	-	100%	77%	-23%	-0.23	3
Commerce	-	100%	82%	-18%	-0.18	3
Culver City	1	140%	174%	34%	0.98	1
Culver City	2	100%	174%	74%	0.74	3
Culver City	5	100%	163%	63%	0.63	3
Culver City	6	140%	174%	34%	0.98	1
Foothill	178	140%	153%	13%	0.45	2
Foothill	185	145%	154%	9%	0.36	2
Foothill	274/6	145%	68%	-77%	-3.59	2
Foothill	280	145%	130%	-15%	-1.28	2
Foothill	495	110%	116%	6%	0.30	4 or 5
Foothill	498	110%	104%	-6%	0.00	4 or 5
Gardena	1	110%	159%	49%	4.91	NA
Gardena	2	145%	159%	14%	0.78	NA
Gardena	3	145%	159%	14%	0.78	NA
Gardena	4	145%	159%	14%	0.78	NA
LADOT	413	100%	136%	36%	1.09	4 or 5
LADOT	419	100%	73%	-27%	-0.77	4 or 5
LADOT	423	110%	82%	-28%	-1.07	4 or 5
LADOT	430	90%	28%	-62%	-1.26	4 or 5
LADOT	431	100%	58%	-42%	-0.67	4 or 5
LADOT	437	90%	73%	-17%	-0.05	4 or 5
LADOT	438	100%	75%	-25%	-0.49	4 or 5
LADOT	448	90%	70%	-20%	-0.14	4 or 5
Long Beach	1	140%	91%	-49%	-0.27	NA
Long Beach	7	120%	68%	-52%	-0.64	NA
Long Beach	12	120%	64%	-56%	-0.73	NA
Long Beach	15	120%	64%	-56%	-0.73	NA
Long Beach	20	140%	71%	-69%	-1.63	NA
Long Beach	30	100%	45%	-55%	-0.55	NA
Long Beach	40	100%	119%	19%	0.19	NA
Long Beach	50	140%	63%	-77%	-1.49	NA
Long Beach	60	145%	73%	-72%	-2.85	NA
Long Beach	80	120%	108%	-12%	0.00	NA
Long Beach	90	140%	73%	-67%	-2.10	NA
Long Beach	100	140%	77%	-63%	-0.70	NA
Long Beach	110	140%	67%	-73%	-1.90	NA
Long Beach	140	140%	54%	-86%	-3.12	NA
Long Beach	160	100%	74%	-26%	-0.17	NA
Long Beach	170	140%	67%	-73%	-1.32	NA
Long Beach	180	100%	30%	-70%	-0.70	NA
Montebello	10	145%	73%	-72%	-2.88	NA

**LACTC OVERCROWDING STUDY
OPERATOR PEAK PM TRIP REQUIREMENTS**

OPERATOR	LINE	COUNTYWIDE BENCHMARK	LOAD RATIO	DIFF. CNTYWIDE BENCHMARK & LOAD RATIO	TRIP REQUIREMENTS	LINE CLASS. PER TPM
Montebello	20	90%	69%	-21%	-0.15	NA
Montebello	40	100%	133%	33%	1.00	NA
Montebello	45	100%	27%	-73%	-0.73	NA
Montebello	50	100%	32%	-68%	-0.68	NA
Montebello	60	100%	105%	5%	0.05	NA
Montebello	70	120%	31%	-89%	-1.39	NA
Norwalk	1	120%	22%	-98%	-1.56	NA
Norwalk	2	120%	5%	-115%	-1.91	NA
Norwalk	3	120%	30%	-90%	-1.41	NA
SCR TD	1	145%	144%	-1%	-0.08	1
SCR TD	2	145%	154%	9%	0.57	1
SCR TD	4	145%	128%	-17%	-1.92	1
SCR TD	10	145%	136%	-9%	-0.70	1
SCR TD	14	145%	104%	-41%	-3.69	1
SCR TD	16	145%	153%	8%	0.88	1
SCR TD	18	145%	133%	-12%	-1.00	1
SCR TD	20	145%	132%	-13%	-2.57	1
SCR TD	26	145%	148%	3%	0.29	1
SCR TD	28	145%	136%	-9%	-1.43	1
SCR TD	30	145%	168%	23%	2.40	1
SCR TD	33	145%	148%	3%	0.26	1
SCR TD	38	140%	159%	19%	0.68	1
SCR TD	40	145%	133%	-12%	-1.40	1
SCR TD	45	145%	170%	25%	2.10	1
SCR TD	53	145%	151%	6%	0.41	1
SCR TD	55	145%	147%	2%	0.15	1
SCR TD	56	140%	128%	-12%	-0.35	1
SCR TD	60	145%	143%	-2%	-0.30	1
SCR TD	65	140%	104%	-36%	-1.30	1
SCR TD	66	145%	154%	9%	1.02	1
SCR TD	68	145%	142%	-3%	-0.16	1
SCR TD	70	145%	152%	7%	0.42	1
SCR TD	76	145%	170%	25%	1.04	1
SCR TD	78	145%	139%	-6%	-0.51	1
SCR TD	81	145%	130%	-15%	-0.94	1
SCR TD	90	145%	99%	-46%	-1.75	1
SCR TD	92	145%	114%	-31%	-1.29	1
SCR TD	94	145%	163%	18%	0.86	1
SCR TD	96	145%	70%	-75%	-2.52	1
SCR TD	102	140%	108%	-32%	-0.30	1
SCR TD	104	120%	131%	11%	0.19	2
SCR TD	105	145%	144%	-1%	0.00	1
SCR TD	107	140%	95%	-45%	-0.62	1
SCR TD	108	140%	147%	7%	0.26	1

**LACTC OVERCROWDING STUDY
OPERATOR PEAK PM TRIP REQUIREMENTS**

OPERATOR	LINE	COUNTYWIDE BENCHMARK	LOAD RATIO	DIFF. CNTYWIDE BENCHMARK & LOAD RATIO	TRIP REQUIREMENTS	LINE CLASS. PER TPM
SCRTD	110	140%	180%	40%	1.14	1
SCRTD	111	145%	134%	-11%	-0.52	1
SCRTD	115	145%	121%	-24%	-2.15	1
SCRTD	117	140%	139%	-1%	-0.02	1
SCRTD	119	100%	42%	-58%	-0.58	2
SCRTD	120	140%	157%	17%	0.49	1
SCRTD	124	120%	88%	-32%	-0.23	2
SCRTD	125	140%	138%	-2%	-0.05	1
SCRTD	127	100%	81%	-19%	-0.19	2
SCRTD	128	100%	94%	-6%	-0.06	2
SCRTD	130	120%	91%	-29%	-0.19	2
SCRTD	152	140%	119%	-21%	-0.74	1
SCRTD	154	120%	88%	-32%	-0.25	2
SCRTD	161	140%	110%	-30%	-0.25	2
SCRTD	163	140%	109%	-31%	-0.88	1
SCRTD	165	140%	131%	-9%	0.00	1
SCRTD	167	140%	103%	-37%	-0.42	2
SCRTD	168	140%	114%	-26%	-0.74	2
SCRTD	169	140%	119%	-21%	-0.02	2
SCRTD	170	100%	46%	-54%	-0.54	2
SCRTD	175	140%	135%	-5%	-0.18	3
SCRTD	176	120%	78%	-42%	-0.44	2
SCRTD	177	120%	103%	-17%	0.00	2
SCRTD	180	145%	146%	1%	0.04	1
SCRTD	187	140%	95%	-45%	-0.62	2
SCRTD	188	140%	131%	-9%	0.00	1
SCRTD	200	145%	151%	6%	0.38	1
SCRTD	201	120%	93%	-27%	-0.14	2
SCRTD	204	145%	153%	8%	0.91	1
SCRTD	205	120%	156%	36%	0.59	2
SCRTD	206	145%	147%	2%	0.09	1
SCRTD	207	145%	147%	2%	0.14	1
SCRTD	208	140%	33%	-107%	-2.00	3
SCRTD	209	120%	81%	-39%	-0.38	1
SCRTD	210	145%	166%	21%	0.85	1
SCRTD	211	140%	113%	-27%	-0.17	2
SCRTD	212	145%	134%	-11%	-0.25	1
SCRTD	220	120%	60%	-60%	-0.79	2
SCRTD	225	120%	62%	-58%	-0.77	2
SCRTD	228	120%	149%	29%	0.49	2
SCRTD	230	140%	94%	-46%	-0.86	1
SCRTD	232	140%	143%	3%	0.10	1
SCRTD	234	140%	156%	16%	0.34	1
SCRTD	236	140%	87%	-53%	-0.40	2

**LACTC OVERCROWDING STUDY
OPERATOR PEAK PM TRIP REQUIREMENTS**

OPERATOR	LINE	COUNTYWIDE BENCHMARK	LOAD RATIO	DIFF. CNTYWIDE BENCHMARK & LOAD RATIO	TRIP REQUIREMENTS	LINE CLASS. PER TPM
SCRTD	240	140%	96%	-44%	-0.80	1
SCRTD	243	140%	122%	-18%	-0.53	2
SCRTD	245	140%	112%	-28%	-0.80	2
SCRTD	250	120%	51%	-69%	-0.97	3
SCRTD	251	145%	169%	24%	1.47	1
SCRTD	254	120%	117%	-3%	0.00	2
SCRTD	255	120%	65%	-55%	-0.69	1
SCRTD	256	140%	78%	-62%	-0.66	2
SCRTD	259	140%	69%	-71%	-0.93	1
SCRTD	260	140%	152%	12%	0.41	1
SCRTD	262	140%	63%	-77%	-1.49	1
SCRTD	264	120%	69%	-51%	-0.63	2
SCRTD	265	120%	35%	-85%	-1.30	2
SCRTD	266	120%	98%	-22%	-0.05	2
SCRTD	267	140%	113%	-27%	-0.18	1
SCRTD	268	145%	83%	-62%	-2.83	2
SCRTD	270	120%	58%	-62%	-0.83	2
SCRTD	358	120%	81%	-39%	-0.37	1
SCRTD	401	110%	79%	-31%	-2.50	4
SCRTD	418	100%	87%	-13%	-0.51	4
SCRTD	420	110%	126%	16%	1.64	4
SCRTD	424	110%	142%	32%	4.08	4
SCRTD	426	100%	107%	7%	0.37	4
SCRTD	427	90%	76%	-14%	0.00	5
SCRTD	429	100%	61%	-39%	-0.55	4
SCRTD	434	100%	160%	60%	1.81	4
SCRTD	436	100%	59%	-41%	-1.36	4
SCRTD	439	90%	150%	60%	1.00	4
SCRTD	442	100%	79%	-21%	-1.03	4
SCRTD	443	90%	69%	-21%	-0.17	4
SCRTD	444	90%	123%	33%	0.74	4
SCRTD	445	90%	65%	-25%	-0.26	5
SCRTD	446	100%	91%	-9%	-0.35	4
SCRTD	456	100%	82%	-18%	-0.90	4
SCRTD	457	100%	58%	-42%	-0.69	5
SCRTD	460	140%	96%	-44%	-0.81	6
SCRTD	462	100%	86%	-14%	-0.54	4
SCRTD	466	90%	59%	-31%	-0.44	5
SCRTD	470	110%	78%	-32%	-1.33	4
SCRTD	480	110%	97%	-13%	-1.07	4
SCRTD	482	100%	85%	-15%	-0.59	4
SCRTD	483	100%	113%	13%	0.51	4
SCRTD	484	100%	125%	25%	0.69	4
SCRTD	486	100%	108%	8%	0.33	4

LACTC OVERCROWDING STUDY OPERATOR PEAK PM TRIP REQUIREMENTS

OPERATOR	LINE	COUNTYWIDE BENCHMARK	LOAD RATIO	DIFF. CNTYWIDE BENCHMARK & LOAD RATIO	TRIP REQUIREMENTS	LINE CLASS. PER TPM
SCRTD	487	110%	92%	-18%	-1.81	4
SCRTD	488	100%	92%	-8%	-0.34	4
SCRTD	490	100%	106%	6%	0.28	4
SCRTD	497	110%	102%	-8%	-0.69	5
SCRTD	560	110%	150%	40%	2.16	4
SCRTD	576	100%	97%	-3%	0.00	4
SMMBL10B	10	100%	126%	26%	0.78	5
SMMBL11B	11	140%	35%	-105%	-1.94	3
SMMBL12B	12	140%	110%	-30%	-1.06	1
SMMBL13B	13	140%	58%	-82%	-1.69	2
SMMBL14B	14	140%	61%	-79%	-1.16	1
SMMBL1D	1	145%	82%	-63%	-2.88	1
SMMBL2B	2	140%	76%	-64%	-1.83	1
SMMBL3D	3	140%	125%	-15%	-0.43	1
SMMBL5B	5	140%	95%	-45%	-0.83	1
SMMBL7B	7	145%	166%	21%	0.99	1
SMMBL8D	8	140%	87%	-53%	-1.90	1
SMMBL9D	9	140%	67%	-73%	-0.98	1
Torrance	1	90%	100%	10%	0.22	4
Torrance	2	75%	98%	23%	0.31	4
Torrance	3	140%	129%	-11%	0.00	2
Torrance	4	100%	16%	-84%	-0.84	2
Torrance	5	100%	70%	-30%	-0.30	2
Torrance	7	120%	63%	-57%	-0.75	2
Torrance	8	140%	78%	-62%	-0.67	2
Torrance	9	100%	44%	-56%	-0.56	2

NA: Not Available

Line Classification Codes

- 1: Local Service - Demand
- 2: Local Service - Demand
- 3: Local Service - Intra-Community
- 4: Express Service - Multi-Stop
- 5: Express Service - Few-Stops

**LACTC OVERCROWDING STUDY
OPERATOR OFFPEAK PM TRIP REQUIREMENTS**

OPERATOR	LINE	COUNTYWIDE BENCHMARK	LOAD RATIO	DIFF. CNTYWIDE BENCHMARK & LOAD RATIO	TRIP REQUIREMENTS	LINE CLASS. PER TPM
Gardena	1	110%	159%	49%	3.57	NA
Gardena	2	145%	159%	14%	0.78	NA
Gardena	3	145%	159%	14%	0.78	NA
Gardena	4	145%	159%	14%	0.78	NA
Long Beach	1	100%	77%	-23%	-0.23	NA
Long Beach	7	140%	45%	-95%	-1.64	NA
Long Beach	12	120%	38%	-83%	-1.25	NA
Long Beach	15	100%	18%	-82%	-1.23	NA
Long Beach	20	140%	59%	-81%	-1.63	NA
Long Beach	30	100%	18%	-82%	-0.82	NA
Long Beach	40	100%	96%	-4%	-0.05	NA
Long Beach	50	140%	65%	-75%	-1.39	NA
Long Beach	60	140%	69%	-71%	-1.98	NA
Long Beach	80	120%	32%	-88%	-1.36	NA
Long Beach	90	145%	48%	-97%	-3.58	NA
Long Beach	100	140%	30%	-110%	-2.80	NA
Long Beach	110	140%	50%	-90%	-2.02	NA
Long Beach	140	140%	35%	-105%	-3.70	NA
Long Beach	160	100%	51%	-49%	-0.49	NA
Long Beach	170	140%	64%	-76%	-1.44	NA
Long Beach	180	100%	18%	-82%	-0.82	NA
Montebello	10	145%	59%	-86%	-3.05	NA
Montebello	20	90%	36%	-54%	-1.03	NA
Montebello	30	120%	20%	-100%	-1.59	NA
Montebello	30	120%	17%	-103%	-1.66	NA
Montebello	40	100%	94%	-6%	-0.25	NA
Montebello	45	100%	2%	-98%	-0.98	NA
Montebello	50	100%	20%	-80%	-0.80	NA
Montebello	60	100%	102%	2%	0.02	NA
Montebello	70	120%	20%	-100%	-1.59	NA
Norwalk	1	120%	28%	-92%	-1.44	NA
Norwalk	2	120%	6%	-114%	-1.89	NA
Norwalk	3	120%	7%	-113%	-1.85	NA
SCRTD	1	145%	113%	-32%	-2.17	1
SCRTD	2	145%	144%	-1%	-0.03	1
SCRTD	4	145%	153%	8%	0.60	1
SCRTD	10	145%	138%	-7%	-0.61	1
SCRTD	14	145%	115%	-30%	-1.87	1
SCRTD	16	145%	121%	-24%	-2.02	1
SCRTD	18	145%	126%	-19%	-1.54	1
SCRTD	20	145%	150%	5%	0.67	1
SCRTD	26	145%	120%	-25%	-2.26	1
SCRTD	28	145%	115%	-30%	-3.48	1
SCRTD	30	145%	161%	16%	1.36	1

**LACTC OVERCROWDING STUDY
OPERATOR OFFPEAK PM TRIP REQUIREMENTS**

OPERATOR	LINE	COUNTYWIDE BENCHMARK	LOAD RATIO	DIFF. CNTYWIDE BENCHMARK & LOAD RATIO	TRIP REQUIREMENTS	LINE CLASS. PER TPM
SCR TD	33	145%	128%	-17%	-1.18	1
SCR TD	38	145%	119%	-26%	-0.90	1
SCR TD	40	145%	143%	-2%	-0.16	1
SCR TD	45	145%	139%	-6%	-0.37	1
SCR TD	53	145%	112%	-33%	-1.22	1
SCR TD	55	140%	145%	5%	0.15	1
SCR TD	56	140%	117%	-23%	-0.81	1
SCR TD	60	145%	143%	-2%	-0.20	1
SCR TD	65	140%	94%	-46%	-0.86	1
SCR TD	66	145%	131%	-14%	-0.80	1
SCR TD	68	145%	128%	-17%	-0.92	1
SCR TD	70	145%	120%	-25%	-0.88	1
SCR TD	76	140%	125%	-15%	-0.43	1
SCR TD	78	140%	182%	42%	1.19	1
SCR TD	81	145%	137%	-8%	-0.61	1
SCR TD	90	140%	104%	-36%	-0.41	1
SCR TD	92	145%	131%	-14%	-0.37	1
SCR TD	94	145%	118%	-27%	-0.95	1
SCR TD	96	140%	66%	-74%	-2.25	1
SCR TD	102	140%	77%	-63%	-1.43	1
SCR TD	104	120%	73%	-47%	-0.54	2
SCR TD	105	145%	148%	3%	0.11	1
SCR TD	107	120%	84%	-36%	-0.33	1
SCR TD	108	140%	169%	29%	0.83	1
SCR TD	110	140%	109%	-31%	-0.90	1
SCR TD	111	140%	157%	17%	0.61	1
SCR TD	115	145%	117%	-28%	-0.99	1
SCR TD	117	140%	87%	-53%	-1.88	1
SCR TD	119	100%	33%	-67%	-0.67	2
SCR TD	120	140%	152%	12%	0.35	1
SCR TD	124	120%	71%	-49%	-0.58	2
SCR TD	125	140%	134%	-6%	0.00	1
SCR TD	127	100%	53%	-47%	-0.47	2
SCR TD	128	100%	56%	-44%	-0.44	2
SCR TD	130	120%	87%	-33%	-0.26	2
SCR TD	152	140%	136%	-4%	0.00	1
SCR TD	154	120%	44%	-76%	-1.12	2
SCR TD	161	120%	40%	-80%	-1.21	2
SCR TD	163	140%	124%	-16%	-0.46	1
SCR TD	165	140%	145%	5%	0.11	1
SCR TD	167	120%	60%	-60%	-0.79	2
SCR TD	168	140%	61%	-79%	-1.16	2
SCR TD	169	120%	55%	-65%	-0.91	2
SCR TD	170	100%	74%	-26%	-0.26	2

