EVALUATION REPORT

ON

METROPOLITAN TRANSIT COMMISSION

PROGRAM EVALUATION DIVISION

OFFICE OF THE LEGISLATIVE AUDITOR

FEBRUARY 1980

TWIN CITIES AREA METROPOLITAN TRANSIT COMMISSION

March 5, 1980

OFFICE OF THE LEGISLATIVE AUDITOR
PROGRAM EVALUATION DIVISION
STATE OF MINNESOTA
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PREFACE

In June 1979, the Legislative Audit Commission directed the Program Evaluation Division to conduct a study of the Twin Cities Area Metropolitan Transit Commission (MTC). The purpose of the study was to generally assess the effectiveness and efficiency of MTC's operations and management. This report presents our findings and recommendations.

The study investigated nine functions performed by MTC. The three functions of bus operations, scheduling, and maintenance were assessed by the consulting firm of Peat, Marwick, Mitchell & Co. Program Evaluation Division staff examined the six remaining areas: procurement, claims, management services, budgeting, cash flow, and planning.

Though this report presents a generally favorable assessment, it is in some respects critical of MTC's performance. We hope that the criticisms will be viewed as constructive. Also, we wish to note that MTC and its management were supportive of our evaluation efforts, that MTC staff cooperated fully, and that in the course of the investigation, we met many dedicated staff who provided valuable assistance. A draft of this report was sent to MTC and its staff on February 25, 1980 for review and comment.

We sincerely hope that this report will help MTC and the Legislature find ways to improve the operation of bus service in the Twin Cities Metropolitan Area. However, our report may provide less information about the recently projected MTC budget deficit than some may expect. It should be remembered that when the scope of our study was established, the current budget deficit concerns were not present. By design our study had a broad management focus and, as a result, its benefit may be less immediate than resolution of MTC's current budget problems.

The Metropolitan Transit Commission evaluation was conducted by Thomas Sims (project manager), Thomas Chapel, Thomas Hiendlmayr, and Daniel Jacobson, with the assistance of Peat, Marwick, Mitchell & Co. John Yunker provided special assistance in reviewing the final report.

James Nobles, Deputy Legislative
Auditor for Program Evaluation

March 5, 1980

The Program Evaluation Division was established in 1975 and does studies at the direction of the Legislative Audit Commission (LAC). The division's general responsibility, as set forth in statute, is to determine the degree to which activities and programs entered into or funded by the state are accomplishing their goals and objectives and utilizing resources efficiently. A list of the division's studies is at the end of this report.

Since 1979, the findings, conclusions, and recommendations in Program Evaluation Division final reports and staff papers are solely the product of the division's staff and not necessarily the position of the LAC. On completion reports and staff papers are sent to the LAC for review and are distributed to other interested legislators and legislative staff.

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EXECUTIVE SUMMARY

This report presents the results of a performance evaluation of the Metropolitan Transit Commission (MTC). Our major conclusions and recommendations regarding MTC's performance are summarized below in each of the following areas:

- Service Efficiency: Do MTC's efforts in the areas of labor cost management, route scheduling, and the monitoring and evaluation of routes result in efficient bus operations?
- Service Reliability: Does MTC provide reliable bus service?
- General Efficiency: Does MTC efficiently manage its costs in such areas as cash management, claims administration, and the hiring of top management personnel?
- Management Effectiveness: Has management been effective in satisfying such organizational needs as budgeting and planning?

A. SERVICE EFFICIENCY

We found MTC's bus operations to be generally efficient. Its driver costs per bus mile driven are below average compared to other systems. In addition, MTC's progressive route scheduling techniques and route evaluation procedures make its Routes, Schedules, & Planning Department among the more effective in the industry, according to Peat, Marwick, Mitchell & Co. (PMM&Co.).

In a number of respects, however, MTC's efficiency can be improved. MTC has experienced the following problems:

1. MTC paid more unscheduled premium or overtime pay per vehicle mile in 1978 than any other transit system surveyed (pp. 5-7).
2. MTC dispatchers had to offer bonus "call time" payments in addition to overtime premiums in order to persuade drivers to work (pp. 5-7).
3. MTC's driver absenteeism rate has increased significantly over the past few years and is higher than the industry average. Greater absenteeism increases costs because

extra drivers must be used to replace absent drivers (pp. 7-10).

4. Compared to other systems, MTC makes an unusually large amount of guarantee time payments--that is, provides eight hours of pay for less than eight hours of work. This is due in part to MTC's practice of scheduling "short runs"--driver assignments that contain between 5½ and 6½ hours of work for 8 hours of pay (pp. 10-11).

The large overtime payments and "call time" payments were required by a driver shortage caused by inadequate workforce planning by MTC. Since mid-1979, MTC management has recognized this problem and made significant progress in reducing these payments by hiring more full-time and part-time drivers. A small amount of bonus "call time" payments are still being made, however, and should be discontinued (p. 7).

PMM&Co. found that MTC's high absenteeism is caused by (1) the availability of overtime and (2) the lack of a uniform discipline/reward system which, if enforced, would control the amount of absenteeism. It is recommended that MTC develop a uniform performance code which covers as many types of absences as possible (p. 9).

PMM&Co. found that MTC's ratio of guarantee time to work performed is almost 33 percent higher than that of the second highest transit system surveyed. It is recommended that several methods be used to reduce the amount of guarantee pay. By either rearranging work assignments or assigning each separate assignment in a short run on a daily basis, the amount of guarantee pay can be reduced (pp. 10-11). Increased use of part-time drivers, to the extent permitted by MTC's labor contract, can also reduce costs in this area.

Several improvements in MTC's route monitoring and evaluation techniques are also recommended. MTC should implement a statistically reliable method for monitoring ridership and develop more accurate estimates of the cost implications of adding or cutting individual bus trips (pp. 11-13).

B. SERVICE RELIABILITY

During 1978 and early 1979, MTC missed a large number of scheduled bus trips. In the summer of 1978, for example, between three and four percent of scheduled rush hour bus trips failed to leave the garage. Prior to 1977, MTC was generally able to keep missed trips to less than one percent.

The unusually large number of missed trips was caused both by a shortage of drivers and a shortage of adequately functioning buses. As MTC has improved its workforce planning, the number of missed trips has declined.

MTC's maintenance program remains a problem area, however. Although its maintenance program has operated in the past under the constraints of inadequate facilities and a troublesome fleet of buses acquired under federal bidding procedures, some improvements in maintenance are possible. We recommend that MTC implement a more reliable and effective inspection scheduling program and track part histories to determine if meaningful mileage intervals can be established for the preventive replacement of particular bus parts (pp. 15-20). Implementing these two recommendations should help reduce the number of vehicle breakdowns on the road. In order to minimize stockouts of bus parts, we recommend that MTC change its current reordering procedures (pp. 27-29). This change will help to ensure that sufficient bus parts are available for use in maintenance work.

C. GENERAL EFFICIENCY

We found that efficiency can be improved in the following areas: (1) cash management, (2) claims administration, and (3) top management costs.

We recommend the following changes in the area of cash management:

- MTC should apply for the federal Section 5 grant by August of each year.
- The Legislature should consider changing the Mn/DOT procedures which affect the timing of performance funding payments.

Implementing the first recommendation would enable MTC to earn between $100,000 and $300,000 in additional investment income (pp. 53-55). If the Legislature permanently changes the timing of performance funding payments, MTC's cash reserve requirement can be reduced. In particular, the amount of additional revenue needed by MTC during the current biennium can be reduced below the $23.6 million MTC has requested (pp. 55-57).

In the area of claims administration, MTC has not devoted sufficient resources to analyzing workers' compensation cases, even though the number of claims filed and paid has increased dramati-

INTRODUCTION

The Twin Cities Metropolitan Transit Commission (MTC) was established in 1967 by the Minnesota Legislature. The commission is composed of eight members appointed by the Metropolitan Council and a chairman appointed by the governor and confirmed by the Senate.

Prior to the establishment of MTC a private company, Twin City Lines, was the major provider of bus service for Twin Cities area residents. The Legislature created MTC, which then acquired Twin City Lines, because it concluded that a private company could no longer provide regional bus service profitably and effectively. However, since the mid-1970s MTC has become increasingly reliant on public subsidies. In 1974 it received its first state funding in the form of a $1.4 million block grant. For that year, MTC had a total operating budget of $24 million and provided 61 million rides. Four years later, in calendar 1978, MTC's annual state subsidy increased to nearly $20 million, the operating budget increased to $56 million, and ridership is estimated to have increased to 71 million.

As the amount of public subsidy has increased for MTC so has the level of legislative oversight. Our report is part of the Legislature's oversight effort; it presents a general assessment of MTC performance in carrying out various management and operational functions.