**LACTC OVERCROWDING STUDY
OPERATOR OFFPEAK PM TRIP REQUIREMENTS**

OPERATOR	LINE	COUNTYWIDE BENCHMARK	LOAD RATIO	DIFF. CNTYWIDE BENCHMARK & LOAD RATIO	TRIP REQUIREMENTS	LINE CLASS. PER TPM
SCRTD	175	140%	22%	-118%	-2.35	3
SCRTD	176	120%	83%	-37%	-0.33	2
SCRTD	177	120%	45%	-75%	-1.09	2
SCRTD	180	145%	132%	-13%	-0.36	1
SCRTD	187	140%	114%	-26%	-0.14	2
SCRTD	188	140%	73%	-67%	-1.57	1
SCRTD	200	145%	153%	8%	0.44	1
SCRTD	204	145%	152%	7%	0.73	1
SCRTD	205	120%	83%	-37%	-0.33	2
SCRTD	206	145%	150%	5%	0.20	1
SCRTD	207	145%	148%	3%	0.23	1
SCRTD	208	140%	12%	-128%	-2.63	3
SCRTD	209	120%	67%	-53%	-0.66	1
SCRTD	210	145%	156%	11%	0.47	1
SCRTD	211	140%	79%	-61%	-1.36	2
SCRTD	212	140%	128%	-12%	-0.43	1
SCRTD	220	120%	47%	-73%	-1.07	2
SCRTD	225	140%	35%	-105%	-1.95	2
SCRTD	228	120%	103%	-17%	0.00	2
SCRTD	230	140%	141%	1%	0.02	1
SCRTD	232	140%	85%	-55%	-1.15	1
SCRTD	234	140%	91%	-49%	-0.98	1
SCRTD	236	140%	64%	-76%	-1.09	2
SCRTD	240	140%	78%	-62%	-1.39	1
SCRTD	243	140%	46%	-94%	-1.63	2
SCRTD	245	140%	120%	-20%	-0.56	2
SCRTD	250	120%	51%	-69%	-0.97	3
SCRTD	251	145%	140%	-5%	-0.36	1
SCRTD	254	120%	77%	-43%	-0.47	2
SCRTD	255	120%	100%	-20%	0.00	1
SCRTD	256	120%	101%	-19%	0.00	2
SCRTD	259	140%	65%	-75%	-1.04	1
SCRTD	260	140%	116%	-24%	-0.69	1
SCRTD	262	140%	70%	-70%	-0.91	1
SCRTD	264	120%	22%	-98%	-1.55	2
SCRTD	265	120%	34%	-86%	-1.33	2
SCRTD	266	120%	98%	-22%	-0.05	2
SCRTD	267	140%	73%	-67%	-0.80	1
SCRTD	268	140%	59%	-81%	-1.64	2
SCRTD	270	120%	62%	-58%	-0.76	2
SCRTD	358	120%	40%	-80%	-1.21	1
SCRTD	401	100%	118%	18%	0.53	4
SCRTD	420	110%	141%	31%	1.99	4
SCRTD	424	110%	141%	31%	1.70	4

LACTC OVERCROWDING STUDY OPERATOR OFFPEAK PM TRIP REQUIREMENTS

OPERATOR	LINE	COUNTYWIDE BENCHMARK	LOAD RATIO	DIFF. CNTYWIDE BENCHMARK & LOAD RATIO	TRIP REQUIREMENTS	LINE CLASS. PER TPM
SCRTD	426	90%	121%	31%	0.69	4
SCRTD	427	75%	74%	-1%	-0.01	5
SCRTD	429	90%	103%	13%	0.30	4
SCRTD	434	100%	36%	-64%	-1.57	4
SCRTD	439	90%	105%	15%	0.33	4
SCRTD	443	75%	58%	-17%	-0.22	4
SCRTD	444	90%	49%	-41%	-0.70	4
SCRTD	446	100%	87%	-13%	-0.53	4
SCRTD	456	100%	56%	-44%	-0.76	4
SCRTD	460	140%	76%	-64%	-0.72	6
SCRTD	462	100%	80%	-20%	-0.35	4
SCRTD	470	100%	105%	5%	0.20	4
SCRTD	480	100%	48%	-52%	-1.45	4
SCRTD	482	90%	55%	-35%	-0.52	4
SCRTD	483	100%	84%	-16%	-0.63	4
SCRTD	484	110%	121%	11%	0.60	4
SCRTD	486	90%	70%	-20%	-0.14	4
SCRTD	487	110%	38%	-72%	-5.55	4
SCRTD	488	90%	60%	-30%	-0.39	4
SCRTD	490	100%	99%	-1%	0.00	4
SCRTD	560	100%	172%	72%	2.80	4
SCRTD	576	100%	96%	-4%	0.00	4
SMMBL10D	10	110%	81%	-29%	-1.35	5
SMMBL12D	12	140%	53%	-87%	-2.33	1
SMMBL13D	13	140%	8%	-132%	-2.75	2
SMMBL14D	14	140%	99%	-41%	-0.53	1
SMMBL1B	1	145%	79%	-66%	-3.49	1
SMMBL2D	2	140%	87%	-53%	-1.89	1
SMMBL3B	3	140%	89%	-51%	-1.03	1
SMMBL5D	5	140%	41%	-99%	-2.37	1
SMMBL7D	7	145%	76%	-69%	-3.20	1
SMMBL8B	8	140%	45%	-95%	-2.76	1
SMMBL9B	9	120%	29%	-91%	-1.41	1

NA: Not Available

Line Classification Codes

- 1: Local Service - Demand
- 2: Local Service - Demand
- 3: Local Service - Intra-Community
- 4: Express Service - Multi-Stop
- 5: Express Service - Few-Stops

RTD will add buses to lines

By Joseph Ascenzi
Staff Writer

LOS ANGELES — Southern California Rapid Transit District will add 15 buses to its countywide fleet to ease overcrowding on the district's most popular lines.

RTD's board of directors and the Los Angeles County Transportation Commission voted unanimously to add the extra buses last week during a special meeting of both bodies at the Hall of Administration.

The 11-member board also voted to add five buses to the most overcrowded run by municipal operators in Los Angeles County.

According to the proposal, the commission will use money from Proposition A — a half-cent sales tax approved by county voters in 1980 for transportation projects — to pay for the extra buses.

The action Wednesday was the second time in less than four months the district has added buses to its busiest lines to ease overcrowding. Last November, faced with an increase in ridership brought on by the Persian Gulf crisis and an increase in the price of gasoline, RTD added 20 buses.

Some RTD lines are as much as 190 percent above their regular capacity, said Neil Peterson, the commission's executive director. The district considers a bus that operates at 145 percent to be overcrowded, he said.

Between six and eight bus routes will get extra buses within the next three weeks. RTD will consider heavily used lines in the western, southern and eastern parts of Los Angeles for the extra lines, Peterson said.

It will not consider any of the San Gabriel Valley routes for the extra buses. However, the West Covina-based Foothill Transit Zone could be considered for one of the five buses set aside for local bus operators.

Alan Pegg, RTD general manager, said he was pleased the district will receive extra vehicles, but he cautioned that overcrowding still will plague some buses.

"We're moving in the right direction, but we can't stop here," Pegg said Thursday in a prepared statement. "One of our most important long-term goals is to add enough buses to our fleet so that the ever-increasing number of transit uses is adequately served."

3-11-91

Star News

RTD to add 15 buses to ease overcrowding

By Joseph Ascenzi
Staff Writer

LOS ANGELES — Fifteen buses will be added to the Southern California Rapid District's countywide fleet, in order to ease overcrowding on the district's most popular lines.

The district's board of directors and the Los Angeles County Transportation Commission voted unanimously Wednesday to add the extra buses, during a special meeting of both bodies at the Hall of Administration.

The 11-member board also voted to add five buses to the most overcrowded bus routes run by municipal operators in Los Angeles County.

According to the proposal, the commission will use money from Proposition A — a half-cent sales tax approved by county voters in

1980 for transportation projects — to pay for the extra buses.

The action Wednesday was the second time in less than four months the district has added buses to its busiest lines to ease overcrowding. Last November, faced with an increase in ridership brought on by the Persian Gulf crisis and an increase in the price of gasoline, the RTD added 20 buses to its fleet.

Neil Peterson, the commission's executive director, said some RTD lines are as much as 190 percent above their regular capacity. He added that the district considers a bus that operates at 145 percent to be overcrowded.

Between six and eight bus routes will get extra buses within the next three weeks. Heavily used lines in the western, southern and eastern parts of Los An-

geles will be considered for the extra lines, Peterson said.

None of the RTD's San Gabriel Valley routes will be considered for the extra buses. However, the Foothill Transit Zone — which is based in West Covina — could be considered for one of the five buses set aside for local bus operators.

Alan Pegg, RTD general manager, said he was pleased the district will be receiving extra vehicles, but he cautioned that some buses will still be plagued by overcrowding.

"We're moving in the right direction, but we can't stop here," Pegg said Thursday in a prepared statement. "One of our most important long-term goals is to add enough buses to our fleet so that the ever-increasing number of transit uses is adequately served."

Thursday, March 14, 1991

Los Angeles Sentinel

A-3

RTD Adds 15 Buses to Relieve Crowding

RTD will field 15 additional buses on six to eight lines starting in about three weeks, using funds approved by the joint Los Angeles County Transportation

Commission/RTD board to help alleviate bus overcrowding.

"I join RTD's 1.4 million daily riders in expressing my gratitude to the joint board for approving the funds to put 15 more buses into service," said RTD Board President Nick Patsouras.

"One of the key elements to the Transit Rider Bill of Rights is quality service, and this is another positive step toward that goal," he said.

Last November, RTD added 20 buses to seven bus lines countywide in response to increasing ridership demands due largely to the Persian Gulf situation. The funding approved Wednesday will bring the total

number of buses added since November to 35.

"We're moving in the right direction, but we can't stop here," said Alan F. Pegg, general manager. "One of our most important long-term goals is to add enough buses to our fleet so that the ever-increasing number of transit users is adequately served."

Between six and eight heavily-used bus lines in the western, southern, and eastern portions of Los Angeles will be targeted to receive the 15 extra buses, which could be in service within three weeks.

RTD will announce specific lines to receive extra buses as soon as the decision is made, Pegg said.

FOR LOS ANGELES COUNTY TRANSPORTATION COMMISSION
ATTN: PAUL SELF

PROGRAM NEWS STATION KTLA-TV
DATE APRIL 8, 1991 10:00 PM CITY LOS ANGELES

RTD ADDS 15 NEW BUSES

JANN CARL, CO-ANCHOR: Fifteen new buses are being added to the RTD fleet as the TRANSIT DISTRICT attempts to ease bus overcrowding. Today, the RTD announced the new buses are being added during peak hours along the most heavily used routes. They say these lines currently run up to two hundred percent of capacity.

NIKOLAS PATSOURAS, RTD BOARD OF DIRECTORS: The number of the complaints that we receive daily is that because the buses are overcrowded. Either the bus operators pass by the passengers waiting at bus stops, so people, out of frustration, they will not take the bus during peak hours on those lines.

CARL: RTD officials say there will be no fare increase, and the fifteen new buses will effect some three hundred sixty thousand riders along fifteen bus routes.

#



Neil Peterson
Executive Director

July 8, 1991

MEMO TO: FINANCE AND PROGRAMMING COMMITTEE - 7/15 MEETING
FROM: NEIL PETERSON
SUBJECT: CONTINUED FUNDING FOR BUS SERVICE OVERCROWDING

ISSUE

At the March 6, 1991 Joint SCRTD/LACTC meeting, funding for bus service overcrowding in the amount of \$750,000 was approved for a four-month period. Absent Proposition C revenues, a decision must be made whether to continue funding for operation of the 20 additional vehicles.

RECOMMENDATIONS

Staff recommends the following:

1. Fund the operating costs of the 20 additional buses (fifteen vehicles for SCRTD, three for Gardena Municipal Bus Lines and two for Culver City Municipal Bus Lines) for the remainder of FY 1992 in the amount of \$2.1 million; and
2. Utilize Proposition A 40% Discretionary Interest revenues as the funding source; and
3. Provide that these services receive priority for funding under the Proposition C Bus Service Capacity Expansion Program when those funds become available; and
4. Review future financial obligations for continued funding if Proposition C revenues remain unavailable after FY 1992; and
5. Authorize the Executive Director to take all the necessary administrative steps to implement the actions approved above.

RELATIONSHIP TO LACTC GOALS

Continuation of funding for these services carries out several Commission goals including mobility improvement through increasing the number of transit riders, increased rider satisfaction through improved service quality, and increased constituent satisfaction.



Los Angeles County
Transportation
Commission
818 West Seventh Street
Suite 1100
Los Angeles, CA 90017
Tel 213 623-1194

Leading the Way to Greater Mobility

00'100

BUDGET IMPACT

There is no impact to the Commission's operating budget. Proposition A 40% Discretionary Interest funds are recommended as the funding source to subsidize the continuation of the bus overcrowding program. Proposition A 40% Discretionary Interest funds are the result of interest generated from unearned/unused Proposition A funds from previous years. The balance in the Proposition A Discretionary Interest account (as of May, 1991) is \$13 million.

BACKGROUND

At the March 6, 1991 joint SCRTD Board of Directors/LACTC Commissioners meeting, funding in the amount of \$750,000 in Proposition A 40% Discretionary Interest funds was approved for the operation of twenty buses to relieve overcrowding in Los Angeles County for a four-month period. The Proposition A funds were to be utilized until Proposition C revenues became available. Fifteen buses were to be added by the SCRTD, while the balance were to be operated on the most overcrowded routes by the Los Angeles County Municipal Bus Operators. It was later determined that Gardena Municipal Bus Lines and Culver City Municipal Bus Lines would be the recipients of increased funding for overcrowding relief.

Additionally, a report was presented at the joint meeting which identified overcrowded services operated by the County's transit providers as well as opportunities for potential service redeployment and other strategies available to operators for overcrowding relief.

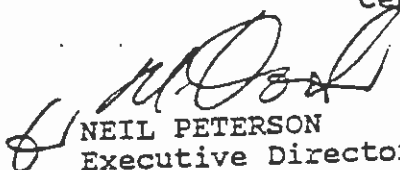
CURRENT SITUATION

Implementation of the additional, temporary service capacity provided through the joint SCRTD/LACTC overcrowding recommendation has been substantially completed. However, SCRTD's funding for their fifteen buses will terminate at the end of July. The Commission has received a communication from SCRTD/LACTC member Patsouras expressing his strong interest to continue funding for District services. Culver City Municipal Bus Lines began service on Line #6 during May, so their funding will conclude in September. Gardena Municipal Bus Lines (GMBL) has not yet implemented service. GMBL wishes to receive a one-year funding commitment from the LACTC prior to implementing additional service.

FINANCE AND PROGRAMMING COMMITTEE - 7/15 MEETING
CONTINUED FUNDING FOR BUS SERVICE OVERCROWDING
Page 3

If Proposition C funds become available, then staff recommends that these services be given priority for Proposition C Bus Service Capacity Expansion funding. However, if Proposition C funds are not anticipated to be available during FY 1993, then the Commission must determine the future of the bus service overcrowding program.

PREPARED BY: ALAN E. PATASHNICK
Project Manager
Central Area Team


NEIL PETERSON
Executive Director

Attachment

CAT1:FPC715.MET



COMMITTEE RECOMMENDATIONS

CONTINUED FUNDING FOR BUS SERVICE OVERCROWDING

The Finance and Programming Committee approved the staff recommendation.





LACTC

**Los Angeles County
Transportation Commission**

818 West Seventh Street
Suite 1100
Los Angeles, CA 90017
Tel 213 623-1194
Fax 213 236-4805

January 2, 1991

Mr. Daniel Gomez
Director of Transportation
Commerce Municipal Bus Lines
2535 Commerce Way
Commerce, CA 90040

Dear Mr. Gomez:

As you may be aware, the LACTC and the SCRTD have been directed to prepare a report evaluating utilization and efficiency of transit services in Los Angeles County (bus service overcrowding). A preliminary report presented at the Joint District/Commission meeting in December indicated that the region is presently underserved when compared to other major systems in the nation. The study noted that there may be a need to add a substantial number of buses to Los Angeles County transit operators. However, during initial discussions between both agencies' staffs, it was determined that additional work beyond the December report would be required to identify the full range of options associated with the overcrowding issue.

A more detailed report is now being prepared for the Joint Policy Board meeting on March 6, 1991. It is imperative that your system provide specific line level data by January 10, 1991. At the request of the Commission's Planning and Mobility Improvement Committee, the study was broadened to include all major public bus operators in Los Angeles County. This information will not only assist our consultants and staff in completing the utilization and efficiency report, but will also provide important information to LACTC's Area Teams in the preparation of the Congestion Management Program's County-wide Transit Standards.

For each of your fixed-route bus lines, the following information is required:

- o line names and route numbers;
- o their frequency of service by time period, i.e., AM peak (6 AM - 9 AM), base, and PM peak (3 PM - 6 PM);
- o their peak passenger load point(s) during the AM and PM peak hour;
- o the peak passenger load for each trip during the peak hour and the associated number of seats on each bus operated during the peak hour;

Mr. Daniel Gomez
January 2, 1991
Page 2.

- o the time each of these weekday trips passed their peak load point for the line;
- o a list of the weekday boardings per revenue bus hour and passenger miles per revenue bus mile for each line; and
- o your agency's passenger loading standards.

At the January 3rd BOS meeting, an outline of this report will be provided. In addition, LACTC staff, District staff, and our consultants will be present to answer any questions. All operators will be continually updated during the preparation of this report.

In the meantime, if you have any questions or need additional information, please call Alan Patashnick, Project Manager for the Central Area Team, at (213) 236-9446.

Sincerely,



NEIL PETERSON
Executive Director

cc: Alan Pegg

JW3:OVERCROW
AP/kgb

NEIL PETERSON
EXECUTIVE DIRECTOR



Los Angeles County
Transportation Commission
818 West Seventh Street
Suite 1100
Los Angeles, CA 90017
213/623-1194

November 9, 1990

MEMO TO: PLANNING AND MOBILITY IMPROVEMENT COMMITTEE,
NOVEMBER 19, 1990 MEETING

FROM: NEIL PETERSON

SUBJECT: SCRTD TRANSIT SERVICE OVERCROWDING

ISSUE

Many SCRTD routes currently experience passenger overcrowding. During the next several months, LACTC and SCRTD staff will cooperatively develop options to address SCRTD passenger overcrowding.

RECOMMENDATION

Review and comment on the attached work program. A preliminary report based on the attached work program will be presented at the December 1990 Joint LACTC/SCRTD Board Meeting. A final report will be presented at the March 1991 Joint LACTC/SCRTD Board Meeting.

BACKGROUND

At the August 1990 LACTC/SCRTD Joint Board meeting, Commissioner Antonovich asked his appointee, SCRTD Board President Nick Patsaouras, to "request that LACTC and SCRTD Executive Officers meet to discuss and report at the next joint meeting the overcrowding of buses, suggest improvement of efficiency, and/or the need for additional funding". During the past few months, staff from both agencies have met on several occasions to discuss the extent of SCRTD passenger overcrowding and the process required to resolve the issue.

In September, a joint staff overcrowding committee was formed. The objective of the committee was to develop a work program which would identify the factors contributing to SCRTD overcrowding and the alternative approaches to resolving overcrowding. Committee meetings were held to discuss study objectives, report content, and schedule for completion.

MEMO TO: PMIC - 11/19 MEETING
NOVEMBER 9, 1990
Page 2

Outlines summarizing potential report content were developed by both agencies. The attached work program, developed by the committee, represents a practical approach to resolving SCRTD passenger overcrowding.

CONCLUSION

Due to the extent of research required to accurately identify the full range of options associated with addressing SCRTD overcrowding, the preliminary report, to be submitted at the December Joint Board Meeting, will focus primarily on defining the scope of the issue. It is proposed that line-specific recommendations as well as short and long-term solutions will be presented at the March Joint Board meeting.

PREPARED BY:


A.R. de la CRUZ
DIRECTOR, Central Area Team


REX GEPHART
PROJECT MANAGER, Westside Area Team


NEIL PETERSON
Executive Director

RG:rg
OVERCRD2.WP5

Attachment

TRANSIT SERVICE OVERCROWDING
Work Program - November 9, 1990

I. ISSUE

It appears that many SCRTD routes currently experience overcrowding. Patronage forecasts, adjusted for increasing gas prices, higher parking fees, energy contingency actions, and AQMD regulations, suggest that the current situation could soon become much worse. During the next several months, SCRTD and LACTC staff will cooperatively develop options to reduce SCRTD passenger overcrowding.

- A. Summarize August 1990 Joint LACTC/SCRTD Board Meeting discussion regarding overcrowding.

II. BACKGROUND

- A. Define passenger overcrowding versus SCRTD currently adopted overcrowding standards.
- B. Compare the utilization and efficiency of Los Angeles County transit operators with other major national and state properties.
- C. Discuss SCRTD's current overcrowding experience:
- Extent of overcrowding (commute versus non-commute travel periods).
 - Is overcrowding line-specific, corridor-specific, or system-wide?
- D. Discuss the factors which contribute to overcrowding:
- Increased patronage.
 - Sufficient headways to meet peak period demand.
 - Reduced average vehicle speeds (due to increased traffic congestion and/or decreased street capacities).
 - Reduced seating capacity (as a result of recent bus procurements).
 - Other.

III. LOADING POLICIES

- A. Discuss current SCRTD standards which attempt to address transit service overcrowding:
- Loading policies. What are the current standards? When were they developed? How have they evolved over time?

- Discuss performance compared to adopted load standards. What has been the response to services determined to be overcrowded, i.e., solutions and mitigation measures? How has performance changed over time? Where are the most serious occurrences of overcrowding? Where is there excess capacity?
- Evaluate other operator standards/criteria used to deploy service.

IV. POTENTIAL OPTIONS

- A. Discuss potential short and long-term options to resolve overcrowding, including the following:
 - Redeploy existing vehicles (from low demand lines).
 - Modify load factor policies.
 - Increase dedicated street/freeway transit capacities (HOV, reverse lanes, etc).
 - Implement peripheral parking strategies (to improve mid-route on-time performance).
 - Operate additional vehicles.
 - Increase real-time control, i.e., supervisor control, schedule adherence, etc.
 - Other.

V. IMPLICATIONS OF REDUCING OVERCROWDING

- A. Required administrative/policy actions (associated with implementation of exclusive bus lanes, signal pre-emption, peripheral parking, etc.).
- B. Operational and/or policy trade-offs.
- C. Financial impacts and changes in patronage (impacts vary by solution).
- D. Impacts associated with increased parking fees, increased gasoline costs, reductions in parking subsidies, AQMD regulations, and implementation of energy contingency actions.



November 28, 1990

MEMO TO: LACTC MEMBERS/ALTERNATES AND SCRTD BOARD MEMBERS,
DECEMBER 5, 1990 MEETING

FROM: ALAN PEGG AND NEIL PETERSON

SUBJECT: TRANSIT SERVICE OVERCROWDING

ISSUE

Many routes operated by the SCRTD and Los Angeles County municipal operators currently experience passenger overcrowding. During the next several months, LACTC and SCRTD staff will cooperatively develop options to specifically address SCRTD and municipal operator passenger overcrowding.

RECOMMENDATION

Review and comment on the attached work program (Attachment 1) and draft preliminary report (Attachment 2). The preliminary report defines the project scope, summarizes the extent of Los Angeles County passenger overcrowding relative to other major transit properties, and lists several potential short and long-term options to resolve overcrowding. Specific actions to resolve overcrowding will be presented at the March 1991 Joint LACTC/SCRTD Board Meeting.

BACKGROUND

At the August 1990 LACTC/SCRTD Joint Board meeting, Commissioner Antonovich asked his appointee, SCRTD Board President Nick Patsouras, to "request that LACTC and SCRTD Executive Officers meet to discuss and report at the next joint meeting the overcrowding of buses, suggest improvement of efficiency, and/or the need for additional funding". During the past few months, staff from both agencies have met on several occasions to discuss the extent of passenger overcrowding and the process required to resolve the issue.

MEMO TO: 12/5 MEETING
NOVEMBER 28, 1990
Page 2

In September, a joint staff overcrowding committee was formed. The objective of the committee was to develop a work program which would identify the factors contributing to passenger overcrowding and the alternative approaches to resolve overcrowding. The attached work program, developed by the committee, represents a practical approach to resolving SCRTD passenger overcrowding.

On November 19, 1990, the work program was presented to the LACTC Planning and Mobility Improvement Committee (PMIC) for review and comment. The following recommendations were made by the PMIC:

- o Extend the scope of the study to include Los Angeles County municipal operators (in addition to the SCRTD);
- o Discuss (in the preliminary report) SCRTD's current passenger overcrowding experience and the steps taken to-date to resolve SCRTD overcrowding;
- o List (in the preliminary report) "4 or 5 SCRTD lines that are currently overcrowded and immediate solutions, ... including reconfiguration of service".

CONCLUSION

Due to the extent of research required to accurately identify the full range of options associated with addressing SCRTD and municipal operator overcrowding, the preliminary report has focused primarily on defining the scope of the issue. The first two recommendations made by the PMIC have been addressed in the preliminary report. A list of all overcrowded lines and comprehensive description of options to resolve overcrowding will be developed during the next few months. The final report, which will include short and long-term line-specific recommendations, will be presented at the next Joint Board meeting.

ALAN PEGG
General Manager



NEIL PETERSON
Executive Director

Attachments

TRANSIT SERVICE OVERCROWDING
Work Program - November 9, 1990

I. ISSUE

It appears that many SCRTD routes currently experience overcrowding. Patronage forecasts, adjusted for increasing gas prices, higher parking fees, energy contingency actions, and AQMD regulations, suggest that the current situation could soon become much worse. During the next several months, SCRTD and LACTC staff will cooperatively develop options to reduce SCRTD passenger overcrowding.

- A. Summarize August 1990 Joint LACTC/SCRTD Board Meeting discussion regarding overcrowding.

II. BACKGROUND

- A. Define passenger overcrowding versus SCRTD currently adopted overcrowding standards.

- B. Compare the utilization and efficiency of Los Angeles County transit operators with other major national and state properties.

- C. Discuss SCRTD's current overcrowding experience:

- Extent of overcrowding (commute versus non-commute travel periods).
- Is overcrowding line-specific, corridor-specific, or system-wide?

- D. Discuss the factors which contribute to overcrowding:

- Increased patronage.
- Sufficient headways to meet peak period demand.
- Reduced average vehicle speeds (due to increased traffic congestion and/or decreased street capacities).
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III. LOADING POLICIES

- A. Discuss current SCRTD standards which attempt to address transit service overcrowding:

- Loading policies. What are the current standards? When were they developed? How have they evolved over time?

- Discuss performance compared to adopted load standards. What has been the response to services determined to be overcrowded, i.e., solutions and mitigation measures? How has performance changed over time? Where are the most serious occurrences of overcrowding? Where is there excess capacity?
- Evaluate other operator standards/criteria used to deploy service.

IV. POTENTIAL OPTIONS

- A. Discuss potential short and long-term options to resolve overcrowding, including the following:
 - Redeploy existing vehicles (from low demand lines).
 - Modify load factor policies.
 - Increase dedicated street/freeway transit capacities (HOV, reverse lanes, etc).
 - Implement peripheral parking strategies (to improve mid-route on-time performance).
 - Operate additional vehicles.
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V. IMPLICATIONS OF REDUCING OVERCROWDING

- A. Required administrative/policy actions (associated with implementation of exclusive bus lanes, signal pre-emption, peripheral parking, etc.).
- B. Operational and/or policy trade-offs.
- C. Financial impacts and changes in patronage (impacts vary by solution).
- D. Impacts associated with increased parking fees, increased gasoline costs, reductions in parking subsidies, AQMD regulations, and implementation of energy contingency actions.

BUS SERVICE OVERCROWDING OUTLINE

I. Examples of Potential Recommendations

- A. Purchase buses
- B. Expedite HOV lanes and other bus preferential treatments
- C. Establish county-wide service standards
- D. Establish priority standards for traffic management techniques, e.g., synchronized signalization
- E. Evaluate line transfers from financial, contractual, legal and institutional parameters
- F. Adopt phased expansion plan
- G. Establish county-wide taxi policies to promote individual mobility
- H. Facilitate pedestrian flow
- I. Establish equity standards, e.g., bus vs. bus or bus. vs. rail
- J. Evaluate criteria for establish new lines
- K. Implementation time-frame
- L. Further action/study required

II. Background

- A. Brief background statement of the purpose/reason for studying the overcrowding issue
- B. Discuss various overcrowding definitions
- C. Methodology

III. Analysis

- A. Discussion of expediting bus transit
 - 1. Potential alternatives, e.g., HOV lanes, transitways , bus preferential treatment
 - 2. Studies in progress, studies already performed
 - 3. Other items noted in I. above
- B. Discussion of reducing bus overcrowding
 - 1. Bus purchase
 - 2. Consider county-wide service standards
 - a. Examine LACTC performance standards
 - b. Examine current operator load standards
 - c. Consider the provision of policy and demand services
 - 3. Line transfer
 - 4. Other items noted in I. above
- C. Evaluation of alternatives
 - 1. Discussion of issues, namely legal, institutional, contractual, costs, benefits

2. Time-frames for implementation
 - a. short-term
 - b. mid-term
 - c. long-term
3. Other
- D. Discussion of need for further action/additional study required

IV. Findings

- A. "Overload" situations
- B. Speed impacts
- C. Cost impacts
- D. High utilization lines
- E. Low utilization lines
- F. Actions already taken by operators
- G. Rank order of all Los Angeles County bus lines utilizing specific criteria

Los Angeles County
Transportation Commission
818 West Seventh Street
Suite 1100
Los Angeles, CA 90017
213/623-1194



Southern California
Rapid Transit District
425 South Main Street
Los Angeles, CA 90013
213/972-6000

November 30, 1990

TO: Los Angeles County Transportation Commission
Southern California Rapid Transit District
Joint Policy Board

FROM: Neil Peterson Executive Director Alan F. Pegg General Manager

SUBJECT: SYSTEMS REPORT ON PASSENGER OVERCROWDING
ON LOS ANGELES COUNTY BUS SERVICES

EXECUTIVE SUMMARY

In response to a request at the last meeting of the Joint Policy Board, the staff of the Southern California Rapid Transit District (SCRTD) and the Los Angeles County Transportation Commission (LACTC) have jointly undertaken a two-phase review of the efficiency and overcrowding of services operated by the "included" Los Angeles County bus operators. The staffs of the two agencies have been working together during the past two months to meet this request.

This report includes a "system level" comparison of the Los Angeles County operators with major transit systems across the country. A variety of key performance variables are reviewed, including passengers per bus hour, passenger miles per bus mile, cost per passenger mile, passenger miles per gallon of fuel and passengers per peak bus.

The second-phase report, scheduled for the next meeting of the Joint Policy Board, will include a detailed line-specific assessment of the services operated by various Los Angeles County operators and will address concerns of overcrowding, efficiency, and under-utilization.

Based upon the findings contained in this phase-one study, the following general conclusions about the status of Los Angeles County bus services have been developed:

1. Taken as a whole, the services operated by all Los Angeles County operators compare very favorably with the service provided by such major carriers as the New York City and the Chicago Transit Authorities.
2. Based upon this comparison, an increase in service operated by all major Los Angeles County operators would be justified.
3. Based upon the experience of the SCRTD, there has been a 5 percent increase in weekday ridership over the past four months.
4. There are several reasons for expecting transit ridership to increase in the future, including fuel costs, population growth, South Coast Air Quality Management District (SCAQMD) requirements, and increasing congestion.
5. There are many factors which contribute to transit service overcrowding including ridership growth, increased congestion, reduced transit travel speeds, the lack of expedited or preferential treatment for transit, reduced bus seating capacity to provide better safety and comfort, highly discounted fares, and general population growth.
6. Although consistently strong, there are significant differences in the productivity of Los Angeles County bus operators.
7. The SCRTD has taken several steps to reduce overcrowding on its services, including: detailed assessments and adjustments of service requirements on over 100 of its lines over the past year, the implementation of a Service Reliability Improvement Program, reconfiguration of major services such as Line 1-217, and the addition of 50 peak buses in the fall of 1989 and 20 buses in the fall of 1990 to address on-time performance and overcrowding problems.
8. A comprehensive set of actions to improve the efficiency and quality of transit service, including capital investment and facility improvements will be included in the second phase of this study.
9. Future transit capital investments should reflect the operating cost of carrying passengers.

INTRODUCTION

As directed by the Joint Policy Board at its last meeting, the staffs of the SCRTD and the LACTC have undertaken a review of the efficiency and overcrowding of the bus services offered by the SCRTD and the "included" Los Angeles County municipal bus operators.

For the past two months, the staffs of the SCRTD and the LACTC have met on a regular basis in an effort to produce a coordinated report which addresses a wide range of issues concerning the status of bus transit service in Los Angeles County. These meetings produced agreement on a two-step approach for responding to the request from the Joint Policy Board: the first report would utilize "system level" data for assessing the overall efficiency and overcrowding of Los Angeles County bus services and a second report would provide line-specific details on the services operated by the Los Angeles County operators. This approach will permit the development of the required information for the various Los Angeles County operators.

BACKGROUND

The SCRTD Board of Directors has been periodically briefed on the status of ridership and service levels on the District's system. This report will bring the Joint Policy Board up to date and provide comparative information from other transit systems.

During the past few months transit utilization has been increasing. While recent data is not available from all municipal operators, if the SCRTD experience is typical for the region, then weekday ridership is up about 5 percent compared to the same period last year. This represents an increase of about 60,000 boardings per weekday for the SCRTD and an estimated 7,500 for all of the combined municipal operators. The reason for this growth is speculated to be the result of higher fuel prices, SCAQMD regulations, and an increase in population. This increase in ridership has led many to the conclusion that transit services in Los Angeles County are overloaded.

Overcrowding is generally defined as passenger loads that are in excess of the operator's loading standards. The vast majority of transit operators have loading standards. However, these standards vary greatly between operators. With different loading standards, it is possible that if two transit operators provided service on the same street, each with the same number of passengers on board, one service could be considered to be

overloaded while the other service is not. This will be dealt with in more detail later in this report.

The SCRTD aggressively reschedules and redeploys buses on a regular basis. Every schedule on all SCRTD lines is reviewed at least once each year. Schedule adjustments are made regularly to SCRTD's 190 routes, most of which also have weekend schedules. More than 200 permanent schedule changes will have been made this year. This massive effort to efficiently match resources to ridership is governed by the SCRTD's adopted loading standard. The Los Angeles County transit operators also employ an ongoing analysis in the scheduling of their services. This has resulted in very efficient services.

OVERCROWDING COMPARISON:

To adequately understand the issues of overcrowding and efficiency, it is important to compare the utilization and efficiency of Los Angeles County transit operators with other major national properties. Data from the 15 largest national operators was used to perform this comparison. These operators along with the included municipal operators are listed in Table 1.

The latest available information from national and local properties that is in a comparable format is the FY 1988 Section 15 data compiled by Urban Mass Transportation Administration (UMTA). This data is presented in Tables 2 and 3.

LACTC staff is in the process of compiling Section 15 type data for FY 1990 for the Los Angeles County municipal and regional operators. The analyses of this more recent data will be summarized in the second-phase report to the Joint Policy Board.

SUMMARY OF COMPARISON ANALYSIS:

Analyzing the relative utilization and efficiency of transit operators requires the comparison of statistics. Three measures of service utilization and three for efficiency were selected. These measures are:

- Utilization - Boardings per bus hours
- Passenger miles per bus mile
- Passenger miles per peak bus

- Efficiency - Passenger miles per gallon of fuel
- Operating cost per passenger mile
- Subsidy per passenger mile

It is important to note that "overcrowding" cannot be directly determined from the system statistics that are available. However, it is possible to infer passenger boardings by comparing measures of resources used relative to passengers carried.

The traditional measure of service utilization is boardings per bus hour. This indicates the average number of boardings for each hour of bus service. Differences from city to city and bus route to bus route make the inference of relative crowding difficult. In addition, changes over time in average bus speed, seats per bus, and passenger trip length make comparisons, even within a system, uncertain.

Passenger miles per bus mile indicates the average passenger load. Because the basic function of transit operators is to move people over a distance, this is a fundamental measure of a property's efficient use of resources. Nonetheless, care must also be taken of this measure. Even though this measure accounts for changes in bus speed and passenger trip length, the difference in the number of seats per bus may affect this measure.