A. SERVICE EFFICIENCY AND RELIABILITY

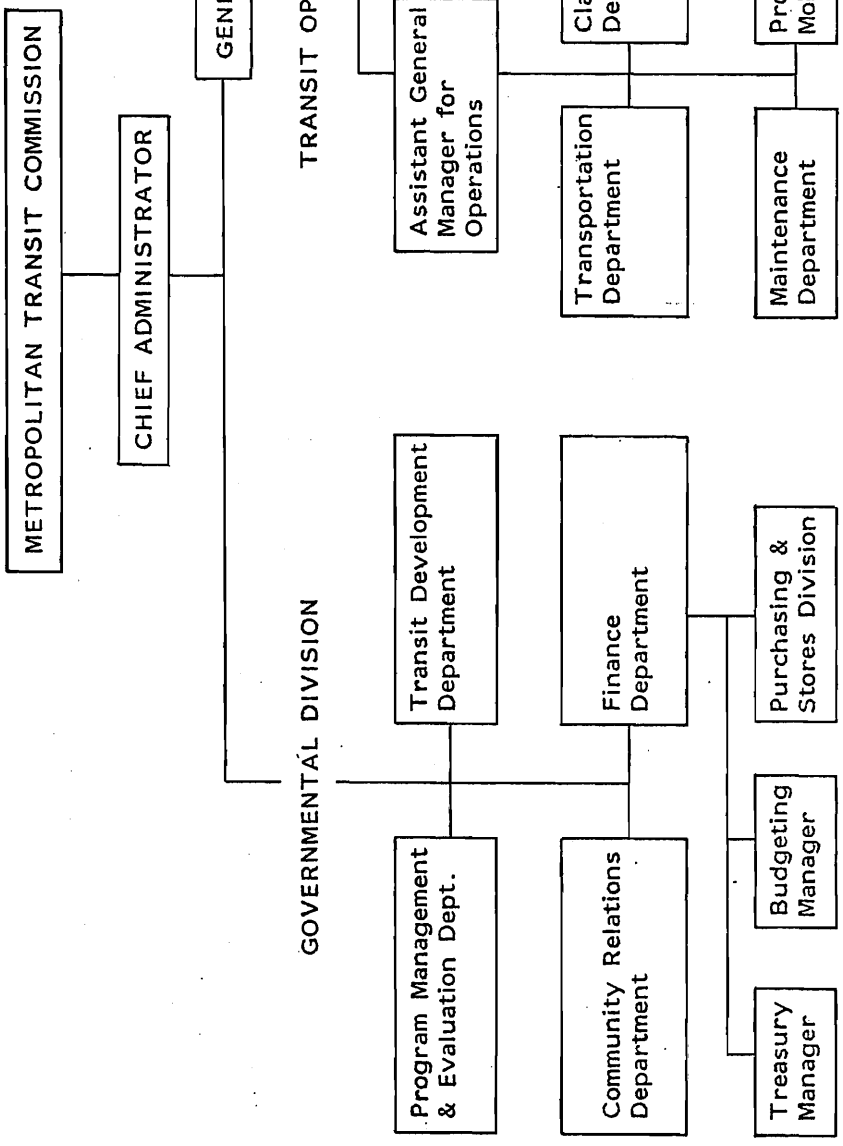
Approximately 90 percent of MTC's total operating budget is spent within its Transit Operating Division to provide bus service. (For a review of MTC's organizational structure see Exhibit 1.) The majority of this amount goes to pay bus drivers' salaries and fringe benefits. Other major cost categories include materials and supplies, including fuel, and general liability.

The first four chapters of this report deal with various functions relating directly and indirectly to the provision of efficient and reliable service by MTC's Transit Operating Division:

- Chapter I focuses on MTC's Transportation Department, which is in charge of matching drivers to the schedule, dispatching drivers, dealing with morale and discipline in the work force, and controlling the cost of providing drivers.

  Chapter I also examines the Department of Routes, Schedules, & Planning, which determines route alignments and schedules, monitors trouble-prone routes, and assists in estimating ridership.

Exhibit 1



NOTE: The Transit Operating Division consists of eight departments closely related to the daily operation and maintenance of MTC's bus fleet. The eight departments are divided into two groups and the directors in each group report to an assistant general manager who reports in turn to the general manager. The general manager reports directly to the chief administrator along with the directors of the four departments which lie outside the Transit Operating Division.

- Chapter II investigates the Maintenance Department, which is in charge of keeping MTC's buses in good repair by means of periodic inspections and preventive and corrective maintenance.

- Chapter III focuses on the Purchasing & Stores Division, which is responsible for the procurement of all materials and supplies, including fuel, bus repair parts, and tires.

- Chapter IV examines MTC's Claims Department, which is in charge of administering MTC's casualty and liability cases and payments.

Due to the technical nature of some of the issues addressed in the areas of bus operations, scheduling, and maintenance, we employed the consulting firm of Peat, Marwick, Mitchell, & Co. (PMM&Co.) to conduct the research for Chapters I and II. Their research included the compilation of performance data for MTC and for seven other comparable transit systems in the United States.

B. MANAGEMENT EFFECTIVENESS

The last five chapters of this report deal with various factors relating to MTC's management effectiveness:

- Chapter V examines the arrangement that MTC has with ATE,[1] a private management firm which is responsible for MTC's daily bus operations.

- Chapter VI investigates MTC's budgeting procedures to determine whether budgets are well developed, rigorously reviewed, and useful for managerial control.

- Chapter VII examines the appropriateness of the size of MTC's cash reserve and factors which affect its cash requirements.

- Chapter VIII evaluates MTC's planning activities regarding their effectiveness in satisfying state requirements and their utility for internal management.

- Chapter IX discusses MTC's efforts to develop management information as a future avenue for alleviating current problems.

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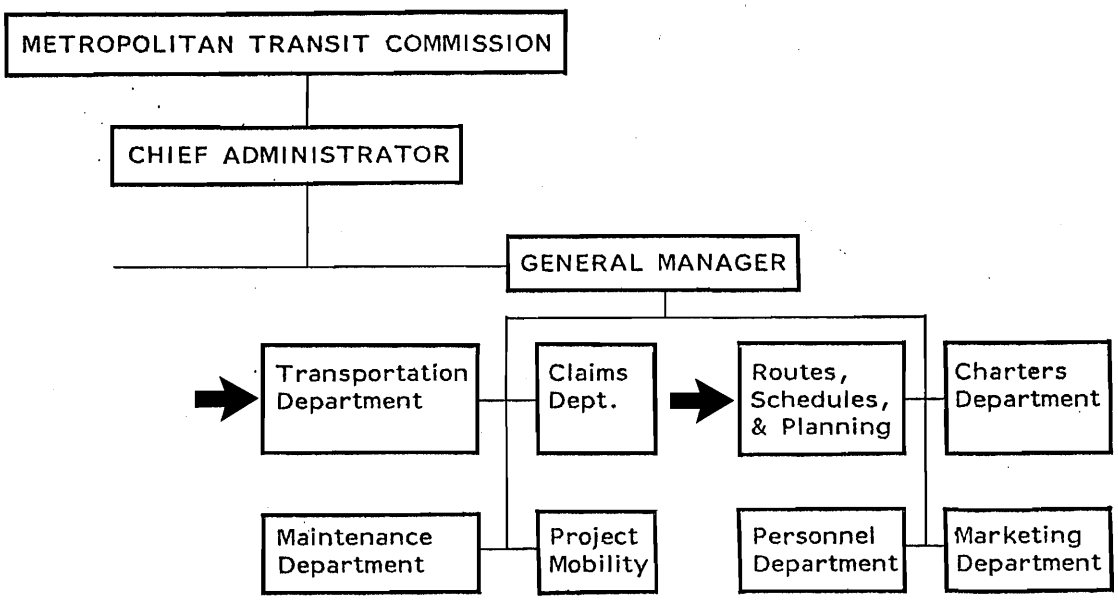
[1] ATE's official name is ATE Management and Services Company, and it is the successor to a company known as American Transportation Enterprises.

I. BUS OPERATIONS AND SCHEDULING

A. INTRODUCTION

This chapter examines the performance of MTC in managing its bus operations. The key functions affecting bus operations are managed by MTC's Transportation Department and the Routes, Schedules, & Planning Department within the Transit Operating Division (see diagram below). The Transportation Department is responsible for matching drivers to schedules, dispatching the drivers and buses, supervising bus operations on the street, motivating employees, and applying fair disciplinary standards. The Routes, Schedules, & Planning Department is responsible for designing route alignments and bus schedules, monitoring and evaluating service, and making adjustments to service to make it reliable and consistent with commission guidelines.



In evaluating how well MTC manages its bus operations this chapter examines the following topics:

- driver labor costs;
- driver personnel planning;
- driver absenteeism;
- scheduling and run-cutting; and
- service monitoring and evaluation.

B. CONCLUSIONS AND FINDINGS

1. MTC'S DRIVER COSTS PER BUS MILE ARE BELOW AVERAGE, RELATIVE TO OTHER SYSTEMS.

In 1978, drivers' wages and fringe benefits amounted to $.97 per bus mile for MTC, compared to an average of $1.10 for other systems, according to PMM&Co.'s survey of seven other transit systems. Exhibit 2 illustrates how certain factors have contributed to MTC's labor efficiency; some of these are discussed below.

a. The ratio of pay hours/platform hours is a good indicator of how efficiently management uses drivers to provide service. This ratio compares the number of hours for which drivers are paid to the number of hours they actually spend driving their buses. This ratio reflects management's success at minimizing such extra costs as overtime pay, "spread time" pay for working staggered hours, and "allowance" pay to drivers when they are not working. In 1978 these extra costs totaled approximately $5 million for MTC. PMM&Co.'s survey indicates MTC is better than average even though it is less efficient in certain cost categories. MTC's own survey in 1979 of 12 other systems also indicated that its pay hour/ platform hour ratio was better than average.