Passenger miles per peak bus indicates the relative use of buses. It also implies the level of strain placed on buses due to heavy use.

One efficiency measure can be the amount of fuel used relative to passenger miles generated. This measures the fuel efficiency of transit.

Operating cost and subsidy per passenger mile are both indicators of cost efficiency of systems. Subsidy per passenger mile is affected by the fare policy of each system.

Compared to the 15 largest transit operators in the nation, the combined Los Angeles County transit systems are significantly over-utilized. The best measure of a transit system's passenger load is passenger miles per revenue bus mile. This indicates the average passenger load per bus. The SCRTD averaged 18.1 for this measure of service utilization, well ahead of New York which was in second place at 15.4. The average for the nation's largest 15 transit properties, excluding SCRTD, was 13.1. The Los Angeles County municipal systems compare very favorably to the nation's largest and most crowded systems, by averaging 12.8 passenger miles per bus mile.

When compared to the top 15 transit operators in the nation, Los Angeles County operators are doing an outstanding job. The

municipal operators with far fewer buses than any of the top 15 transit properties are carrying more boarding passengers than four of these major operators. In terms of annual passenger miles (the true measure of service used), they also perform better than two other major cities. The SCRTD boards more people on buses than all other cities with the exception of New York and Chicago. When passenger miles are considered, the SCRTD is number one, almost 15 percent ahead of New York City Transit Authority (NYCTA), and 68 percent ahead of Chicago Transit Authority.

Because of this high utilization rate, Los Angeles County is ranked high in boardings per hour, average loads, fuel efficiency and relatively lower cost and subsidy per passenger mile.

If the municipal operators' performance were compared as a unit to the largest 15 transit properties in the nation, they would compare very favorably. They would rank as follows:

<u>Measure</u>	<u>Rank</u>	<u>Combined Muni Value</u>	<u>Group Avg.</u>
Boarding per Revenue Hour	9th	44.3	46.1
Passenger Miles/Rev. Bus Miles	8th	12.8	13.1
Passenger Miles/Peak Bus	3rd	538,000	425,000
Passenger Miles/Gallon of Fuel	6th	41.2	36.7
Operating Cost/Psngr. Mile	2nd	\$.31	\$.46
Subsidy/Psngr. Mile	5th	\$.23	\$.22

The SCRTD also compares very favorably:

<u>Measure</u>	<u>Rank</u>	<u>SCRTD Value</u>	<u>Group Avg.</u>
Boarding per Revenue Hour	4th	57.6	46.1
Passenger Miles/Rev. Bus Miles	1st	18.1	13.1
Passenger Miles/Peak Bus	1st	824,000	425,000
Passenger Miles/Gallon of Fuel	1st	50.1	36.7
Operating Cost/Psngr. Mile	1st	\$.29	.46
Subsidy/Psngr. Mile	4th	\$.18	\$.22

These comparative performance and utilization measures indicate that Los Angeles County transit operators as a whole are outstanding performers. In a service area that is extremely large and not noted for being attuned to transit, our municipal systems rank among the best in the nation. The SCRTD is ranked better than all the other major transit operators in having the highest average passenger loads, most passenger miles per gallon of fuel used, and the lowest operating cost per passenger mile.

However, these statistics, particularly the average passenger mile per bus mile, indicate that Los Angeles County is also significantly underserved.

Boardings Per Bus Hour

The District's boardings per hour of 57.6 is virtually the same as Chicago, Washington, D.C. and Philadelphia. Only New York with 62.1 is higher. The composite for the included municipal operators of 44.3 boardings per hour is only slightly below the average of 46 for the nation's 15 largest transit operators, excluding SCRTD.

Passenger Miles Per Bus Mile

This indicator of average load per bus trip shows that SCRTD buses have substantially heavier loads than any of the other major properties. The District's value of 18.1 is over 17 percent higher than NYCTA and nearly 40 percent over the weighted average for the national group. The Los Angeles County municipal operators have virtually the same value as the average for the major properties.

Passenger Miles Per Peak Bus

This is another statistic where the SCRTD is significantly above all other major transit operators. The District's 825,000 annual passengers per peak bus is 50 percent higher than second place Chicago. The Los Angeles County municipal operators are also doing an outstanding job in this measure. Their value of 539,000 is below only Chicago and SCRTD.

Passenger Miles Per Gallon of Fuel

Again, the SCRTD has significantly better performance than the other major transit properties. The District generated over 50 passenger miles per gallon of fuel which is 15 percent better than second place NYCTA and over 25 percent higher than the average for the other top 15 transit properties. Los Angeles County municipal operators average over 41 for this statistic, which is about 10 percent better than the average and are performing nearly as well as Chicago in this area.

Operating Cost Per Passenger Mile

The SCRTD leads the nation in the number of passenger miles generated. The SCRTD spreads its operating costs over nearly 1.7 billion passenger miles. At an operational cost of 29 cents per

passenger mile for SCRTD and 31 cents for the municipal operators, Los Angeles County is significantly better than any other national transit system. The average for the 15 largest system was 46 cents which is about 60 percent higher than SCRTD and above 50 percent higher than the municipal operators.

Subsidy Per Passenger Mile

Because the municipal systems offer relatively low passenger fares, their average subsidy per passenger mile of 23 cents is ranked fifth among the 15 largest systems. The SCRTD, even though it has a relatively high base fare, offers significant discounts so that the average fare collected is only about half the base fare. This also results in a subsidy per passenger mile of 18 cents, which ranked fourth among the 15 largest properties.

SCRTD Current Overloading Experience

Prior to the Proposition A reduced fare program between FY 1983 and FY 1985, the SCRTD was averaging about 1.1 million boardings and 53 boardings per hour on weekdays. Ridership increased during the reduced fare period to about 1.6 million boardings per weekday in FY 1985.

Presently, the system level passenger loads per bus are about the same as in FY 1985, the last year of the 50 cents reduced fare program. In FY 1985, the SCRTD averaged 71 boardings per revenue bus hour on weekdays. This was acknowledged as causing grossly excessive overloads. For the first four months of the present fiscal year, the SCRTD is averaging over 61. For September and October, this value was over 63.

This would seem to indicate that less overcrowding is now occurring than in FY 1985. However, since 1985 three factors have combined to result in FY 1985 and FY 1991 having equivalent crowding levels. These factors are longer passenger trip lengths, fewer seats per bus and slower bus speeds.

Compared to FY 1985, passengers are taking trips that are about 2.5 percent longer, from 3.93 miles in FY 1985 to 4.03 miles in FY 1991.

Because buses without wheelchair lifts have more seats and SCRTD has been aggressively phasing out non-wheelchair lift buses, the average number of seats per bus has been dropping. In FY 1985 the average was 45.1 seats per bus, now it is 43.5 seats per bus, a decline of 3.5 percent.

The largest single factor has been the decline in average bus speeds. Due primarily to increased traffic congestion, and the lack of bus preferential treatment, bus speeds have dropped from 13.2 mph to 12.3 mph, a decrease of 7.3 percent. In sum:

- Longer trip lengths mean passengers occupy seats longer;
- Fewer seats per bus mean more passengers must stand; and
- Slower bus speeds mean riders are on board for a longer time.

Due to these factors 63 boardings per hour in FY 1990 is equivalent to 71 in FY 1985 in terms of crowding. A better measure of crowding than boardings per bus hour is passenger miles per bus mile. This is an indication of the average passenger load. As stated earlier in this report, the average passenger miles per bus mile for the largest 15 bus transit systems in the nation was 13.1 in FY 1988. For FY 1985 the SCRTD averaged 21.3 passenger mile per bus miles for weekdays.

During the first four months of FY 1991, the SCRTD averaged about 20.7 passenger miles per bus mile. Adjusting the FY 1985 and early FY 1991 values for the average number of seats per bus results in .472 passenger per seat per mile in FY 1985 and .476 for FY 1991. This is another indication that overcrowding is now at those levels experienced during the reduced fare period.

For FY 1990, the latest year for which data is available for every line that the SCRTD operates, an analysis of overload conditions was conducted. During the AM and PM rush hours, over 2,400 bus trips were operated. Of these, nearly 1,000 or about 40 percent were overloaded. It is estimated that about 50 to 75 additional buses would have been required to bring all SCRTD lines into compliance with its loading standards in FY 1990.

Given that weekday patronage has increased about 5 percent in FY 1991, the present estimate of additional buses required to meet the loading standard is 100 to 125. Even if 125 buses were each operated for 16 per hours weekday, the passenger miles per bus mile factor would fall from 20.7 to about 19.0. Adding current weekend service and patronage levels to this would lower this measure to about 18.5. This is still about 20 percent higher than the NYCTA's bus system in FY 1988.

Load Factors

In general, transit headways (minutes between buses) and frequency (bus trips per hour) are determined either by actual ridership levels or by an established minimum service policy. Those lines scheduled to meet ridership levels are known as "demand" lines, while lines operating a minimum service regardless of patronage are known as "policy" lines. Every transit operator has adopted loading standards which are used to determine the appropriate number of bus trips to schedule to meet passenger demand. Many properties also have policies which also mandate a minimum level of service that must be operated on routes regardless of ridership. For the SCRTD this "policy headway" is 60 minutes. For other major properties such as Chicago, it is 30 minutes while for New York it is 20 minutes.

On lines that generate enough ridership to warrant service levels better than the policy minimums, the loading standards are used to schedule service on a demand basis.

Table 4 lists the loading standards for New York, Chicago and SCRTD. These loading standards are similar in structure. The load factor varies by time of day and frequency of service. A review of these tables shows that during the peak periods, New York and Chicago load only their most frequent services (about every five minutes or better) to levels as high as the SCRTD. When trip time intervals are increased to about every six minutes or more, then New York and Chicago place far fewer people on each bus than does the SCRTD. This becomes very pronounced when service levels are 15 minutes or worse. While the SCRTD is still scheduling for 17 standees per trip, the other two major properties are scheduling for empty seats. At 20-minute intervals, the SCRTD has 17 standees, Chicago has nine empty seats and New York has 13 empty seats.

It should also be noted that Chicago and New York use their peak-load standards for the highest 30-minute demand period and the remainder of the peak period is "feathered" into the lower midday or night standards. By contrast, the SCRTD maintains its standards for the entire three-hour peak period.

As reported by LACTC staff, many of the Los Angeles County municipal operators also have very high loading standards, as listed below:

- Santa Monica - Maximum load factor is 150% of seated capacity for a distance of two miles or more (peak period).
- Culver City - Not to exceed 150% of seated capacity on more than two trips per line per peak period.
- Torrance - Shall not exceed 140% of seated capacity on more than three consecutive runs.
- Gardena - Not to exceed 140% of number of seats on three consecutive buses.
- Long Beach - Not to exceed 140% of number of seats on three consecutive buses.

The actual ridership levels relative to policy standards for SCRTD and the municipal operators will be presented in the second phase of this report in March.

Potential Actions

Compared to the largest transit operators in the nation and especially when compared to the major properties within the state, SCRTD and many municipal operators are not providing enough service. The indications are that overloading, relative to other large transit systems, is occurring on several Los Angeles County transit providers.

Several potential actions can be taken to reduce overloading. These actions, which will be discussed in detail in the March report, include but are not limited to the following:

- Redeploy existing vehicles from low demand lines on system
- Modify load factor policies
- Increase dedicated street/freeway transit capacities (HOV lanes, reverse lanes, bus only streets)
- Implement peripheral parking strategies
- Fund additional transit service

CONCLUSION

Compared to the largest 15 national transit operators, the SCRTD performs extremely well. It is ranked number one in average passenger load, fuel efficiency, and passenger utilization. It also ranks within the top four in terms of cost and subsidy per passenger mile.

The municipal operators of Los Angeles County are also performing very well when their average is compared to the other major operators.

These facts, in particular the average passenger load, indicate that more transit service is needed in the county. The SCRTD and several municipal transit systems are performing at or near the top in statistics that relate to utilization while comparing very well in cost efficiency. It may be possible to slightly improve these factors by increasing the average number of boardings and passenger miles per bus. However, given that these factors are already at or among the highest in the nation, improvements in these statistics could lead to service quality problems.

The March phase two report will contain specific steps that can be taken to identify problems and recommend remedial actions. In the meantime, the SCRTD is preparing a report that lists overloads and underloads on all its lines. The LACTC staff will obtain data for FY 1990 for the municipal operators and prepare a contract for a consultant to evaluate the municipal overload and underload situation as it exists this year.

Respectfully,

Neil Peterson


Alan F. Pegg

Attachments

TRANSIT SYSTEMS SELECTED FOR COMPARISON

15 LARGEST TRANSIT SYSTEMS IN U.S.
RANKED BY PASSENGER BOARDINGS

New York - NYTA
Chicago - CTA
Los Angeles - SCRTD
Washington, D.C. - WMATA
Philadelphia - SEPTA
Seattle Metro
Minneapolis - MTC
Boston - MBTA
Pittsburgh - PAT
Baltimore - MTA
Houston - MTA
Denver - RTD
St Louis - Bi State
Atlanta - MARTA
Dallas - DART

LOS ANGELES COUNTY MUNICIPAL SYSTEMS
RANKED BY PASSENGER BOARDINGS

Long Beach
Santa Monica
Gardena
Montebello
Torrance
Culver City
Norwalk
City of Commerce

TABLE 2

FY 88 SECTION 15 DATA

15 LARGEST TRANSIT SYSTEMS

TRANSIT SYSTEM	Passengers per Revenue Bus Hour	Passenger Miles per Rev Bus Mf	Passenger Miles per Peak Bus	Passenger Miles per Gallon Fuel	Operating Cost per Passenger	Operating Cost per Psgr Mile	Subsidy per Passenger	Subsidy per Psgr Mile	Peak Buses	Annual Bridgs. (000)	Annual Psgr. Mi. (000)	
Los Angeles-SCRTD	57.6	18.1	824.6	50.1	\$1.16	\$0.29	\$0.718	\$0.176	2040.0	424646.1	1682210.3	SCRTD
Los Angeles-Muni. Ops.	44.3	12.8	538.5	41.2	\$1.06	\$0.31	\$0.797	\$0.229	364.0	57450.2	196019.5	MUNI OPS
New York CTA	62.1	15.4	464.3	43.6	\$1.30	\$0.63	\$0.659	\$0.318	3174.0	710342.3	1473710.4	NYCTA
Chicago-CTA	58.3	13.5	547.6	41.7	\$0.89	\$0.38	\$0.360	\$0.154	1830.0	430089.5	1002108.4	CTA
Washington, D.C.-WMATA	58.7	14.3	406.0	33.9	\$1.61	\$0.48	\$0.923	\$0.276	1371.0	166379.2	556643.6	WMATA
Philadelphia-SEPTA	57.1	15.1	460.0	37.0	\$0.92	\$0.34	\$0.250	\$0.093	1110.0	189790.3	510555.0	SEPTA
Seattle Metro	36.4	14.6	396.7	43.2	\$2.25	\$0.36	\$1.845	\$0.292	859.0	53907.2	340744.8	Metro
Minneapolis MTC	45.7	11.5	299.2	36.1	\$1.38	\$0.40	\$0.940	\$0.270	827.0	71233.1	247455.5	Minn
Boston-MBTA	54.5	10.2	294.0	30.3	\$1.38	\$0.62	\$0.987	\$0.444	814.0	107570.0	239310.0	MBTA
Pittsburgh-PAT	38.7	11.8	403.0	31.1	\$1.50	\$0.38	\$0.951	\$0.240	762.0	77415.7	307116.4	PAT
Baltimore-MTA	55.9	15.2	435.4	42.1	\$0.97	\$0.32	\$0.440	\$0.144	733.0	104883.9	319113.9	Balt
Houston-MTA	33.8	12.1	498.8	35.7	\$1.85	\$0.37	\$1.382	\$0.276	698.0	69421.7	348195.0	Houston
Denver-RTD	37.9	9.1	354.9	30.6	\$1.92	\$0.46	NA	NA	603.0	51240.6	213990.8	Denver
St Louis-Bi-State	34.3	9.5	304.4	27.2	\$1.95	\$0.48	NA	NA	597.0	45089.0	181743.6	Bi-State
Atlanta-HARTA	41.9	10.4	465.8	27.7	\$1.19	\$0.36	\$0.870	\$0.266	578.0	82297.3	269257.0	HARTA
Dallas Area Rapid Tr	40.5	9.2	283.2	22.9	\$2.26	\$0.72	\$1.730	\$0.549	539.0	48479.6	152650.7	Dallas
WTD AVG (excluding SCRTD)	46.1	13.1	425.2	36.7	\$1.30	\$0.46	\$0.621	\$0.222	1035.4	157724.2	440185.4	

TABLE 3

FY 88 SECTION 15 DATA

L.A. COUNTY INCLUDED MUNICIPAL SYSTEMS

TRANSIT SYSTEM	Passengers per Revenue Bus Hour	Passenger Miles per Rev Bus Mi	Passenger Miles per Peak Bus	Passenger Miles per Gallon Fuel	Operating Cost per Passenger	Operating Cost per Psgr Mile	Subsidy per Passenger	Subsidy per Psgr Mile	Peak Buses	Annual Brdgs. (000)	Annual Psgr. Mi. (000)	
Los Angeles-SCRTD	57.6	18.1	824.6	50.1	\$1.16	\$0.29	\$0.718	\$0.176	2040.0	424646.1	1682210.3	SCRTD
Los Angeles-Muni. Ops.	44.3	12.8	538.5	41.2	\$1.06	\$0.31	\$0.797	\$0.229	364.0	57450.2	196019.5	MUNI OPS
Long Beach PTC	42.3	10.7	484.4	33.3	\$1.20	\$0.40	\$0.978	\$0.298	130.0	21232.1	62971.0	LB
Santa Monica Muni Bus	64.7	17.7	585.5	51.4	\$0.71	\$0.21	\$0.403	\$0.118	106.0	18194.8	62059.8	SM
Gardena-Municipal Bus	42.5	14.2	585.6	53.6	\$1.28	\$0.27	\$1.008	\$0.249	31.0	3781.6	18153.0	Gard
Montebello Muni Bus Lines	53.3	14.4	685.9	46.8	\$0.82	\$0.26	\$0.581	\$0.187	29.0	6393.8	19890.4	Mont
City of Torrance TS	24.8	10.6	567.3	39.6	\$2.07	\$0.36	\$1.639	\$0.289	28.0	2796.8	15885.6	Torr
Culver City Muni Bus Line	44.4	12.4	542.2	37.7	\$1.05	\$0.33	\$0.771	\$0.257	18.0	3088.7	9760.4	CC
Norwalk TS	21.8	4.8	218.3	18.0	\$2.25	\$0.75	\$2.018	\$0.672	16.0	1163.9	3493.2	Norwalk
City of Commerce	68.8	18.5	634.4	83.2	\$1.21	\$0.25	\$1.215	\$0.255	6.0	798.5	3806.1	Comm
WTD AVG (excluding SCRTD)	44.3	12.8	538.5	41.2	\$1.06	\$0.31	\$0.797	\$0.229				
SUM (excluding SCRTD)									364.0	57450.2	196019.5	

TABLE 4

COMPARISON OF PASSENGER LOADING STANDARDS

LOS ANGELES - SCRTD - All Routes

HEADWAY (Minutes)	WEEKDAY PEAKS	WEEKENDS AND MIDDAY	NIGHTS	EXPRESS
1 - 10	145%	120%	110%	110%
11 - 20	140%	110%	100%	100%
21 - 30	120%	100%	90%	90%
31 - 60	100%	90%	75%	75%

CHICAGO - CTA -- Downtown/Feeder Routes

HEADWAY (Minutes)	WEEKDAY PEAKS	WEEKENDS AND MIDDAY	NIGHTS	EXPRESS
1 - 4	150%	90%	80%	50%
5	140%	90%	80%	50%
6	130%	90%	80%	50%
7-1/2	120%	80%	70%	50%
10	110%	70%	60%	50%
12	100%	60%	50%	50%
15	90%	50%	50%	50%
20	80%	40%	40%	40%
30	60%	40%	40%	30%
60	--	--	--	30%

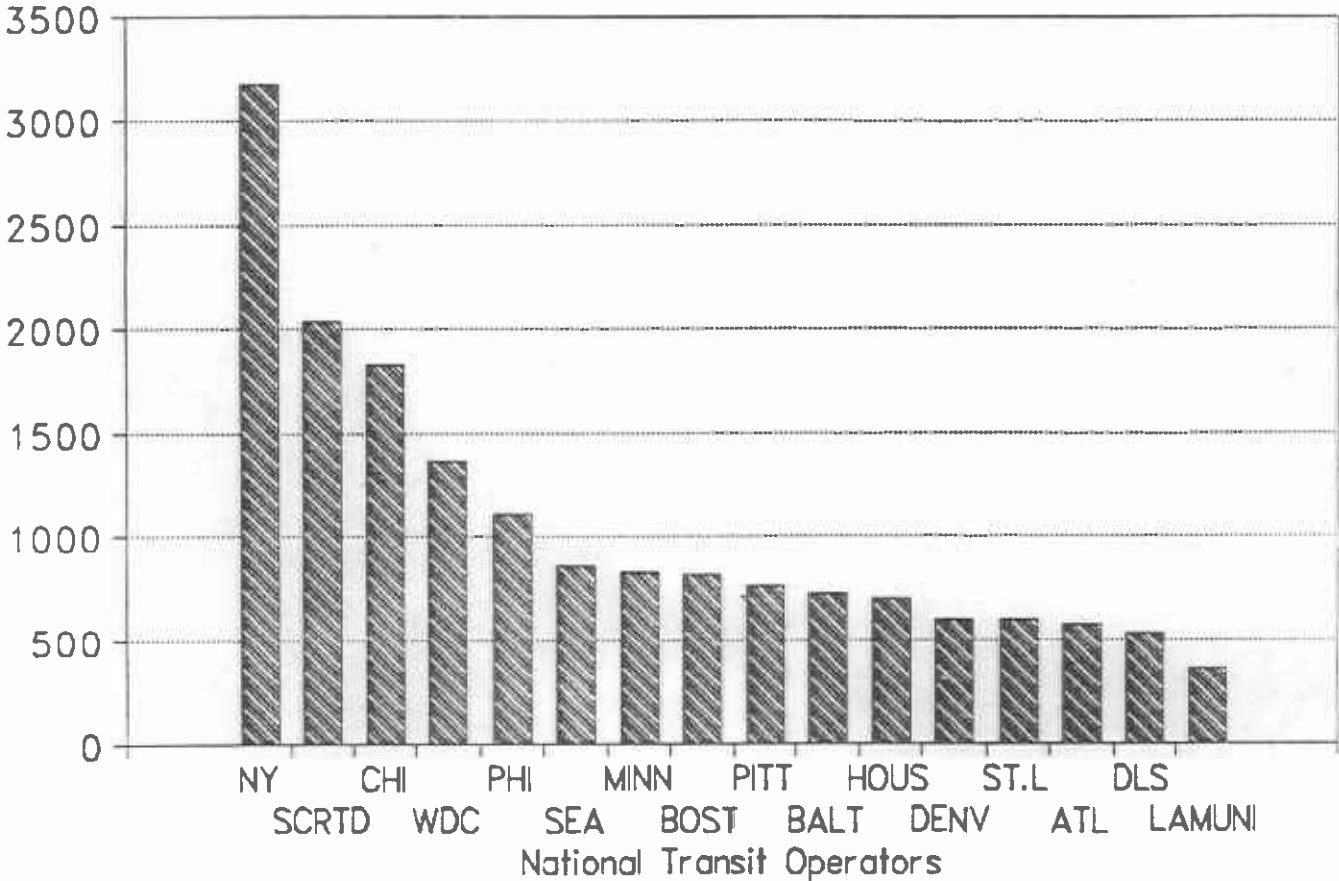
NEW YORK - NYCTA -- Grid Routes

HEADWAY (Minutes)	WEEKDAY PEAKS	WEEKENDS AND MIDDAY	NIGHTS	EXPRESS
1 - 6	145%	95%	85%	--
7-1/2	130%	85%	70%	--
10	120%	70%	50%	35%
12	107%	67%	35%	35%
15	95%	60%	35%	35%
20	70%	60%	35%	35%
30	--	--	--	25%