   Driver personnel planning, scheduling, and union contract provisions all influence the degree to which MTC minimizes the pay hour/platform hour ratio. PMM&Co. concluded that MTC's pay hour/platform hour ratio is lower than average because MTC has effectively avoided excessive allowances for non-service work time in union contracts, and its schedule making is generally efficient.

b. While MTC drivers' wages and fringe benefits have risen considerably along with inflation, they are slightly below the average of other transit systems.

c. MTC buses run at higher average speed compared to other systems. Traffic conditions significantly influence this factor.

2. DURING THE PAST FEW YEARS, MTC EMPLOYED TOO FEW DRIVERS, RESULTING IN TOO MUCH OVERTIME PAY AND TOO MANY MISSED TRIPS. ALTHOUGH MTC IS CORRECTING THESE PROBLEMS, IT IS STILL MAKING A SMALL AMOUNT OF UNNECESSARY "CALL TIME" PAYMENTS.

Maintaining the proper number of drivers is critical to efficient and reliable operations. Until recently, MTC computed its

EXHIBIT 2: INTER-CITY COMPARISON: DRIVER LABOR COSTS, 1978

		7 Systems			
	MTC	Average	Low	High	MTC's Rank
Pay Hours per Platform Hour	1.22	1.25	1.13	1.34	3rd lowest of 8
Wages per Pay Hour	$7.80	$7.88	$7.21	$8.80	4th lowest of 8
Fringes per Pay Hour	$3.04	$3.20	$2.52	$4.43	5th lowest of 8
Wages and Fringes per Pay Hour	$10.84	$11.08	$9.73	$12.77	5th lowest of 8
Driver Cost per Platform Hour	$13.19	$13.80	$11.00	$16.90	3rd lowest of 8
System Speed (miles per hour)	13.6	12.5	10.1	21.0	2nd highest of 7
Driver Cost per Bus Mile	$.97	$1.10	$.68	$1.50	3rd lowest of 7

NOTE: The other seven systems were Baltimore, Chicago, Detroit (SEMTA), Milwaukee, Oakland, Seattle, and Toronto. Three systems reported data for the fiscal year ending June 30, 1979; for these three systems, wage figures were divided by 1.05, as an adjustment for inflation, to obtain estimates for calendar year 1978.

DATA SOURCE: PMM&Co., 1979.

driver complement using a fixed man-to-work ratio, e.g., 1.5 drivers per peak hour bus. The problem is that several other factors in addition to the number of peak hour buses also determine how many drivers MTC should employ. These include driver absenteeism rates, union contract provisions, total system miles driven, and type of service. When any of these factors change, MTC's driver requirements change. The fixed ratio method fails to take into account the basic trade-off between the cost of hiring additional drivers and the cost of overtime premium. For example, between 1974 and 1978 MTC's driver requirement increased because of rising absenteeism, but MTC did not adjust its method for computing its driver complement. Consequently, MTC had to pay unusually large amounts of overtime in order to complete as much scheduled service as possible. According to PMM&Co., the cost of unscheduled premium or overtime pay per vehicle mile was higher for MTC in 1978 than for any other transit system surveyed. A more efficient alternative for MTC would have been to hire additional drivers.

The relative shortage of drivers also led to breakdowns in service reliability. Frequently, MTC could not find enough drivers willing to work overtime in order to complete the scheduled service. Consequently, unusually large numbers of scheduled trips were missed during the past few years, particularly in 1978 and early 1979. In the summer of 1978, three to four percent of scheduled rush hour bus trips were missed, amounting to an average of 52.9 bus trips per week day, while prior to 1977, MTC had been able to keep missed rush-hour trips to less than one percent. While some missed trips occurred because of unavailable buses, MTC attributed most of the missed trips to driver shortages.

In 1979, MTC management recognized the problem and began to experiment with a new method for estimating its driver requirements. MTC increased its driver complement during the summer of 1979 and has closely monitored its effect. MTC found that its new work force planning strategy improved efficiency and caused missed trips to rapidly decline. As illustrated in Exhibit 3, missed trips for fall 1979 were lower than for any three month period over the last four years.

The shortage of drivers prior to the fall of 1979 caused MTC dispatchers to offer bonus "call time" payments in addition to overtime premiums in order to persuade drivers to work overtime and complete more of the service. Although MTC managers have adopted a policy to end such payments, PMM&Co. found that bonus "call time" payments are still being made, although such payments are not required by MTC's labor contract. Although the exact savings from ending all remaining bonus "call time" payments are not known, the savings are likely to be small.

3. DRIVER ABSENTEEISM AT MTC HAS BEEN INCREASING AND IS NOW HIGHER THAN THE NATIONAL AVERAGE.

Absenteeism results in higher costs--directly through the payment of regular compensation and indirectly through additional

EXHIBIT 3

MTC MISSED TRIPS: 1976 - 1979

Year	Season	Average Weekday Missed Trips* (16 per day is approximately one percent of peak hour trips)	
1976	Winter	25.4	
	Spring	11.1	
	Summer	8.8	
	Fall	11.0	
1977	Winter	9.3	
	Spring	8.1	
	Summer	22.1	
	Fall	25.9	
1978	Winter	26.6	
	Spring	25.6	
	Summer	52.9	
	Fall	24.3	
1979	Winter	39.8	
	Spring	10.0	
	Summer	23.1	
	Fall	5.2	9/79 drivers increased at all divisions

*
The term "missed trip" refers to an entire bus assignment (from leaving the garage to returning) that is not operated. These assignments vary in how many times a bus goes back and forth along a route. Since dispatching personnel attempt to eliminate only the shortest vehicle assignments, three percent missed trips translates to less than three percent missed miles or hours of service.

DATA SOURCE: MTC, 1979.

overtime payments or additional fringe benefits for extra drivers used to replace absent drivers.

MTC's absenteeism has increased significantly over the past few years. While this is true for most transit systems, MTC's absence rate is higher than average. MTC's absence rate for sick leave increased from 6.1 percent in 1976 to 8.2 percent in 1978. The absence rate due to injuries covered by workers' compensation also increased during this time period. Out of 13 systems with more than 500 drivers, MTC's absence rate was fourth highest in 1978, according to a PMM&Co. survey.

PMM&Co. concluded that the following factors may have contributed to MTC's increased absenteeism:

a. Availability of Overtime

Drivers are not paid for the first three days they report in sick. However, when there is a driver shortage, drivers can count on working their scheduled day off and receive time-and-a-half pay for that day even though their total work week might not exceed 40 hours. Consequently, drivers who report sick one day and work on their scheduled day off will receive 44 hours of pay for 40 hours of work.

b. Lack of a Uniform Discipline/Reward System

PMM&Co. found that MTC did not have a uniform performance program which disciplined or rewarded drivers on the basis of all types of absenteeism. The driver shortage also made it difficult to effectively discipline drivers with suspension because supervisors needed every available driver to complete the scheduled service.

c. Low Employee Morale

The results of a PMM&Co. attitudinal survey indicate morale problems among drivers. This may also contribute to MTC's absenteeism problem.

d. Increased Claims for Workers' Compensation

The number of drivers unavailable for work due to injuries covered by workers' compensation has risen sharply at MTC in recent years. The increasing number of workers' compensation claims is discussed in detail in Chapter IV on Claims.

PMM&Co. found that the implementation of a uniform performance code would help in controlling MTC's absenteeism problems and reducing the additional overtime costs caused by absenteeism.

4. MTC CAN REDUCE ITS COSTS BY REFINING ITS SCHEDULING TECHNIQUES.

PMM&Co. found that MTC's scheduling techniques are generally efficient and progressive compared to other transit systems. Efficient scheduling is one of the factors which has enabled MTC to have below average driver costs per bus mile driven.

PMM&Co. found, however, that MTC can arrange work assignments more efficiently by reducing guarantee time payments--paying full-time drivers for 8-hours even if they work less than 8 hours in a day. In 1978, MTC paid approximately $1.5 million in guarantee time payments, including associated fringe benefits.

Most of this guarantee time is unavoidable because the large number of peak hour trips makes it impossible to arrange all work assignments into 8 hour days. MTC's ratio of guarantee time to work performed is, however, almost 33 percent higher than that of the second highest system surveyed by PMM&Co., even though MTC's contract provisions for guarantee time are similar to these other systems.

In order to test whether MTC's driver labor costs might be reduced by improving MTC's scheduling, PMM&Co. selected and examined schedules for two MTC routes, which represent approximately 8 percent of MTC's regularly scheduled runs. They found four situations where rearranging work assignments could reduce driver labor costs. While one of these four suggested changes may not be feasible because of union contract restrictions, the other three changes would reduce costs by $6,500 per year.