GRAPH 1

PEAK BUSES

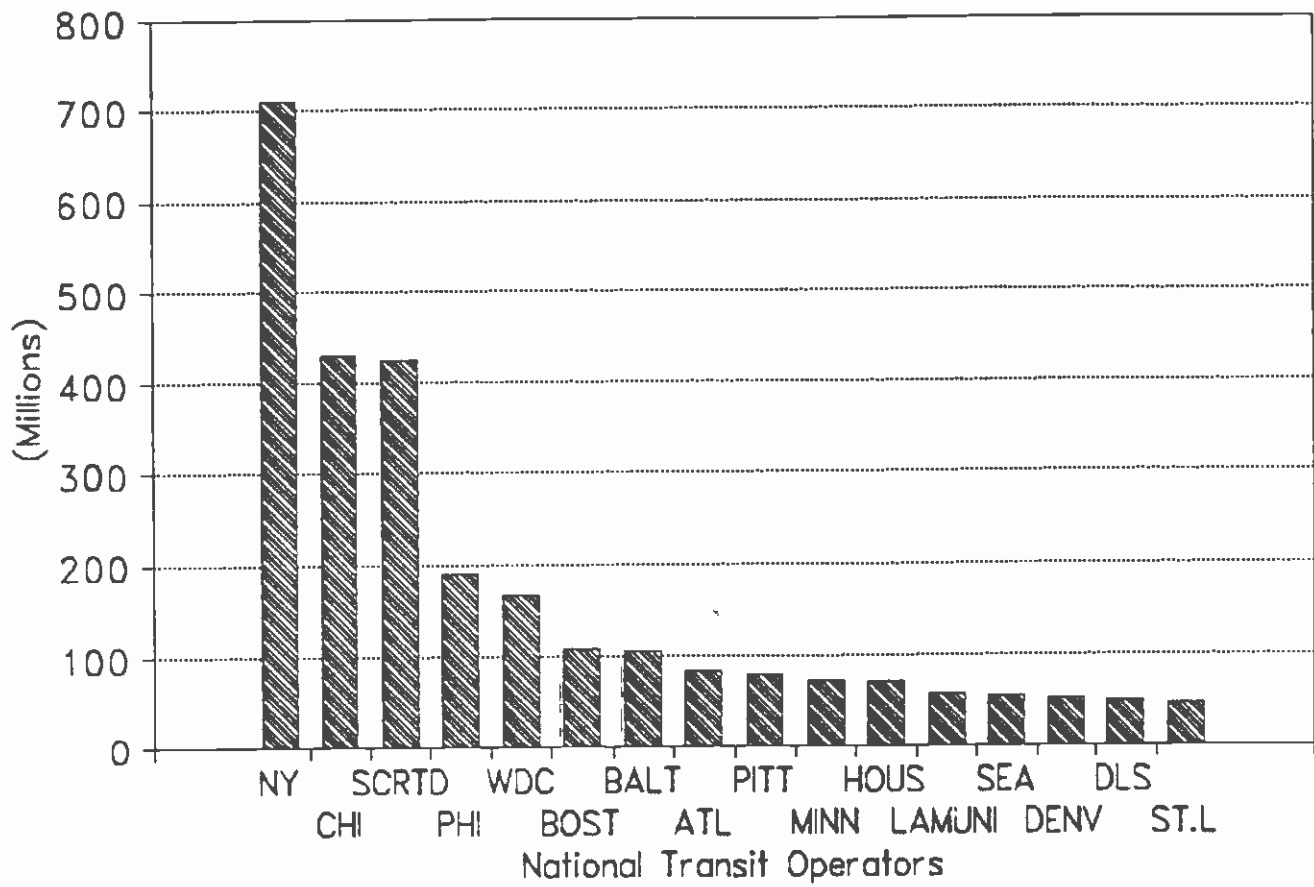
Fiscal Year 1988



GRAPH 2

ANNUAL BOARDINGS

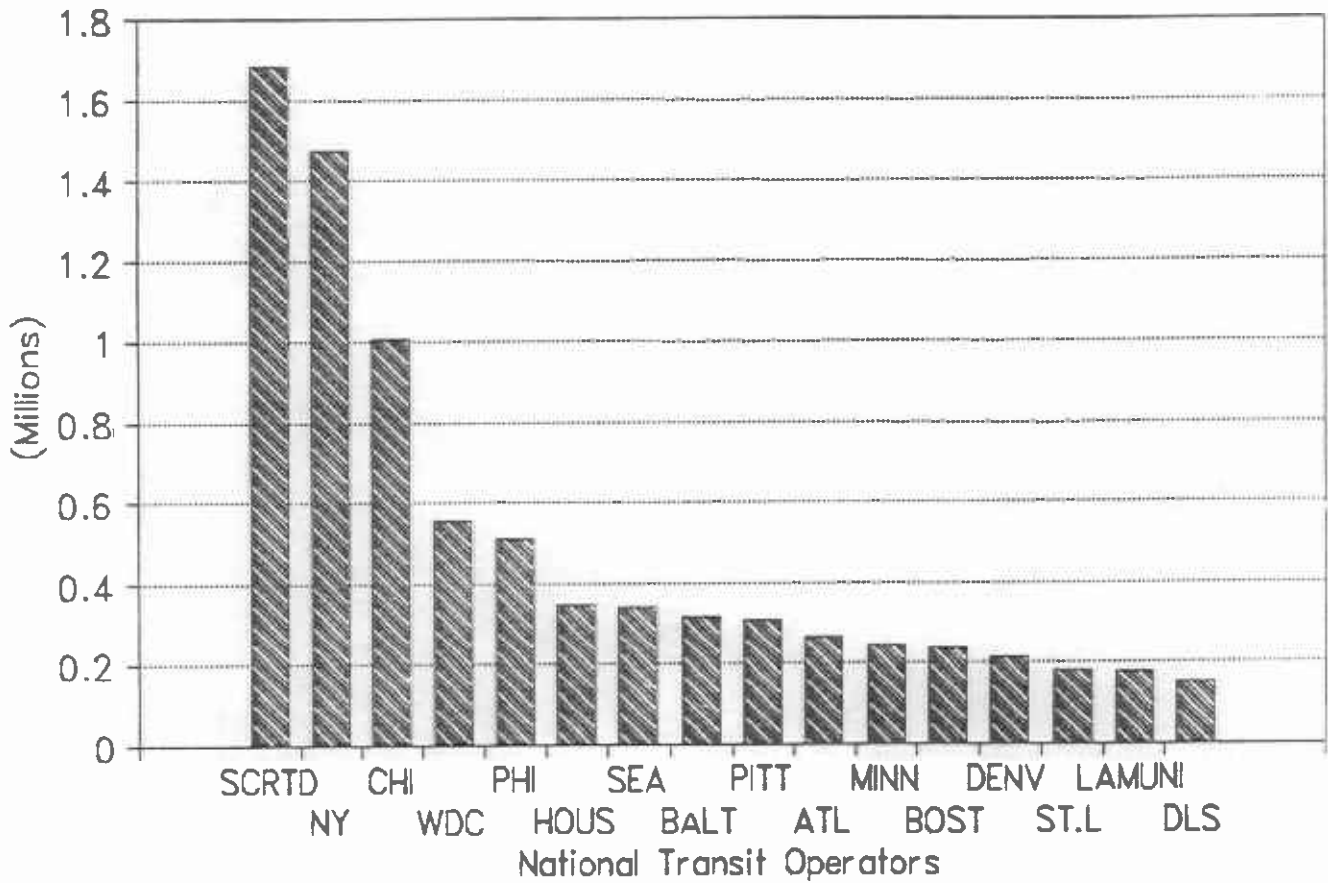
Fiscal Year 1988



GRAPH 3

ANNUAL PASSENGER MILES

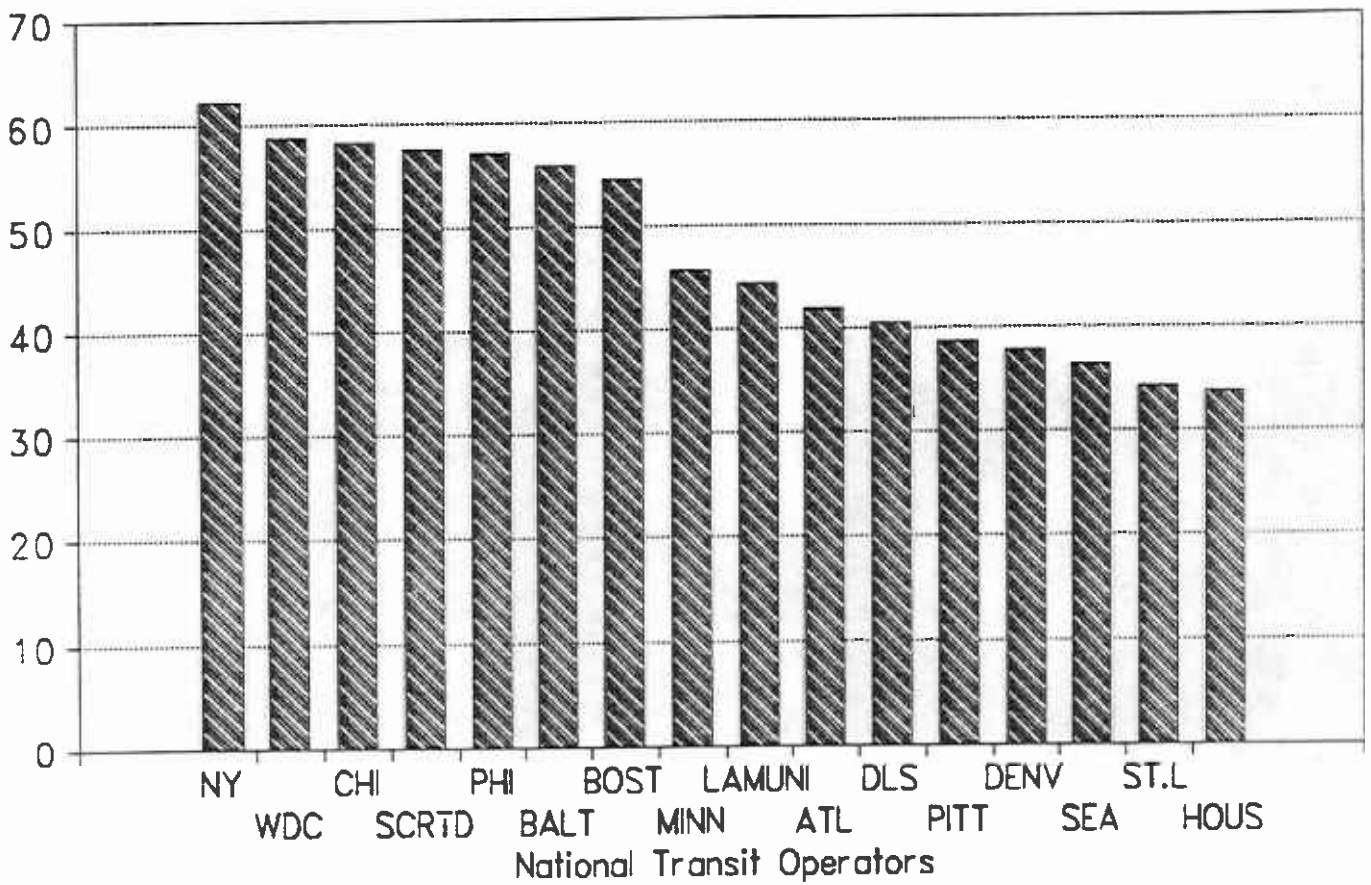
Fiscal Year 1988



GRAPH 4

PASSENGERS/REVENUE BUS HOUR

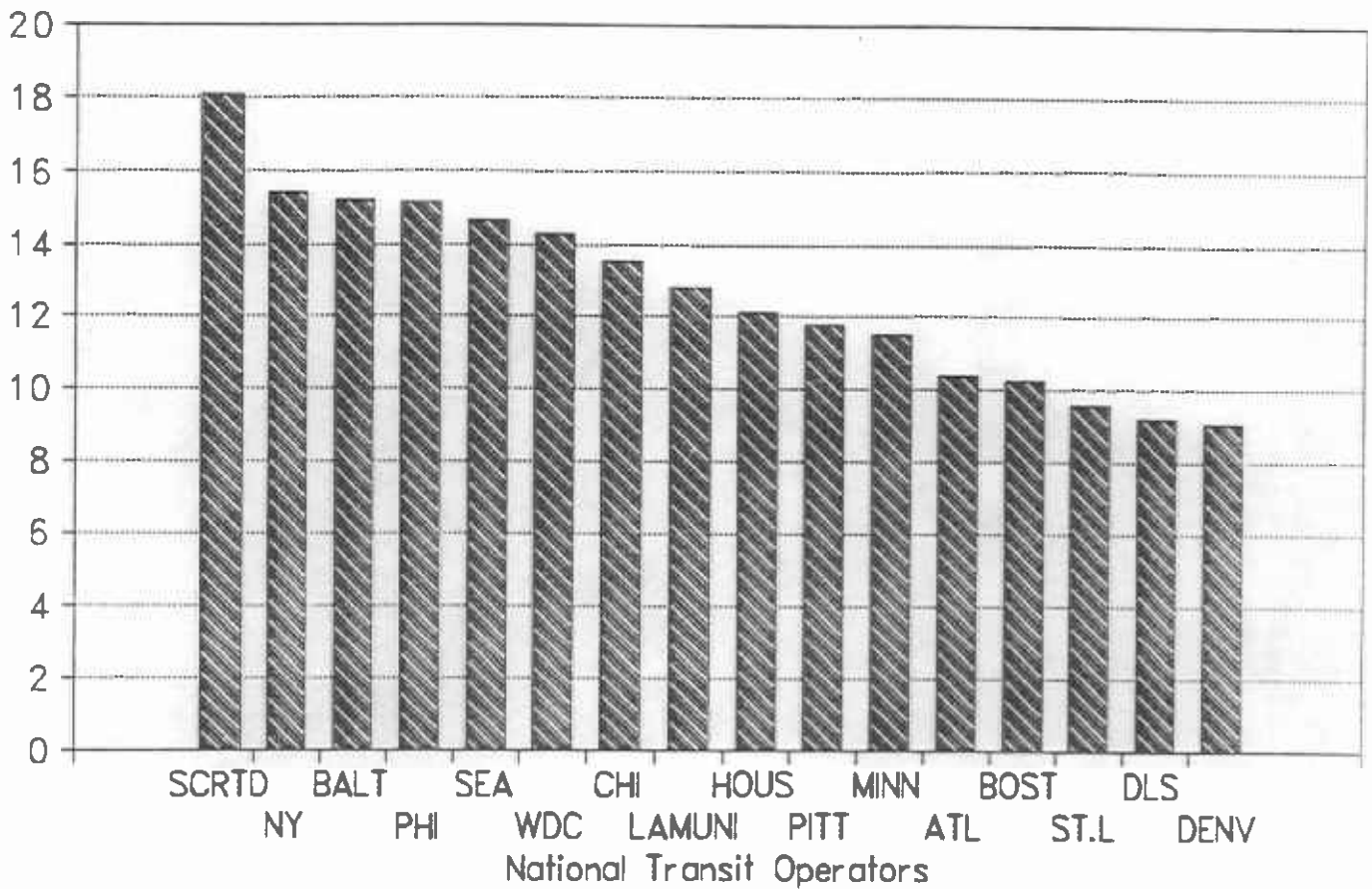
Fiscal Year 1988



GRAPH 5

PASSENGER MILES/REV. BUS MILE

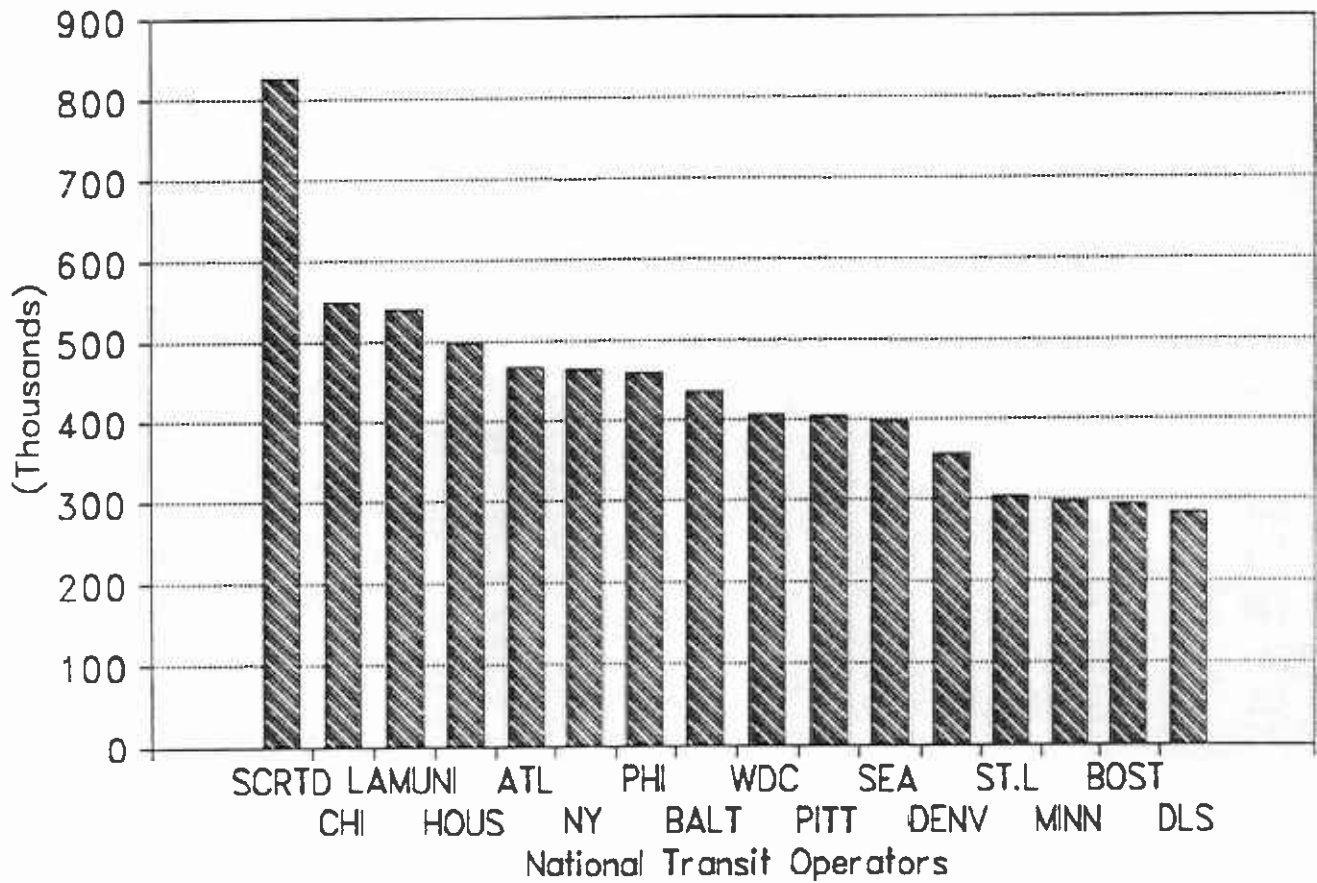
Fiscal Year 1988



GRAPH 6

PASSENGER MILES/PEAK BUS

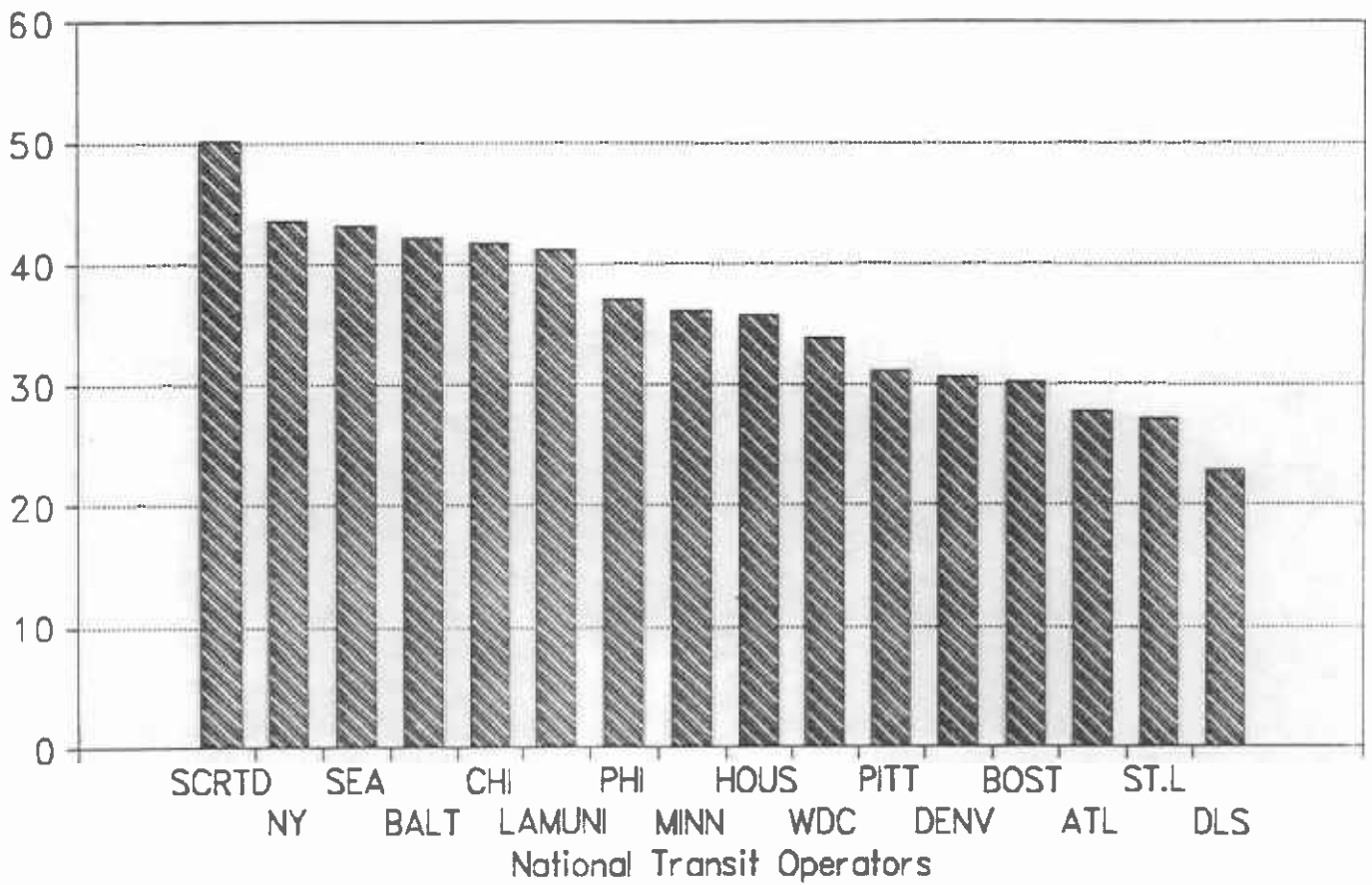
Fiscal Year 1988



GRAPH 7

PASSENGER MILES/GALLON FUEL

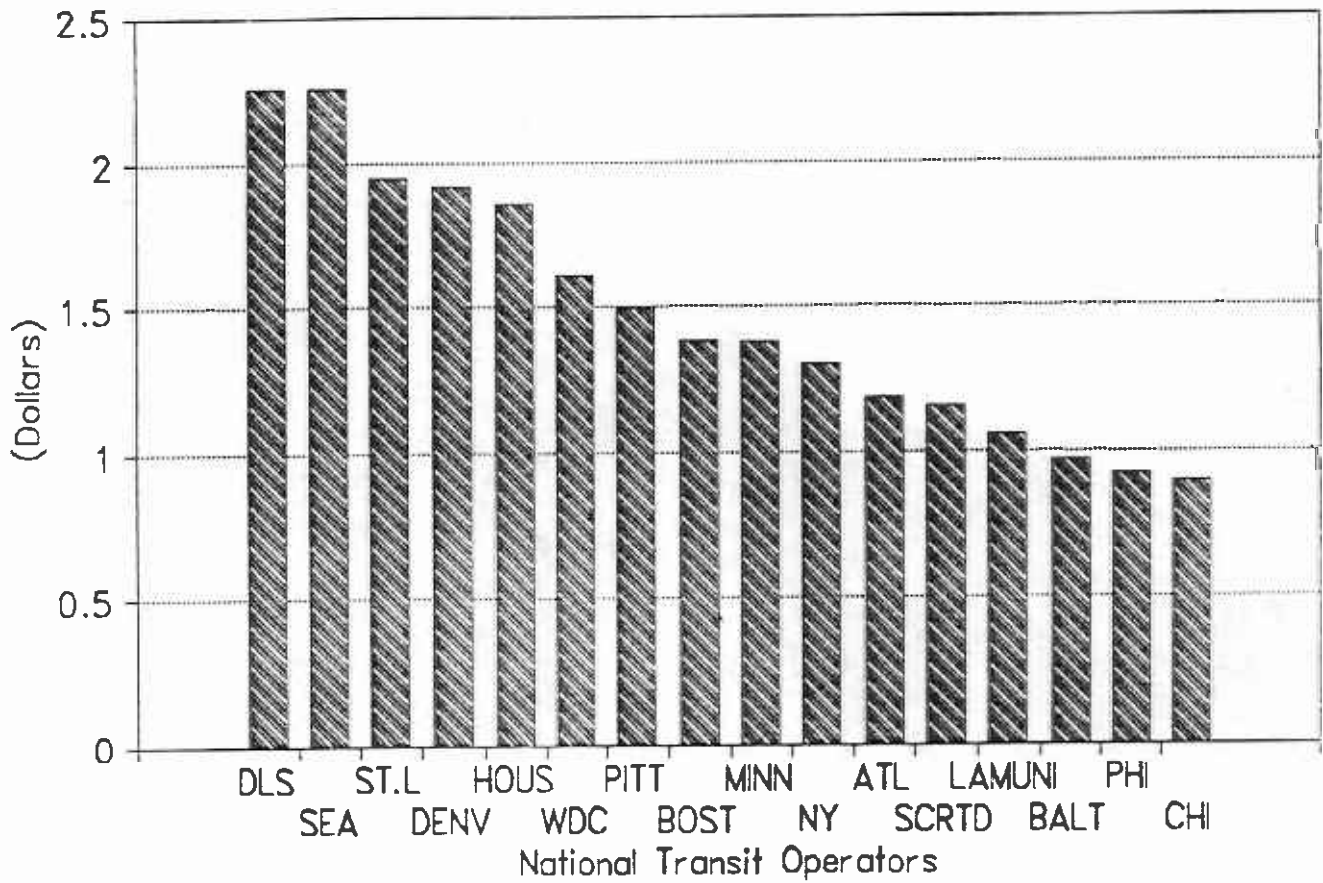
Fiscal Year 1988



GRAPH 8

OPERATING COST PER PASSENGER

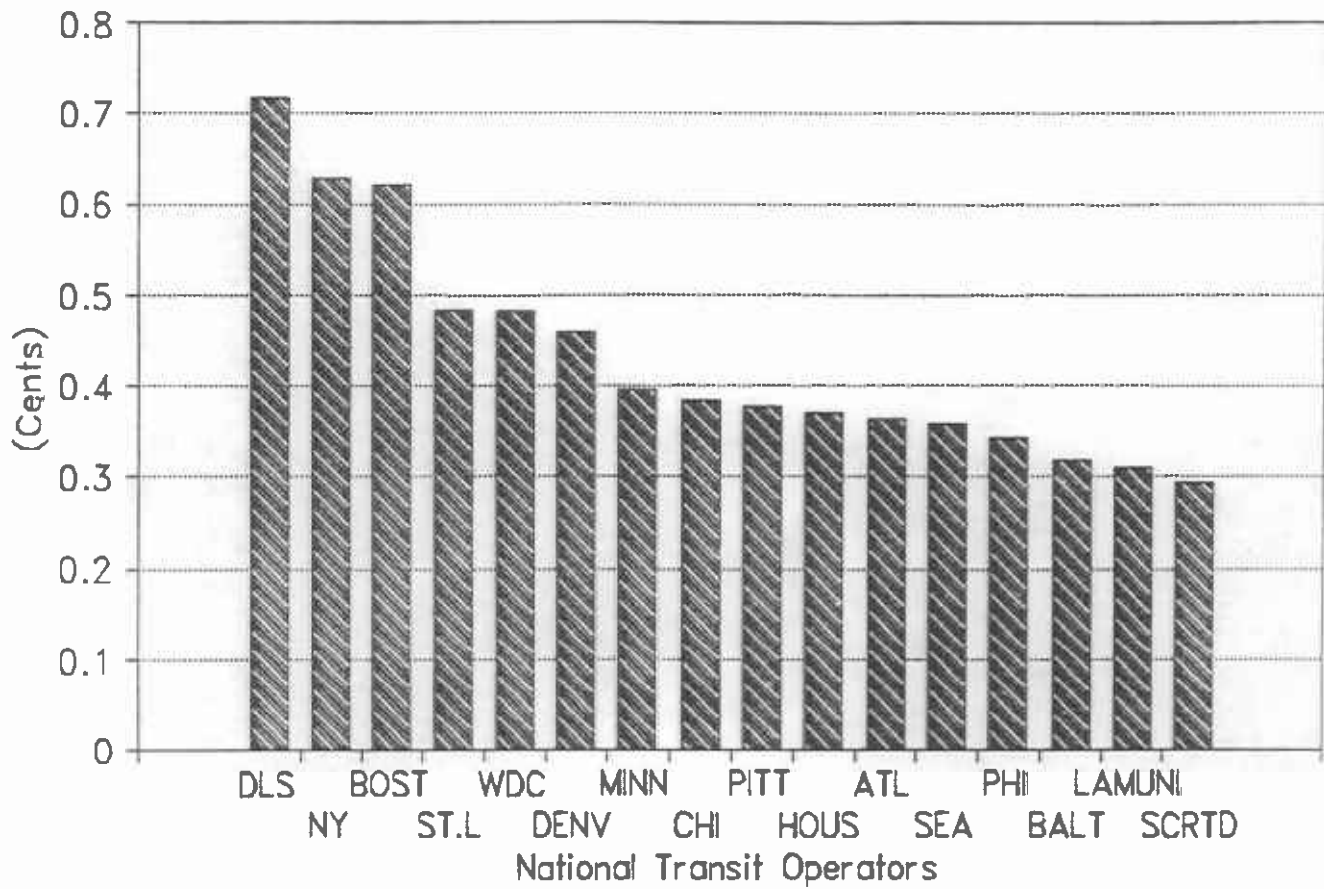
Fiscal Year 1988



GRAPH 9

OPERATING COST/PASSENGER MILE

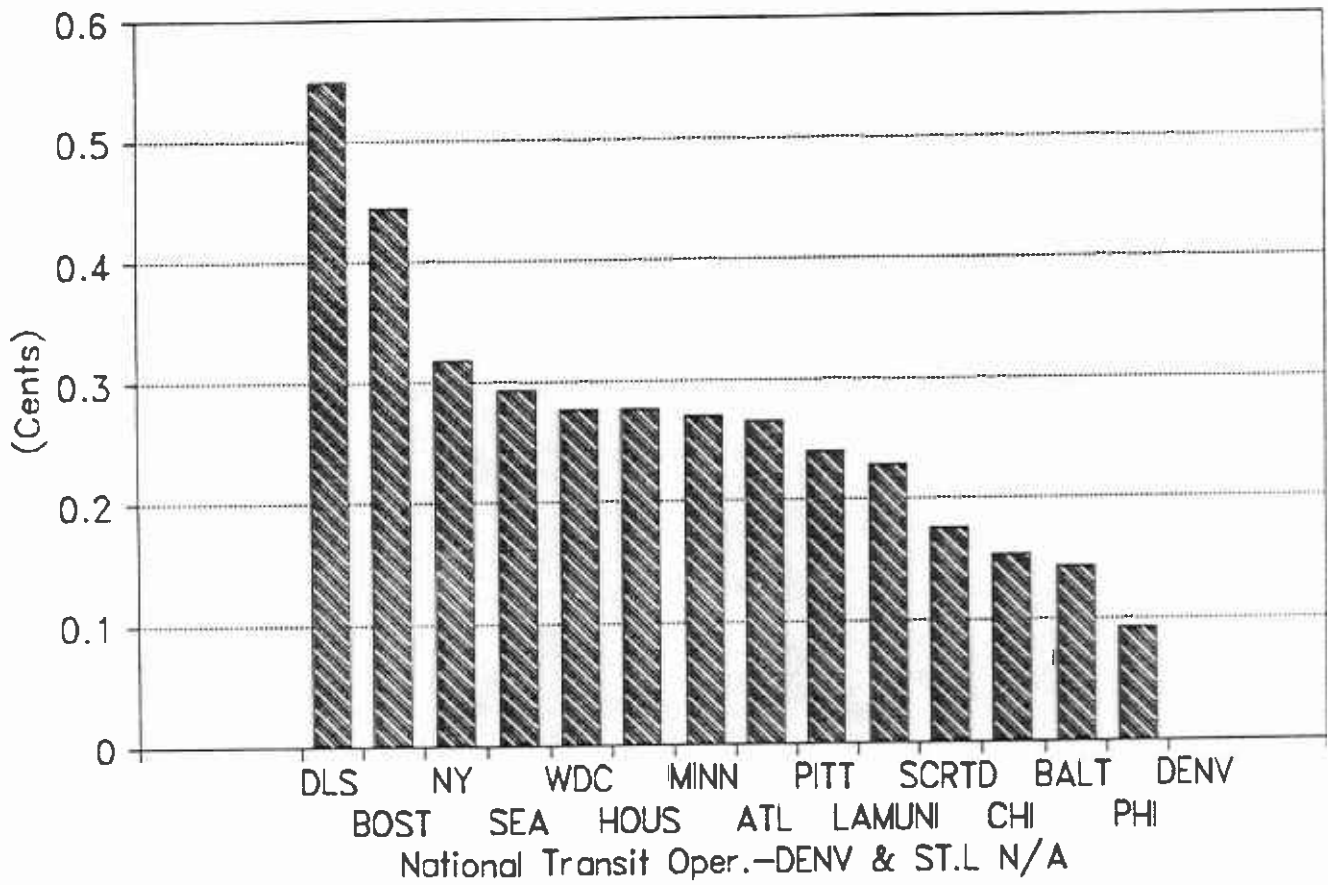
Fiscal Year 1988



GRAPH 10

SUBSIDY PER PASSENGER MILE

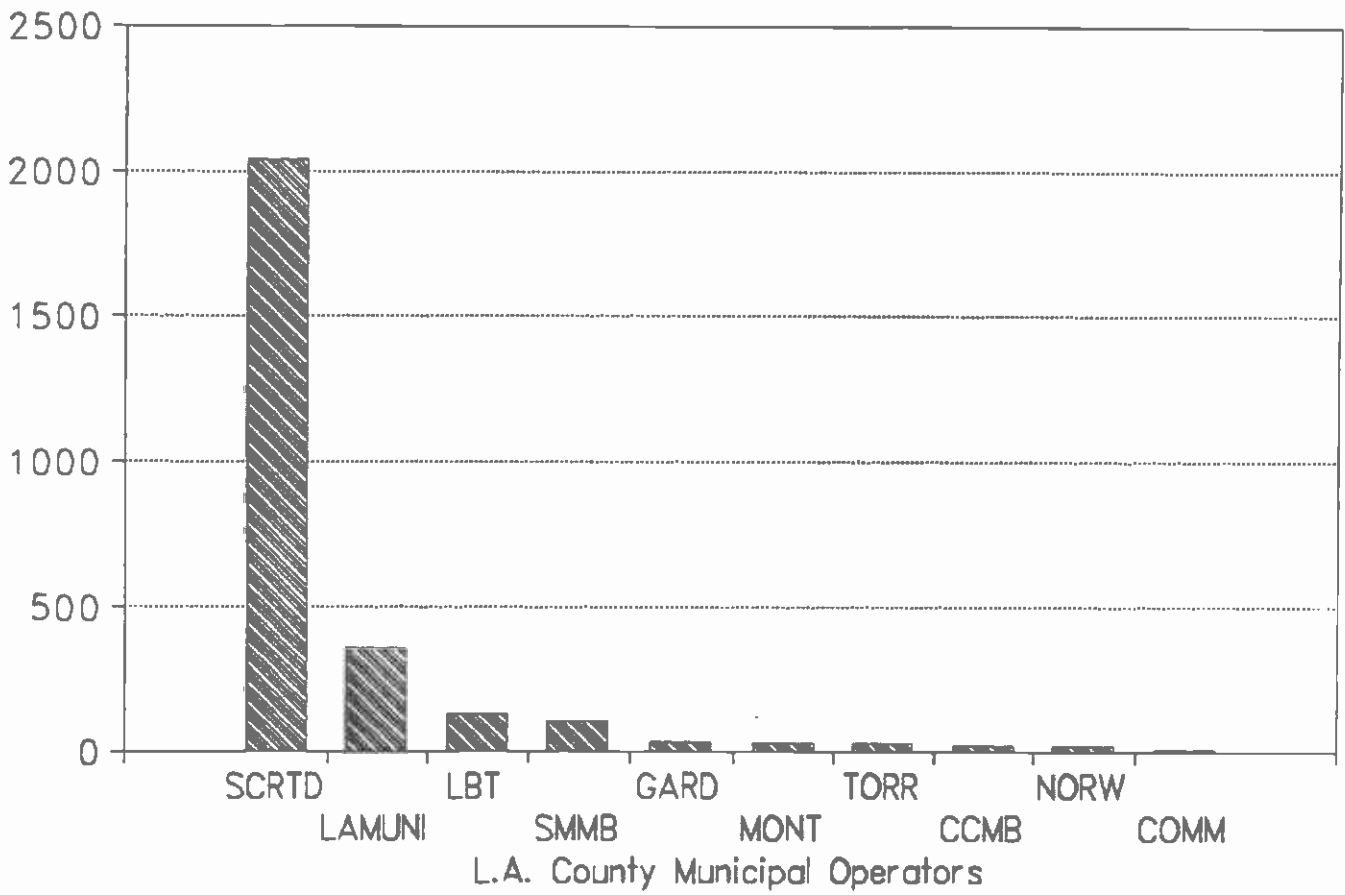
Fiscal Year 1988



GRAPH 11

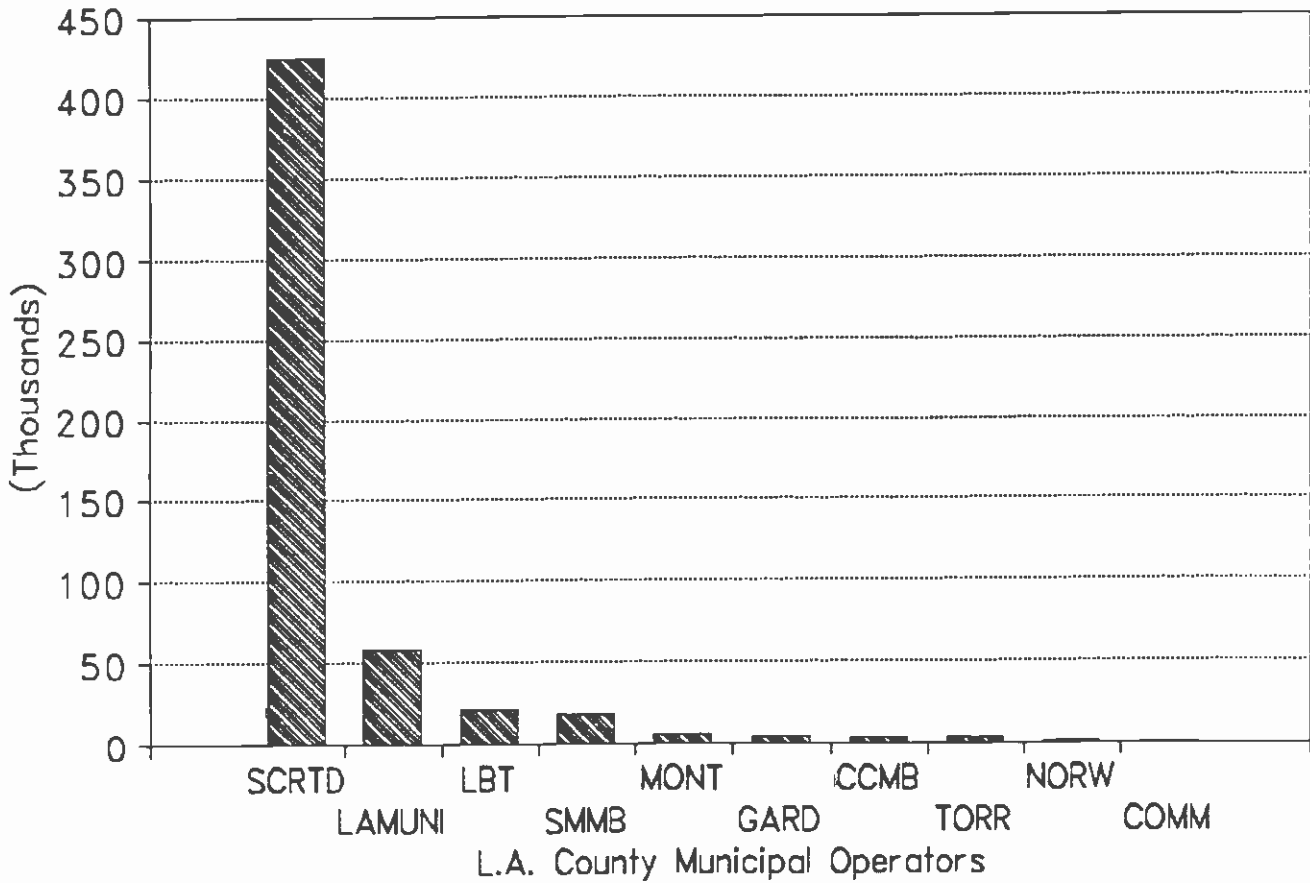
PEAK BUSES

Fiscal Year 1988



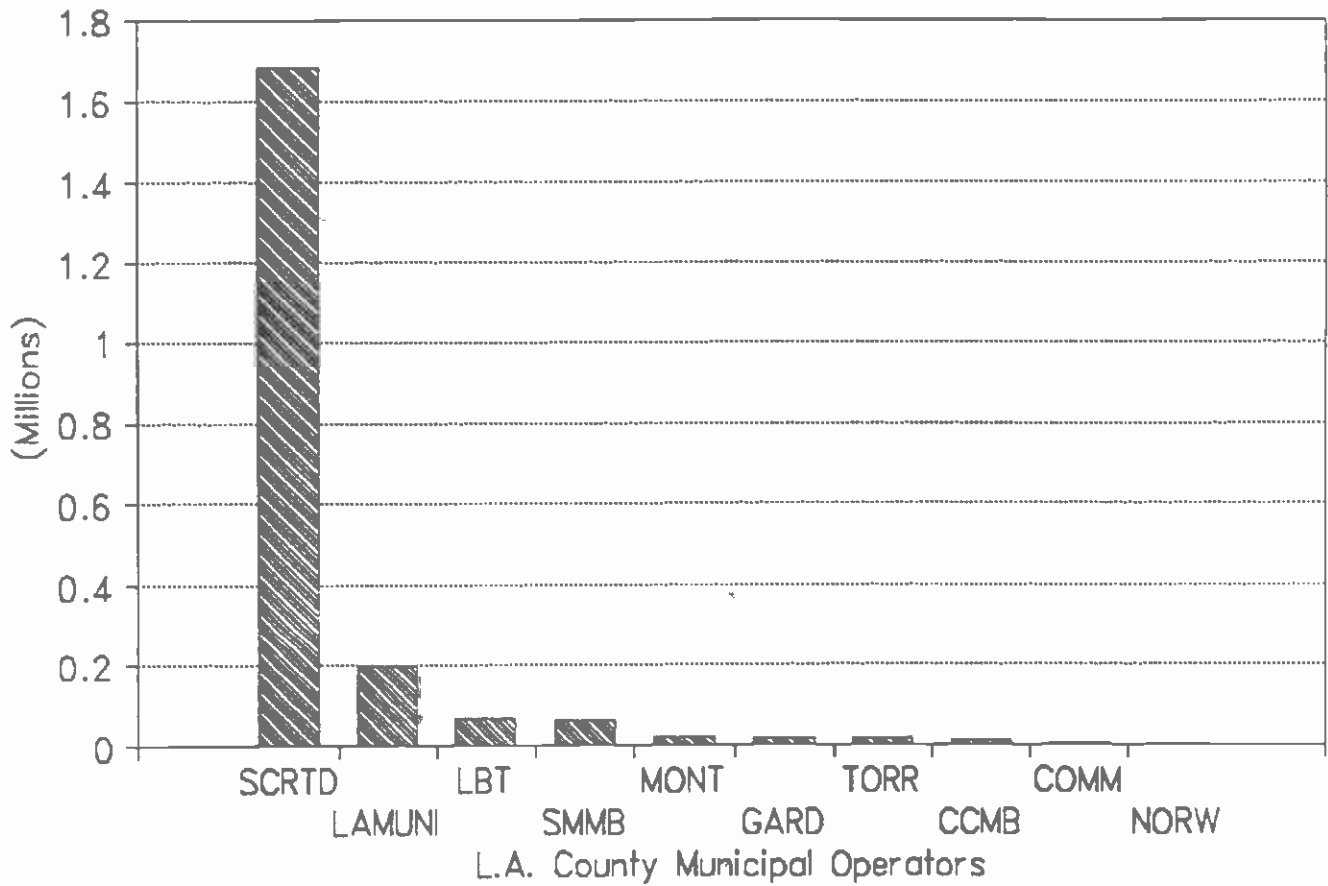
ANNUAL BOARDINGS

Fiscal Year 1988



ANNUAL PASSENGER MILES

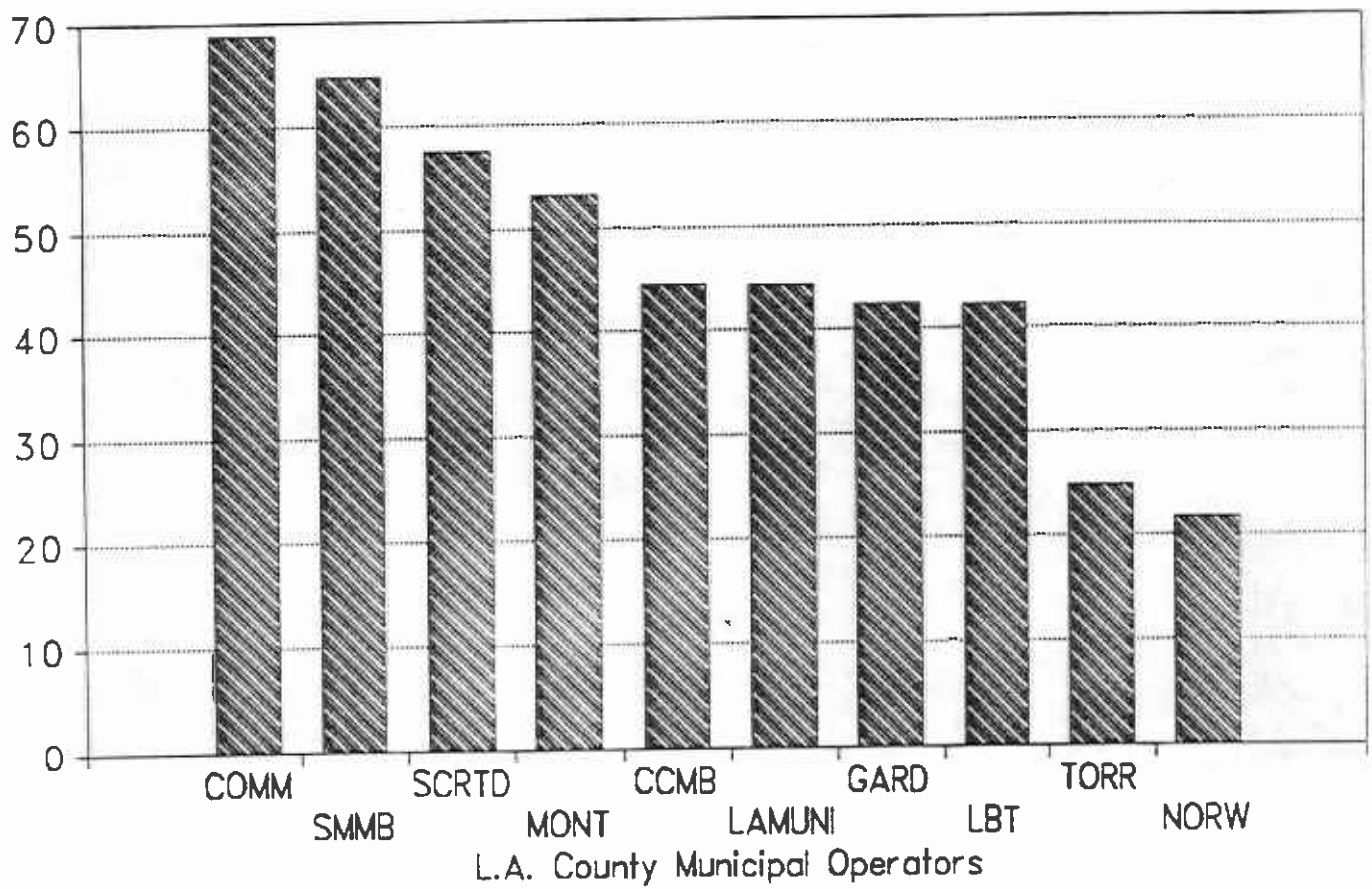