Another method for reducing MTC's driver labor costs is to phase out "short-runs"--driver assignments that contain between 5½ and 6½ hours of work for 8 hours of pay. The 1½ and 2½ hours that are not worked is "guarantee time." Short runs are themselves composed of short morning and evening pieces that are difficult to combine into 8-hour runs. The disadvantage of placing short runs into a regular schedule is that it increases the cost of service because drivers are assured in advance of receiving the guarantee pay. MTC has reduced the number of short runs from about 75 to about 60 by assigning some short pieces of work to part-time drivers. Since part-time drivers do not receive guarantee pay, this can be an effective way to reduce costs. PMM&Co. concluded that costs could be further reduced by assigning the work contained in the remaining short runs on a daily basis. The advantage of assigning this work on a daily basis is that MTC has the option of combining them with special runs or charters, operating them at overtime by operators with regular runs, or leaving the

pieces of work intact. By maintaining several options, MTC's staff could select the most efficient option available to them on a daily basis.

MTC staff stated that the disadvantage of assigning short runs on a daily basis is that a different driver may operate the run each day. As a result, service reliability may be reduced. If, on certain short runs, reliability is a problem when daily assignments are made, MTC could instead assign part-time drivers to those short runs. Thus, guarantee time payments could be reduced while retaining sufficient reliability on those runs.

While PMM&Co. believes the potential overall cost savings is "substantial," PMM&Co. did not attempt to estimate those savings. To estimate the savings would require an intensive review of "short runs" and guarantee payments by MTC's Routes, Schedules, & Planning Department. The implementation of a computerized scheduling program in late 1980 will facilitate a review of guarantee payments. It should be noted, however, that MTC staff could manually review the schedules on MTC's routes as PMM&Co. did for two routes. Rearranging work assignments on schedules does not require use of the computer program.

5. SERVICE MONITORING AND EVALUATION PROCEDURES AT MTC ARE STRONGER THAN MOST TRANSIT SYSTEMS. HOWEVER, SOME IMPROVEMENTS CAN BE MADE.

MTC's monitoring and service evaluation procedures determine how well MTC responds to changing ridership on individual routes. PMM&Co. concluded that MTC's procedures for monitoring and evaluating service are generally strong compared to other transit systems. They found that:

- MTC's passenger load review procedures allow MTC to effectively respond to changes in ridership by indicating which schedules need adjustments in their times and which routes need more or fewer bus trips.

- Routes, Schedules, & Planning is currently operating under guidelines established by the commission in 1977 which limit the maximum subsidy per passenger on a trip and route basis. The times between buses on routes that do not meet the standard are extended in order to increase the passengers per trip. PMM&Co. found that this process is more objective than those used by most transit systems.

Nonetheless, PMM&Co. found some problems with MTC's existing service evaluation process:

- Ridership on individual routes and trips is estimated with trip sheet data filled out by drivers. MTC selects one weekday, one Saturday, and one Sunday to represent the ridership for a month. Because ridership can vary from day to day due to changes in weather, these ridership samples may not be truly representative and thus may bias the estimates. Furthermore, since ridership on some routes may be more sensitive to weather changes than for other routes, this sampling method may present inequitable comparisons among routes.

- Passenger trips are used to compare routes regardless of their trip lengths. For a more valid measure of service benefit, both the number of trips and the miles traveled by passengers should be included.

- Costs are allocated among routes and trips purely on the basis of miles and hours. More accurate estimates of the actual marginal cost of the defined service increment, e.g., a trip, can be made with existing data. Scheduling data can be used for accurate driver cost estimates while maintenance and fuel costs could be estimated by average speed or type of service. MTC is currently undertaking a federal study to develop more accurate costing techniques for service revisions; such a study will help to eliminate this bias in MTC's current route evaluation methods.

C. RECOMMENDATIONS

Implementing the following three recommendations could reduce MTC's operating costs. The first recommendation probably has the greatest potential for improving MTC's efficiency. The savings from the second recommendation would likely be very small. Savings from the third recommendation cannot be predicted.

1. In order to reduce guarantee time payments, MTC should refine its scheduling techniques. Cost savings would result from rearranging work assignments or from phasing out "short runs" and assigning the work on a daily basis. Greater use of part-time drivers, to the extent permitted by MTC's labor agreements, would also reduce guarantee time payments.

2. MTC should discontinue making bonus "call time" payments to persuade drivers to work overtime.

3. MTC should implement a uniform performance code which regulates as many types of absence as possible. The code should be developed and enforced in cooperation with employee representatives.

Implementing the following recommendations would improve MTC's route evaluation methods by providing better and more accurate information on the costs and benefits of individual bus routes and trips.

4. MTC should implement a statistically reliable method for monitoring ridership which would include periodic route profiles along all links of each route.

5. MTC should consider the average passenger trip length as well as the number of passengers when evaluating service.

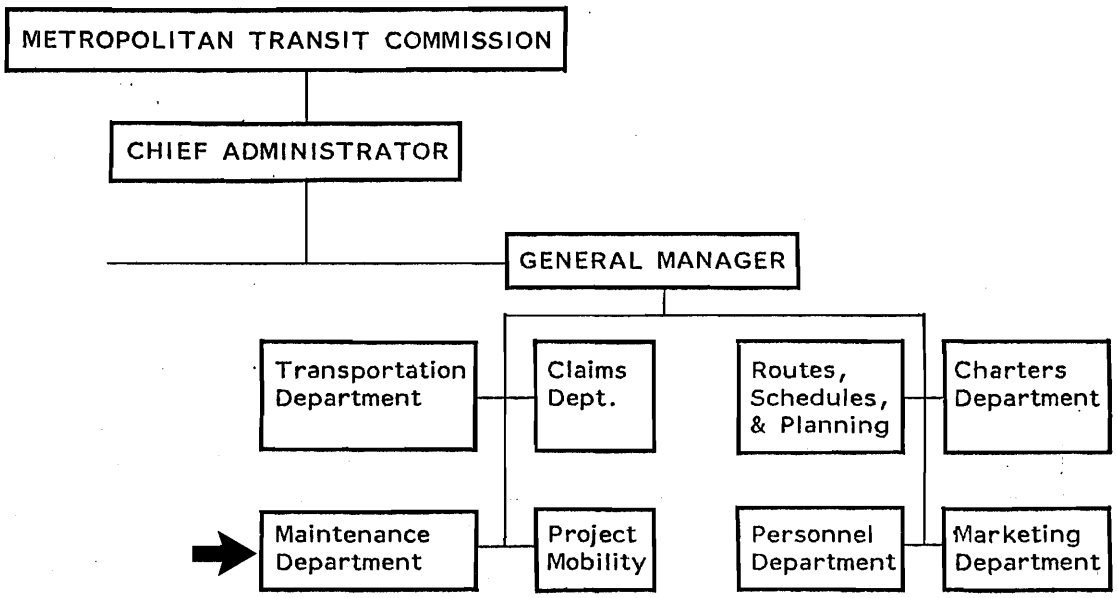
6. MTC should develop more accurate estimates of the cost implications for adding or cutting individual bus trips.

These recommendations are explained in greater detail in PMM&Co.'s "Bus Operations Report," which is available from the Program Evaluation Division.

II. MAINTENANCE

A. INTRODUCTION

This chapter examines the performance of MTC's Maintenance Department. As part of the Transit Operating Division (see diagram below), the Maintenance Department is responsible for providing reliable vehicles so that bus schedules can be met. The Department is also responsible for minimizing MTC's long-run vehicle costs.



In this chapter, we examine the cost of MTC's maintenance program compared to other systems, and the mechanical reliability of MTC's buses. We focus on two key areas which have influenced the effectiveness of MTC's maintenance program: preventive maintenance and recruitment of personnel.

B. CONCLUSIONS AND FINDINGS

1. ALTHOUGH MTC'S MAINTENANCE COSTS HAVE BEEN LOW COMPARED TO OTHER SYSTEMS, THE MECHANICAL RELIABILITY OF ITS BUSES HAS ALSO BEEN LOW.

MTC's maintenance cost per mile is lower than other transit systems. According to PMM&Co.'s survey, MTC's direct

maintenance cost in 1978 was $339 per 1,000 miles compared to an average of approximately $400 for six other systems. The only two systems with lower costs than MTC were Seattle and Oakland, both of which benefit from mild winters. The reason for MTC's low maintenance costs is that the number of mechanic hours worked per 1,000 bus miles driven is 17 percent lower than the average for the other six systems.

In recent years, however, there has also been a serious decline in service reliability due to maintenance problems. Road calls due to maintenance failures steadily increased in frequency from 1972 to 1979. The average number of miles between road calls was 2,651 in 1979, compared to 8,953 miles between road calls in 1972. Furthermore, MTC had to increase its bus fleet faster than it increased service because a growing proportion of buses were out of order. At various times, particularly during winter, MTC has had so many buses out of order that there were not enough to complete the scheduled service. Exhibit 4 indicates that MTC has a higher than average proportion of spare buses compared to the six other systems covered in PMM&Co.'s survey. A large number of spare buses generally indicates that a large number of buses are out of order.[1]

Although MTC's low maintenance costs and low mechanical reliability are related, they did not result from a conscious decision on the part of MTC's management. Instead, both are in part a result of MTC's inability to adhere to a preventive maintenance program. This inability to perform needed preventive maintenance is in turn the result of a number of factors which have limited the amount of space and number of personnel available to do preventive maintenance. These factors are discussed in the next section.

2. LOW VEHICLE RELIABILITY IS DUE IN PART TO MTC'S INABILITY TO ADHERE TO AN EFFECTIVE PREVENTIVE MAINTENANCE PROGRAM. TRANSMISSION MALFUNCTIONS BEYOND MTC'S CONTROL AND INADEQUATE SPACE FOR MAINTENANCE OPERATIONS, HOWEVER, HAVE PREVENTED MTC FROM ADHERING TO AN EFFECTIVE PREVENTIVE MAINTENANCE PROGRAM.

An effective preventive maintenance program has three essential elements:

- A reliable method of scheduling vehicle inspections;
- Timely adherence to the inspection schedule; and
- An effective system for replacing component bus parts before they fail.

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[1] In computing spare buses, only buses housed in MTC garage or parking facilities are included. Buses in storage are not included.

PMM&Co. found that MTC's method of scheduling vehicle inspections is unreliable and should be modified. PMM&Co. also found that MTC has fallen significantly behind its inspection schedule and is no longer performing preventive maintenance on bus parts at pre-determined mileage intervals. In general, MTC has been unable to maintain an effective preventive maintenance program and has consequently experienced a large number of mechanical breakdowns while buses are in service.

It should be understood that a number of factors have constrained MTC's ability to perform preventive maintenance. First, MTC has lacked sufficient facility space to perform scheduled inspections and preventive maintenance. Since 1972, MTC's bus fleet has increased by over 30 percent. During the same period, however, MTC has not added any additional space for heavy maintenance work. This problem should be alleviated with the opening of a new major overhaul facility in 1980. With this facility, MTC will have expanded the number of work stations for heavy maintenance from 18 to 50. Second, MTC has experienced transmission malfunctions beyond its control. Extensive breakdowns of the V-730 transmissions in a certain fleet of buses have tied up heavy maintenance facilities and limited MTC's ability to use those facilities for preventive maintenance. Finally, MTC has experienced certain difficulties in recruiting and retaining qualified mechanics and supervisors.

While MTC's Maintenance Department has faced difficulties, certain improvements can be made. Improvements in each area of preventive maintenance are discussed below.

a. Vehicle Inspection Scheduling

MTC determines when a bus should be inspected by taking weekly odometer readings and projecting inspection times on the basis of the systemwide average daily mileage per vehicle. PMM&Co. concluded that this is too inaccurate because of the large variance in actual daily mileages among buses. In the past, because of the unreliability of MTC's inspection scheduling methods, inspections at the desired mileage intervals have been missed for some vehicles. This can result in a greater number of vehicle breakdowns on the road.

Inspection schedules would be more accurate if they were based on scheduled mileage for each bus or on a daily mileage check made by the driver of each bus. MTC is developing a management information system which should improve its scheduling system. However, PMM&Co. concluded that because of possible delays in implementing the management information system, MTC currently needs to develop an improved inspection system independent of the planned management information system.

EXHIBIT 4: INTER-CITY COMPARISON FOR MAINTENANCE

		6 Systems			
	MTC	Average	Low	High	MTC's Rank
Direct Maintenance Cost per 1,000 Miles	$339	$400	$279	$500	3rd lowest of 7
Mechanic Hours Worked per 1,000 Miles	19.4	23.5	17.8	29.1	2nd lowest of 7
Spare Factor (number of vehicles not used during peak hours as percent of peak hour buses)	16%	14%	6%	19%	3rd highest of 7
Miles Between Road Calls Chargeable to Maintenance	2,791	3,289	(only one response)		

NOTE: The other six systems were Baltimore, Chicago, Detroit (SEMTA), Milwaukee, Oakland, and Seattle. The data was provided for either 1978 or fiscal year 1979.

DATA SOURCE: PMM&Co., 1979.

b. Vehicle Inspection Adherence

PMM&Co. found that MTC has fallen significantly behind its inspection schedule. Several factors have contributed to this situation. The severe winter of 1978-1979 resulted in a large number of road calls which disrupted mechanic work schedules, including scheduled inspections. Further, the lack of adequate garage space and the personnel problems discussed below have also limited the ability of MTC to adhere to its schedule.

PMM&Co. concluded that more staff may be needed to adhere to the inspection schedule. Exhibit 4 indicates that at MTC, the number of mechanic hours worked per 1,000 miles is significantly less than the average of other systems. MTC's 1980 budget proposal increases the ratio of mechanics per 1,000 miles by nearly 10 percent over its 1978 level. While this will increase MTC's maintenance costs, they will still be below the average of other systems. After MTC increases its maintenance staff, the number of mechanic hours worked will be approximately 21.3 per 1,000 miles, which is still less than the multi-system average of 23.5 hours per 1,000 miles.

If MTC is unable to adhere to its inspection schedule even with the increased staff and work space becoming available in 1980, MTC should increase the amount of mileage between inspections rather than following the inspection schedule for some buses but skipping inspections for others. In that way, all vehicles will be subject to periodic inspections.

c. Component Parts Maintenance

MTC previously had a formal preventive maintenance program for particular component parts whereby parts would be replaced at pre-determined mileage intervals. However, MTC has abandoned this program and is now relying on corrective maintenance. If parts are not replaced in the shop at specified mileage intervals based either on inspections or on historical failure points, they will inevitably fail while on the road. This is demonstrated by the three-fold increase in road call frequency between 1972 and 1979.

Extensive breakdown problems encountered with the V-730 transmissions on over 300 buses further threw the component maintenance program off schedule; however, MTC has gained control of this problem. MTC has caught up in repairing failed transmissions and is now doing preventive maintenance according to key indicators as opposed to pre-determined mileage intervals.

However, as mentioned above, MTC does not currently use preventive maintenance for any other parts. Consequently, these parts will often fail while a bus is on the road. In order to determine which parts should be replaced at pre-determined mileage intervals, MTC should track particular part histories and determine whether some parts consistently fail at particular mileage intervals.

3. MTC FACES DIFFICULTIES IN RECRUITING AND RETAINING QUALIFIED MECHANICS AND SUPERVISORS.

PMM&Co. found that the following factors have limited the development of an effective maintenance staff:

- Recruitment. MTC's labor contract requires that all new maintenance employees start out as bus cleaners and that to qualify as a cleaner one must pass a mechanical aptitude test and possess a class B driver's license. These requirements discourage qualified mechanics from applying because they do not want to clean buses, and it prevents cleaners who have no qualifications to become a mechanic from applying and being hired as cleaners.

- Bidding. The labor contract requires MTC to post all maintenance positions for open bidding and allows maintenance employees to bid back and forth for positions. Maintenance employees of different types (engine, body, electrical, air conditioning, etc.), are all permitted to bid on any maintenance job. PMM&Co. suggested that frequent job switching among employees in these different maintenance areas has resulted in a significant loss in experience per position.

PMM&Co. found that MTC has recognized these problems and has responded to them with some success; however, PMM&Co. suggested that certain further action be taken.

- MTC has negotiated with the transit union in an attempt to change recruitment and bidding provisions. While no changes have been made in the recruitment provisions, MTC has made progress in the area of bidding by:

  a) negotiating the conversion of several mechanic positions to senior mechanic in an attempt to retain employees in their current position; and

  b) negotiating the separation of the radio and vehicle maintenance functions. This allows MTC to control job transfers between these two functions.

  According to PMM&Co., negotiating similar agreements such as the separation of building maintenance from vehicle maintenance would also discourage counter-productive bidding. PMM&Co. also concluded that MTC could further ensure that positions are filled by qualified employees by enforcing probationary periods when employees bid on new positions for which they are not qualified. PMM&Co. found that MTC has not actively used this option.

- In order to improve employees' training, MTC has sent air conditioning mechanics to classes sponsored by an air conditioning vendor. PMM&Co. concluded that even more extensive classroom training would be an effective supplement to on-the-job training.

C. RECOMMENDATIONS

1. In order to reduce mechanical failures in buses that are on the road, MTC should implement a more reliable inspection scheduling system, as outlined above, and closely follow that schedule. This scheduling system should be developed independent of the planned management information system because of possible delays in implementing the information system. If MTC is unable to immediately adhere to its schedule, it should increase the mileage interval between inspections for all buses rather than meeting the schedule for some buses, but skipping inspections for others.

2. In order to re-establish a preventive maintenance program for bus parts at a later date, MTC should track part histories to determine if meaningful mileage intervals can be established for replacement of particular parts.

III. PROCUREMENT

A. INTRODUCTION

This chapter examines the MTC procurement procedures and activities which directly support bus maintenance and operations. We examined the acquisition of operating materials and supplies because they are a major cost, second only to labor expenditures, and because the success of the procurement program directly affects the availability and the reliability of buses.

Procurement is becoming even more significant as "materials and supplies" becomes a greater portion of MTC's operating budget. In 1980, MTC expects to spend approximately 19 percent of its total operating budget, or nearly $16 million, on operating materials and supplies. This compares to 15 percent in 1979 and 11 percent in 1978. (See Exhibit 5.) The major expenditures are for fuel and lubricants, bus repair parts, and tires.