Fiscal Year 1988



GRAPH 14

PASSENGERS/REVENUE BUS HOURS

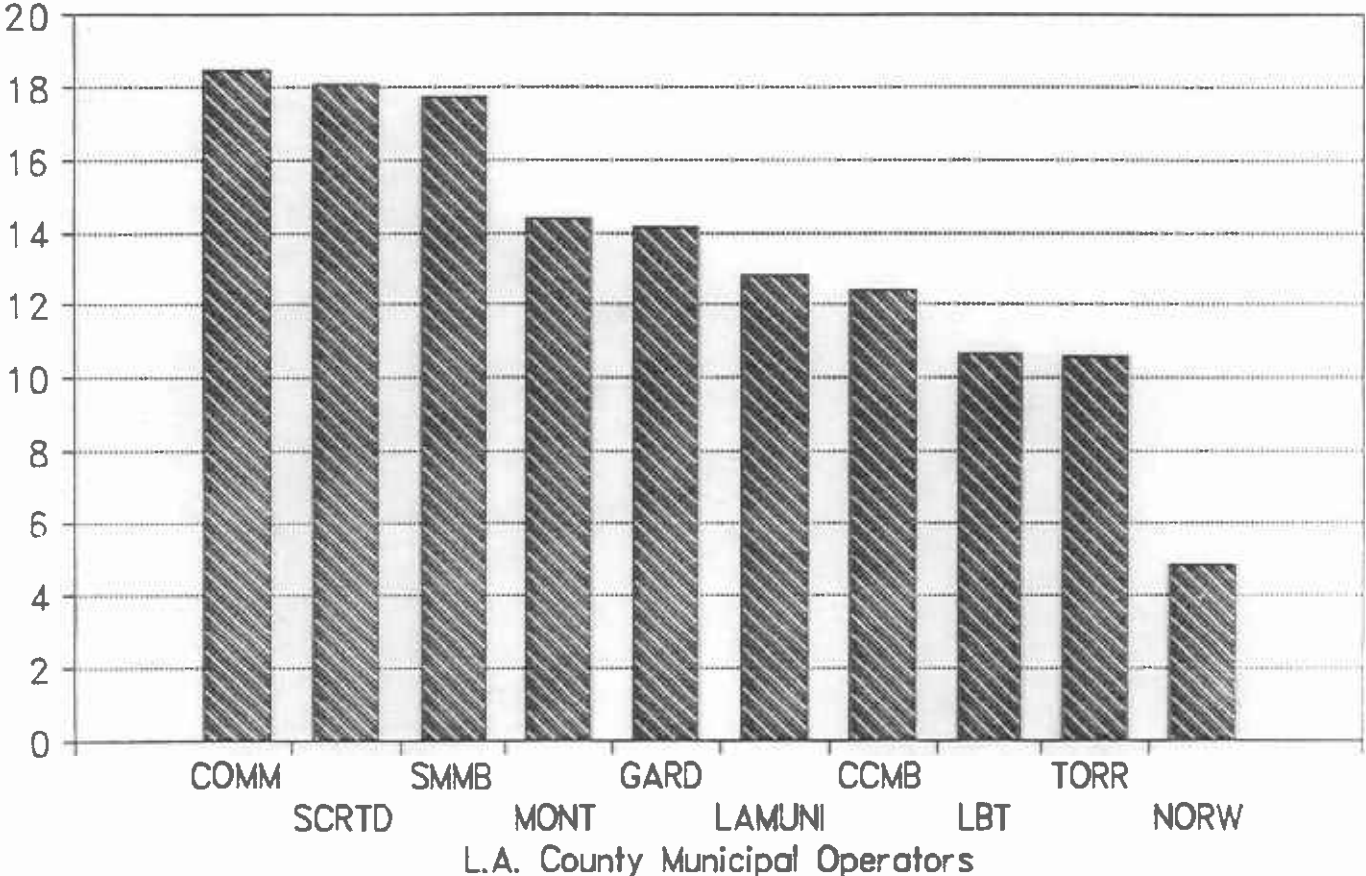
Fiscal Year 1988



GRAPH 15

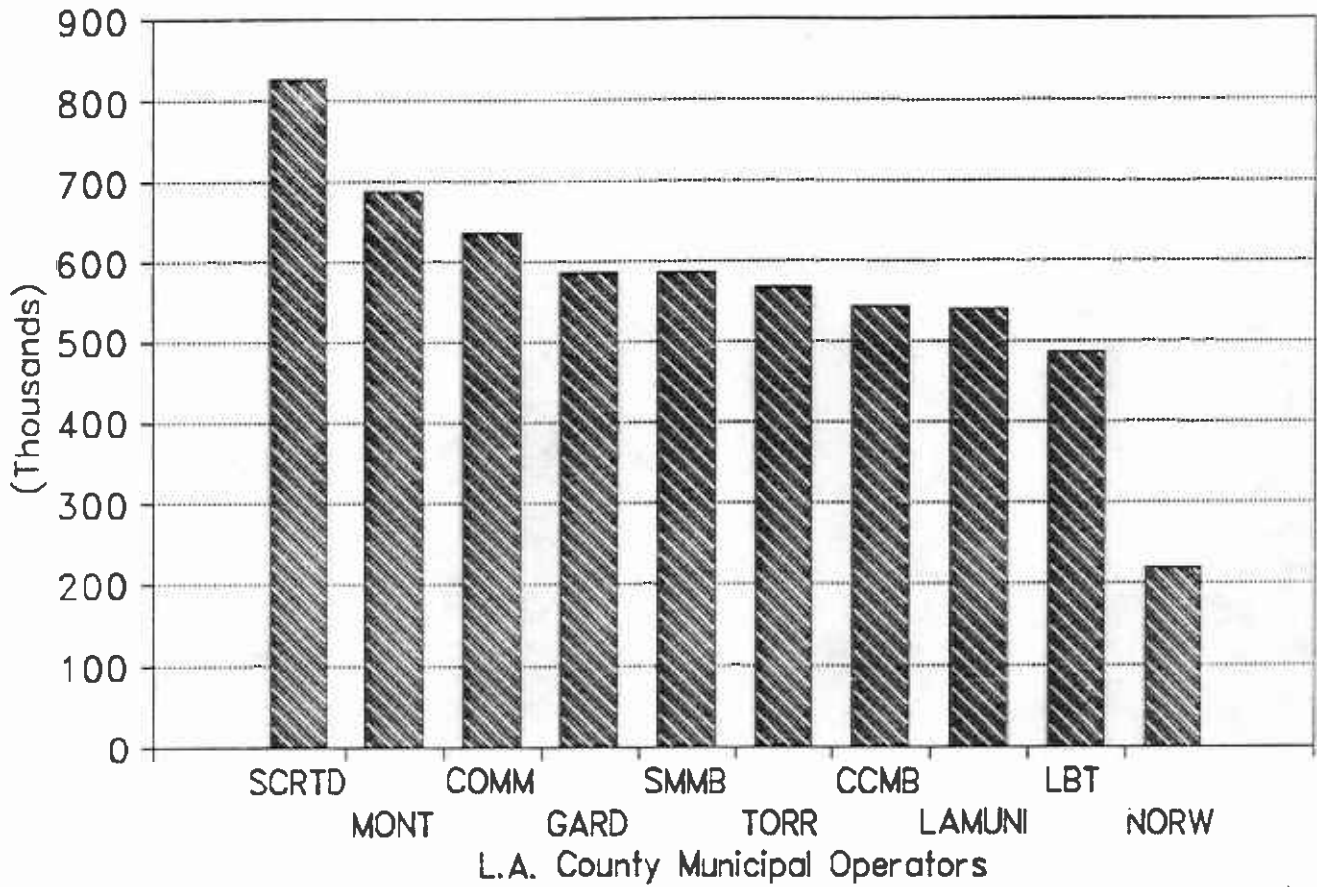
PASSENGER MILES/REVENUE BUS MILES

Fiscal Year 1988



PASSENGER MILES/PEAK BUS

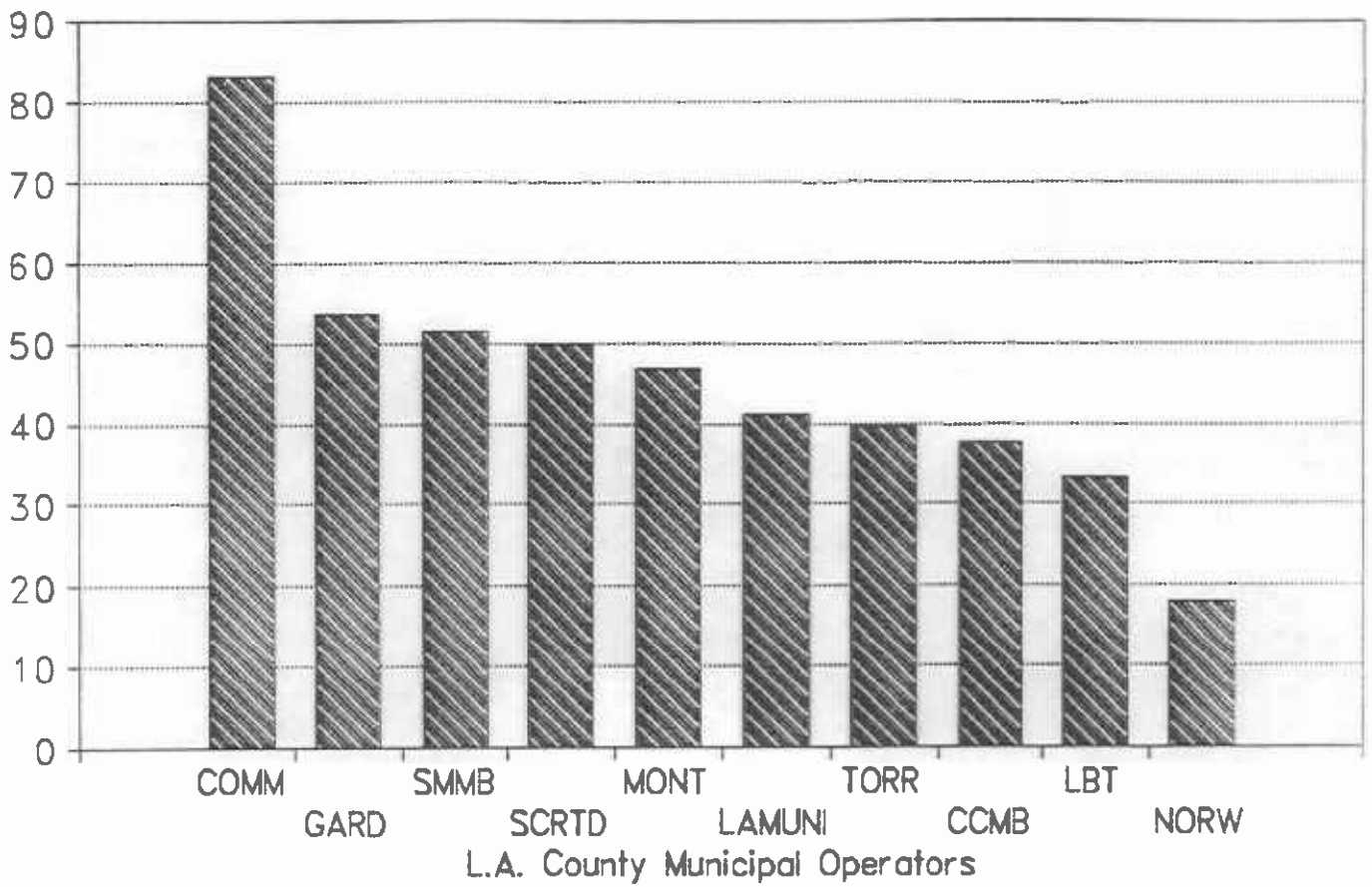
Fiscal Year 1988



GRAPH 17

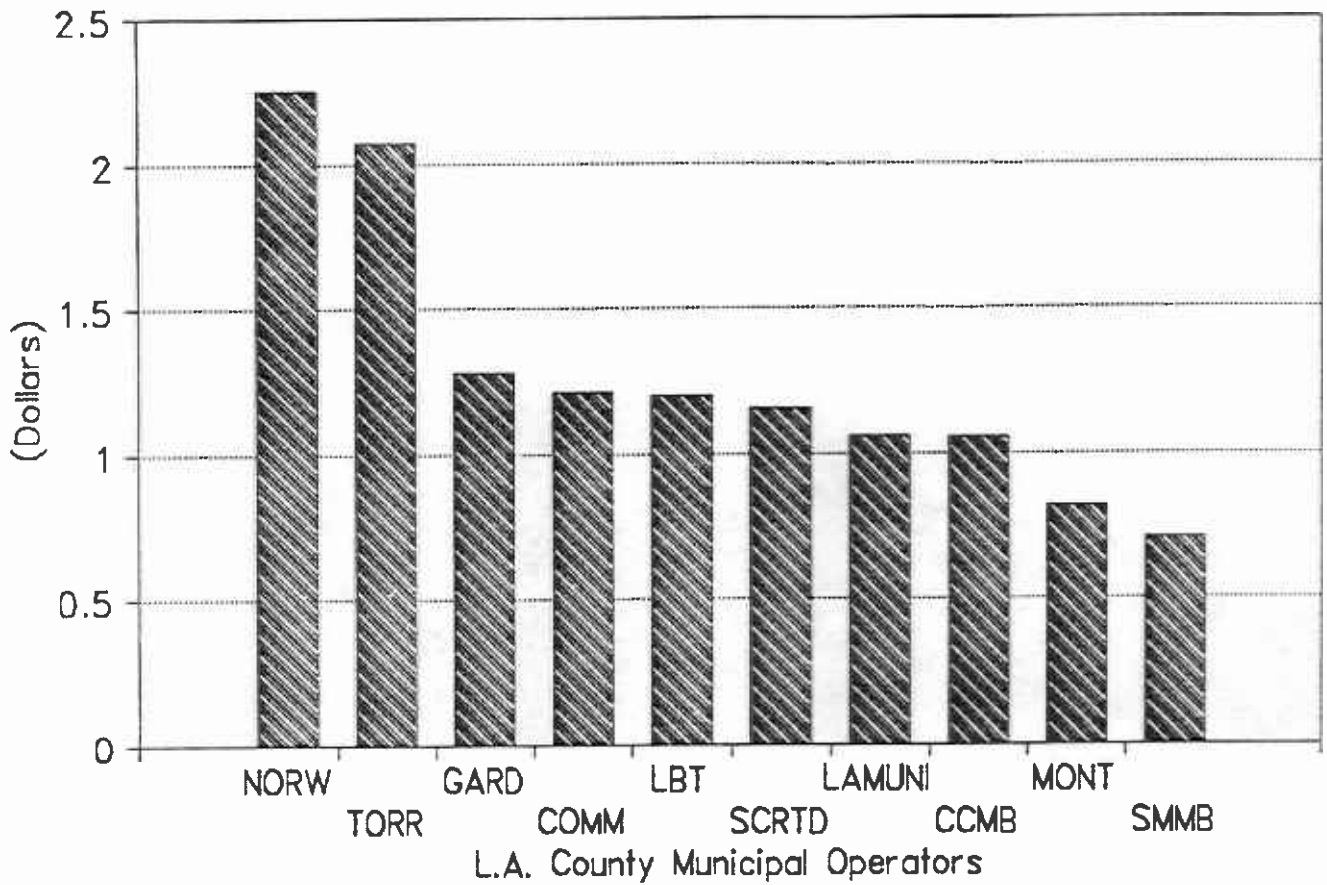
PASSENGER MILES/GALLON FUEL

Fiscal Year 1988



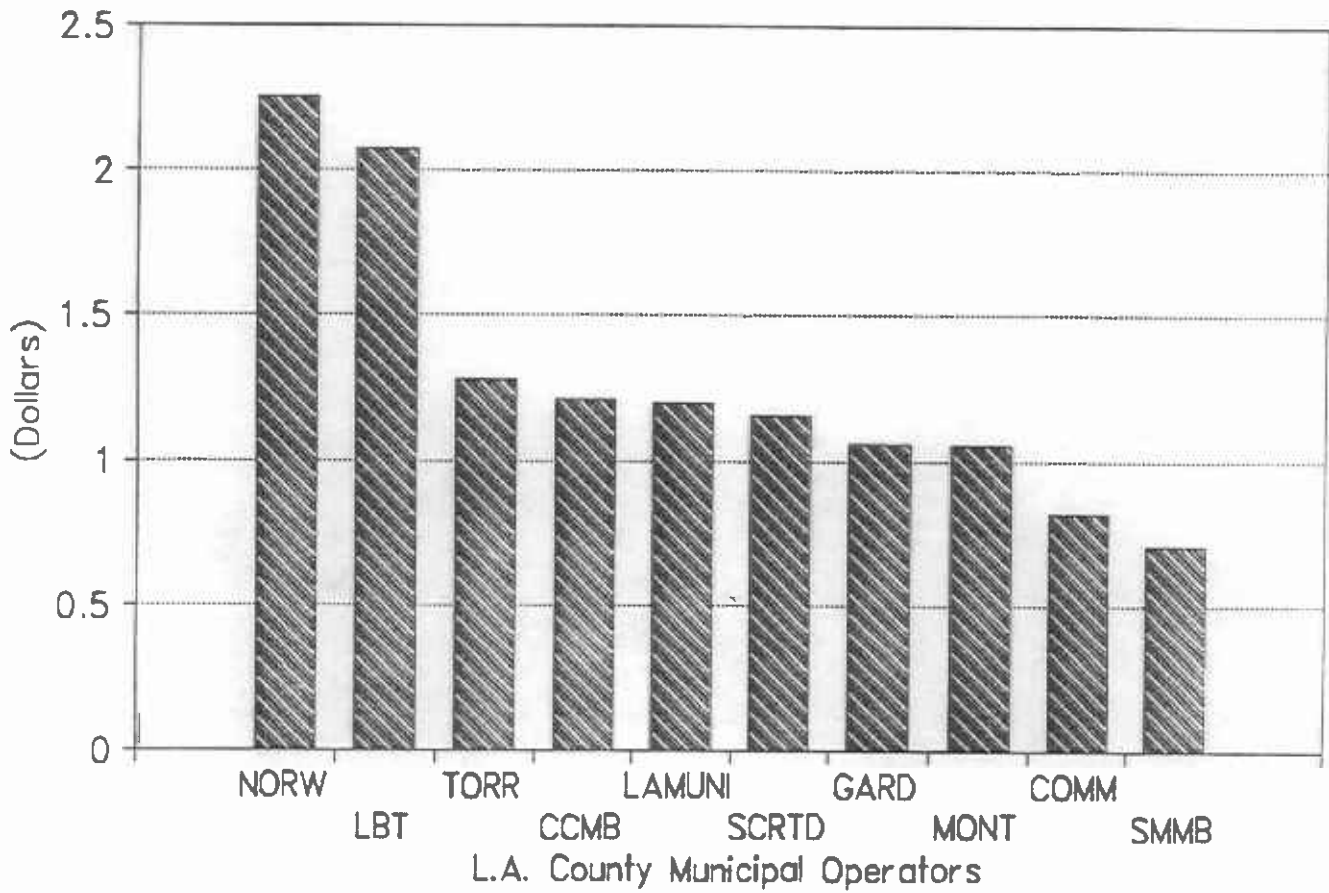
OPERATING COST/PASSENGER

Fiscal Year 1988



OPERATING COST/PASSENGER MILE

Fiscal Year 1988



SUBSIDY PER PASSENGER MILE

Fiscal Year 1988