The Purchasing & Stores Division of MTC's Finance Department is responsible for MTC's procurement. Its primary duty is to acquire and maintain inventories of fuel and transit vehicle parts and supplies. The manager of Purchasing & Stores reports to the Director of Finance, who in turn reports to the Chief Administrator (see diagram below). The Program Management & Evaluation Department has limited responsibility for processing procurement of items which cost $10,000 or more, i.e., brake blocks and drums, engine and heating oil, fuel, and mechanics' uniforms. One staff member of the Program Management & Evaluation Department works closely with the Purchasing & Stores manager when such supplies are needed.

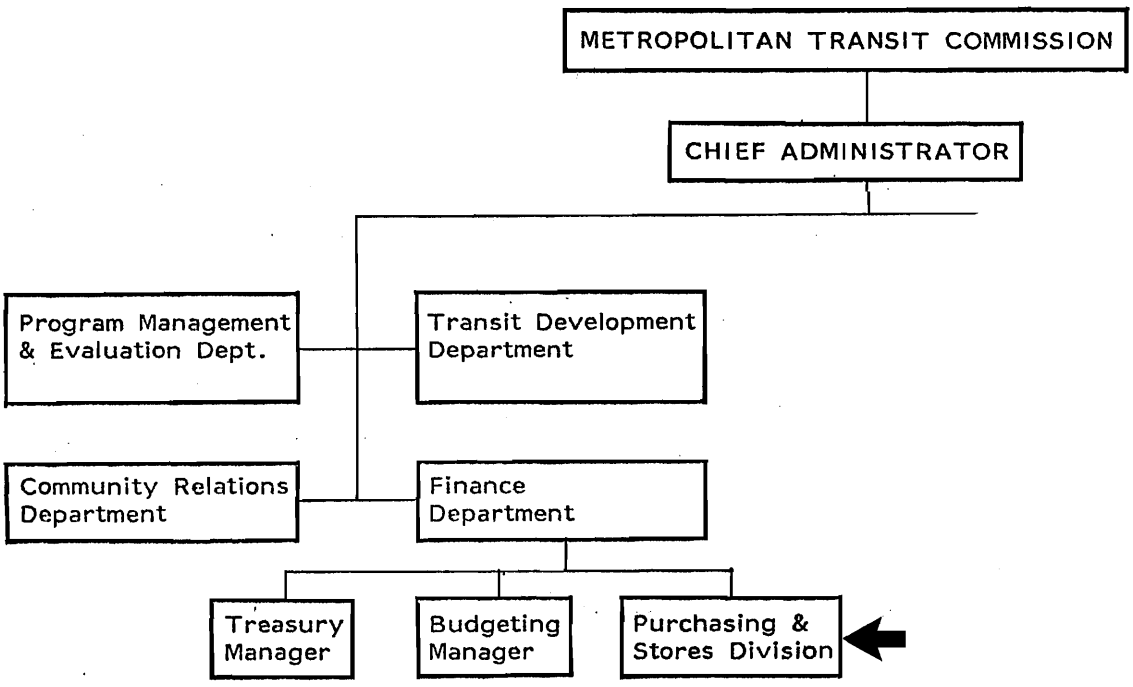
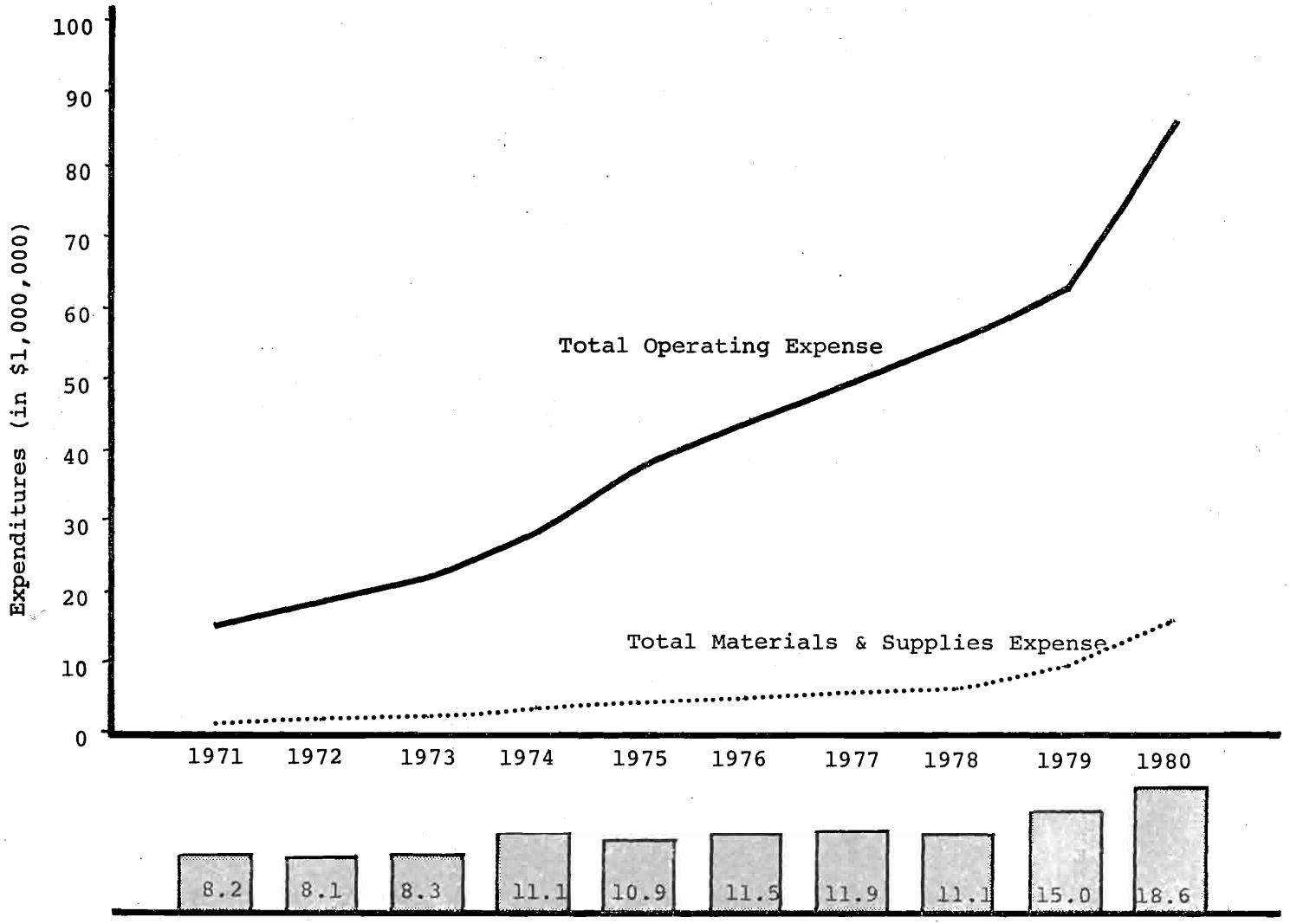


EXHIBIT 5
COMPARISON OF TOTAL OPERATING EXPENDITURES
TO PROCUREMENT EXPENDITURES: 1971 - 1980



DATA SOURCE: MTC, 1979

The objective of procurement procedures is to make available a sufficient variety and quantity of materials and supplies at the lowest possible cost. We evaluated the extent to which MTC's procurement procedures and activities meet this objective.

Our findings and conclusions are detailed below in three sections. The first section describes and explains the reasons for procurement cost increases from 1971 to 1978. The second section examines whether MTC's procedures and activities result in excessive expenditures for materials and supplies. The last section discusses the effectiveness of MTC's inventory controls, i.e., whether procurement procedures and activities impair bus fleet availability.

B. CONCLUSIONS AND FINDINGS

1. SOME FACTORS CONTRIBUTING TO RISING COSTS ARE BEYOND MTC'S CONTROL.

a. Fuel

One of the major reasons for increased supply expenses has been the escalating cost of fuel. Exhibit 6 shows how fuel and lubricant expenses have been rising more rapidly than other material and supply costs since 1978, and it reflects the fuel crises of 1974 and 1979. The price paid by MTC for diesel fuel has risen from 12¢/gallon in 1971 to a projected $1.21 by the end of 1980. Projected fuel costs in 1979 and 1980 are based upon past fuel consumption rates at MTC (approximately 1 gallon for every 4 miles of service). MTC expects to spend $10 million for fuel and lubricants in 1980, which is over 13 percent of its total operating budget for regular transit services.

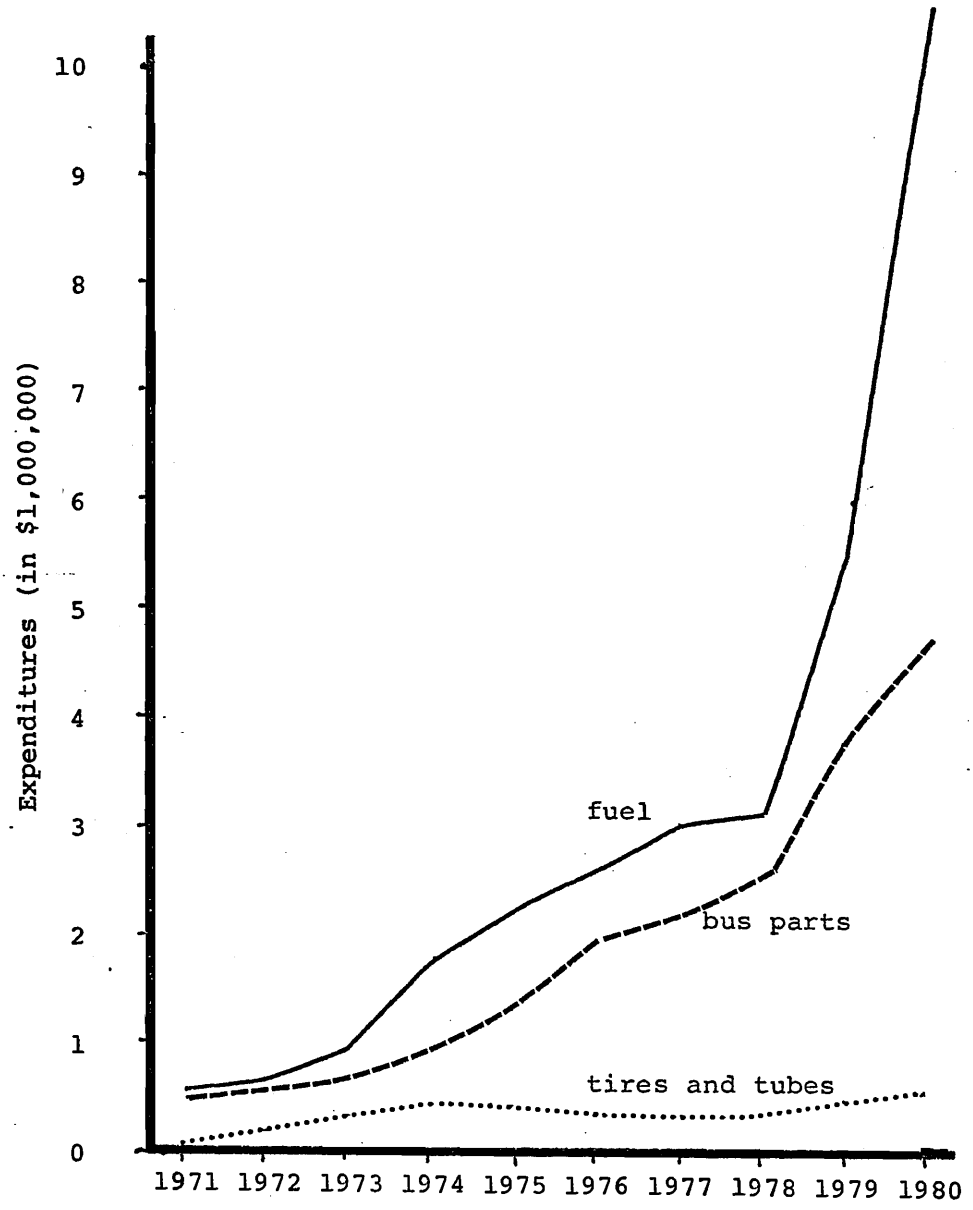
Currently, MTC has a one-year supply contract with a major oil company that provides for price escalations. In other words, MTC is guaranteed delivery of all the fuel it needs for one year, and the price paid is determined by the supplier. MTC receives written notice of price changes, and all deliveries are paid for at the price set forth in the last notice. Even though fuel and lubricant cost increases have closely followed market increases, MTC staff suggest that cost savings might be achieved by negotiating a shorter term supply contract which specifies a fixed price.

b. Bus Parts

The second major material operating expense is for bus parts (see Exhibit 6) which is projected to be over $5 million in 1980. We found that expenditures for bus parts and supplies depend largely on the degree to which new bus types are similar to

EXHIBIT 6

BREAKDOWN OF PROCUREMENT EXPENDITURES:
1971 - 1980



DATA SOURCE: MTC, 1979.

the older buses in the MTC fleet. Three factors account for overall cost increases: (1) inflation in the cost of bus parts; (2) increases in fleet size with corresponding increases in the quantities of items previously held in stock; and (3) increases resulting from the introduction of new items to the inventory that are necessary to support maintenance of new and different bus models. We conclude that the third factor is the most significant contributor to inventory value increases and the rising expenditures for bus parts. Exhibit 7 shows that inventory-value increases are not explained by inflation or bus-fleet size alone. The shaded area of Exhibit 7, which shows the difference between actual inventory value for 1978 (line A) and the 1971 inventory value updated to 1978 for inflation and fleet size (line B), represents the inventory increase attributable solely to procurement of different bus models.

As of September 30, 1979, MTC's operational bus fleet totaled 1,035 buses and was composed of 11 different models. MTC estimates that to maintain and operate these buses, it will be necessary to keep over 25,000 different bus parts in inventory in 1980. This compares to approximately 6,000 items kept in 1971 when the fleet had 635 buses and 3 different models. Because of Urban Mass Transit Authority guidelines which regulate expenditure of federal monies, MTC has not been able to specify and obtain the exact bus model it wants to purchase. This has led to the wide variety of models it now owns. Thus, we conclude that while MTC uses measures to minimize costs, as is discussed below, overall cost increases for bus parts are largely beyond MTC's control.

c. Tires

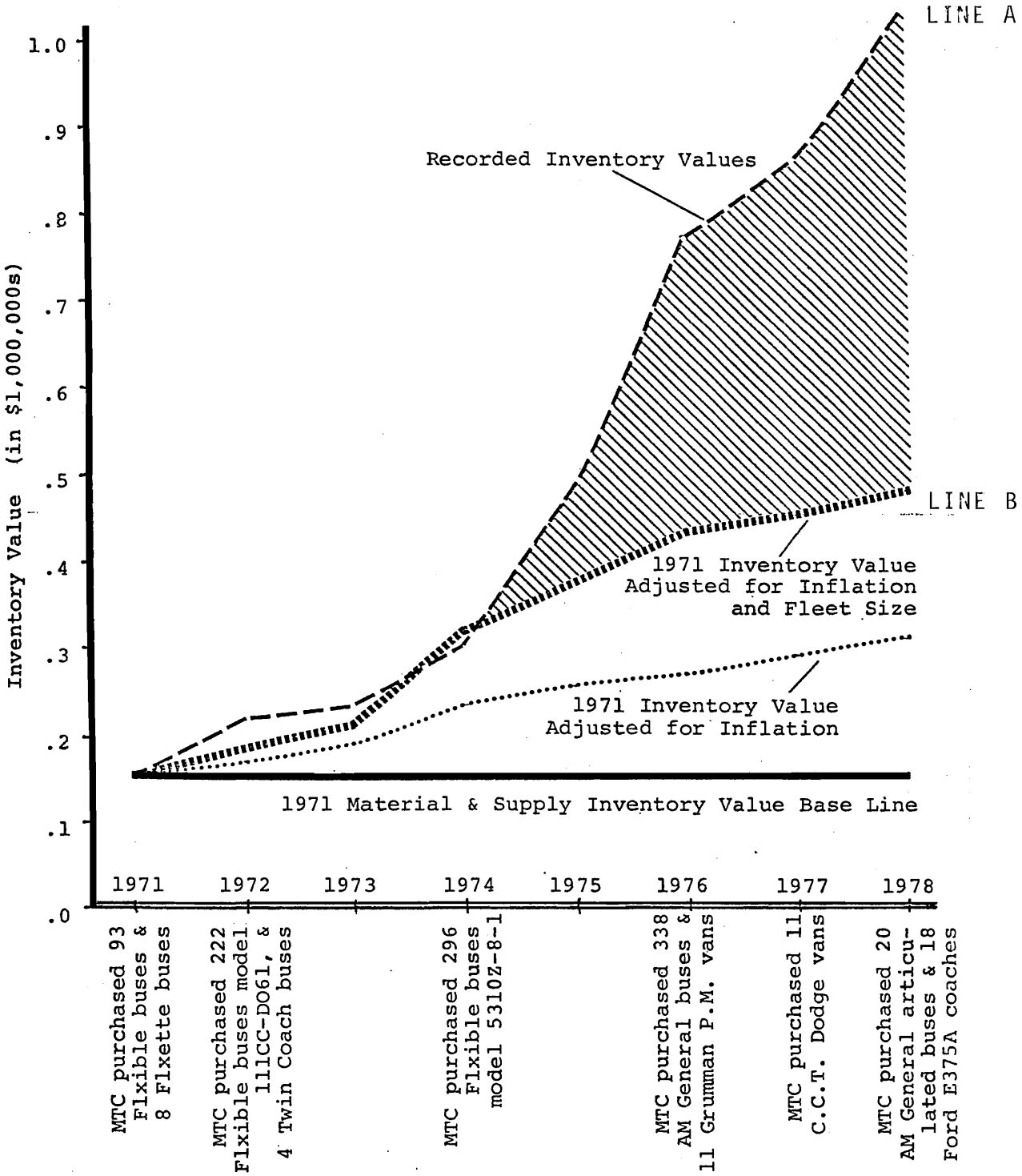
The third major expense item for operating materials and supplies is tires. Compared to the costs for fuel and bus parts, tire costs have remained rather constant. (See Exhibit 6.) Nevertheless, between 1971 and 1979, tire expenses have increased from $.007/bus/mile to $.015/bus/mile and are projected to account for $500,000 in 1980. Some of this increase is due to increased wages and manufacturing costs. During the period from 1971 to 1979, MTC has had several contracts with a major tire company for the leasing and servicing of special high-mileage, low-speed transit tires. In 1980, in an effort to minimize costs, MTC will decide whether to renew the current contract or attempt to negotiate a more favorable agreement with a different tire company.

2. PROCUREMENT PROCEDURES ARE DESIGNED FOR ECONOMIC PURCHASING. HOWEVER, THESE PROCEDURES ARE INADEQUATELY DOCUMENTED.

The procurement function at MTC is highly centralized, with authority, responsibility, and control vested in Purchasing & Stores personnel. In addition, Purchasing & Stores procedures are

EXHIBIT 7

INVENTORY VALUES ADJUSTED FOR
INFLATION AND FLEET SIZE



DATA SOURCE: MTC, 1979.

designed to result in an efficient purchasing program. We observed that Purchasing & Stores personnel consistently follow one of four procedures when acquiring merchandise, each of which involves comparative pricing and competitive bidding among suppliers. We noted that Purchasing & Stores personnel routinely request information on volume discounts and challenge price changes. While bid selections involve considerations of availability and quality, we found that suppliers offering the lowest bids are consistently selected and that exceptions are appropriately documented. Purchasing & Stores also record supplier information regarding defective products, shipment shortages, and delayed deliveries. We found that Purchasing & Stores ensures that adequate numbers of responsive bids are received by distributing bid requests to large numbers of suppliers. Purchasing & Stores personnel also review trade publications and flyers, attend trade shows, and have regular contact with sales people. We conclude that Purchasing & Stores does not overlook potential suppliers, and that it minimizes procurement costs by maintaining contact with and ensuring competition among a large group of reliable suppliers.

Even though Purchasing & Stores procurement procedures result in a consistent daily routine and ensure that all appropriate activities are performed, we found that there are no written materials which describe and document the procedures. MTC Administrative Regulations Article IX, pertaining to procurement, sets forth minimum requirements and safeguards, but flowcharts and detailed explanations of approved procedures do not exist. Thus, the continuity of the procurement function could be disrupted in the event that key Purchasing & Stores personnel become severely ill, resign, or retire.

3. THERE IS NO EVIDENCE OF CURRENT PROCUREMENT INEFFECTIVENESS, BUT AVOIDABLE STOCKOUTS HAVE OCCURRED. A CHANGE IN THE PROCEDURE FOR ORDERING SUPPLIES IS NECESSARY TO PREVENT FUTURE IMPAIRMENT OF BUS SERVICE.

From user department personnel, we learned that while stockouts have occurred (i.e., Purchasing & Stores does not have an item in stock at the time it is requested), they are infrequent and have not caused serious problems. Though we conclude that Purchasing & Stores currently operates at an adequate level of effectiveness, there are problems which could produce stockouts of important items.

For example, we learned that inventory control records did not accurately reflect the stock levels during MTC's most recent physical inventory check. The net discrepancy between the financial ledgers and the physical count indicated that there was $30,000 more inventory in stock than was shown in the ledger accounts. Finance personnel attributed the variance to the recent change in the accounting system and to the inexperience of new personnel who

may have made errors in coding supplier invoices. In the same physical inventory check, stock card balances in the inventory records located in Purchasing & Stores misrepresented the numbers actually contained in storage bins 16 percent of the time. Sixty-two percent of the erroneous balances were higher than the bin count. When the actual inventory is less than the record inventory, the likelihood of stockouts greatly increases. Purchasing & Stores personnel believe that the errors occur when material handlers in the storeroom fail to make credit and charge card entries correspond with receipt and distribution of inventory items.

Occasional and avoidable stockouts on some bus parts were also noted on inventory stock cards, though there is no indication whether they actually impaired bus service. (MTC does not document the extent to which bus maintenance is hindered by stockouts.) The stockouts were avoidable because the quantities remaining in inventory were insufficient to cover MTC's expected usage from the time the parts were ordered until new shipments arrived. Stockouts which occur after an item is ordered indicate that the procurement procedure should have been initiated sooner.

Currently, Purchasing & Stores reorders a bus part when the inventory level falls to 50 percent of the amount last ordered. In the past, this method has been effective in ensuring an adequate supply of materials for the Maintenance Department. However, we conclude that continued use of the reorder method will become increasingly ineffective. Purchasing & Stores personnel informed us that the time it takes to receive supplies after they have been ordered has been increasing. Also, several key personnel with many years experience in the bus part supply industry will soon retire from Purchasing & Stores. In view of these changes, the physical-to-record inventory discrepancies, occasional stockouts, and expected expansion in the volume of inventory, we foresee an increased risk in bus part stockouts which could reduce the number of operational buses available for service.

C. RECOMMENDATIONS

1. MTC management should document all procurement procedures followed by Purchasing & Stores to ensure stability, continuity, and consistency in the event of staff turnover, and for purposes of general accountability.

2. Purchasing & Stores managers should act to reduce the potential for occurrence of stockouts by:

    a) providing better training and closer supervision of material handlers to ensure prompt and accurate recording of receipt and distribution of inventory items; and

b) initiating the reorder procedure when the inventory balance is slightly higher than the product of the length of time required for delivery and the average number of parts used during the period. This formula will help ensure that the inventory balance at the time of ordering will be sufficient to meet demand until the shipment arrives.

IV. CLAIMS

A. INTRODUCTION

MTC estimates that it will have paid approximately $5 million in casualty and liability expenses in 1979. Exhibit 8 presents MTC claim expenses from 1971 to 1978 for the four major expense categories: liability payments, insurance, legal services, and administration. Claim expenses have increased greatly during this period, particularly since 1974. While total claim expenses increased from $446,000 in 1971 to $725,000 in 1974, since 1974 they have increased by $700,000 per year, reaching $3.66 million in 1978. Liability payments alone account for 81 percent of the increase between 1974 and 1978. Furthermore, workers' compensation payments account for almost 60 percent of the total liability incurred by MTC in 1978 (see Exhibit 9).

Administration of MTC's liability payments is handled by the Claims Department, which is within the Transit Operating Division (see chart below). The Claims Department is concerned with accidents involving buses and with the resulting claims for injuries and damages brought by passengers, pedestrians, motorists, and MTC employees. To process these claims, department staff investigate accidents; interview witnesses; verify, evaluate, negotiate and settle claims; set up reserves for paying benefits; execute and record payments; and coordinate the administration of cases that involve legal proceedings. With regard to all of these activities, the primary management objective is to minimize claims expenses while ensuring correct payment of benefits for valid claims.

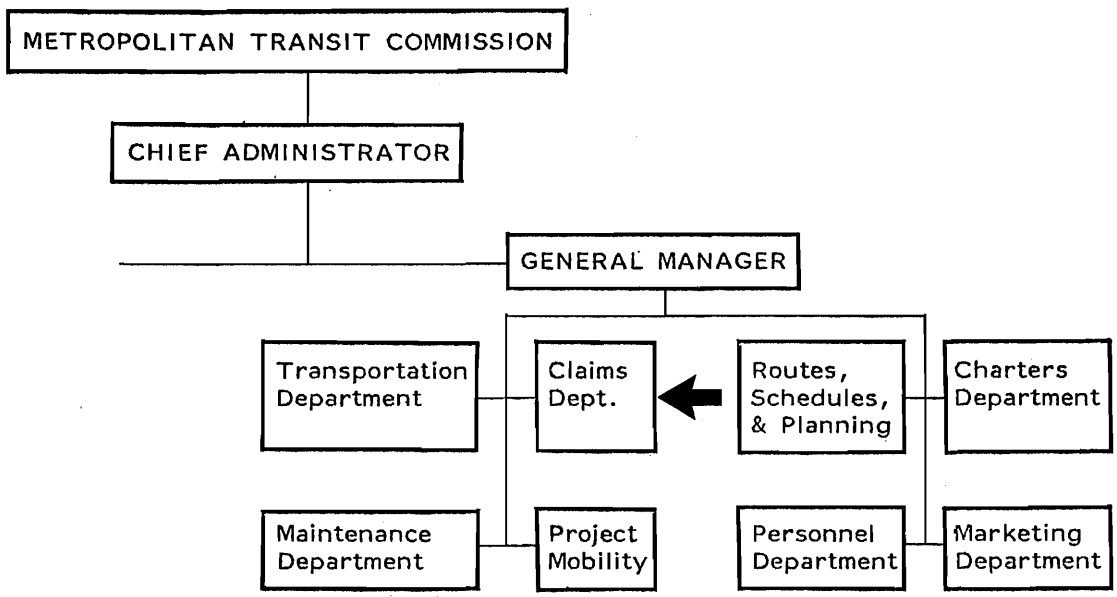
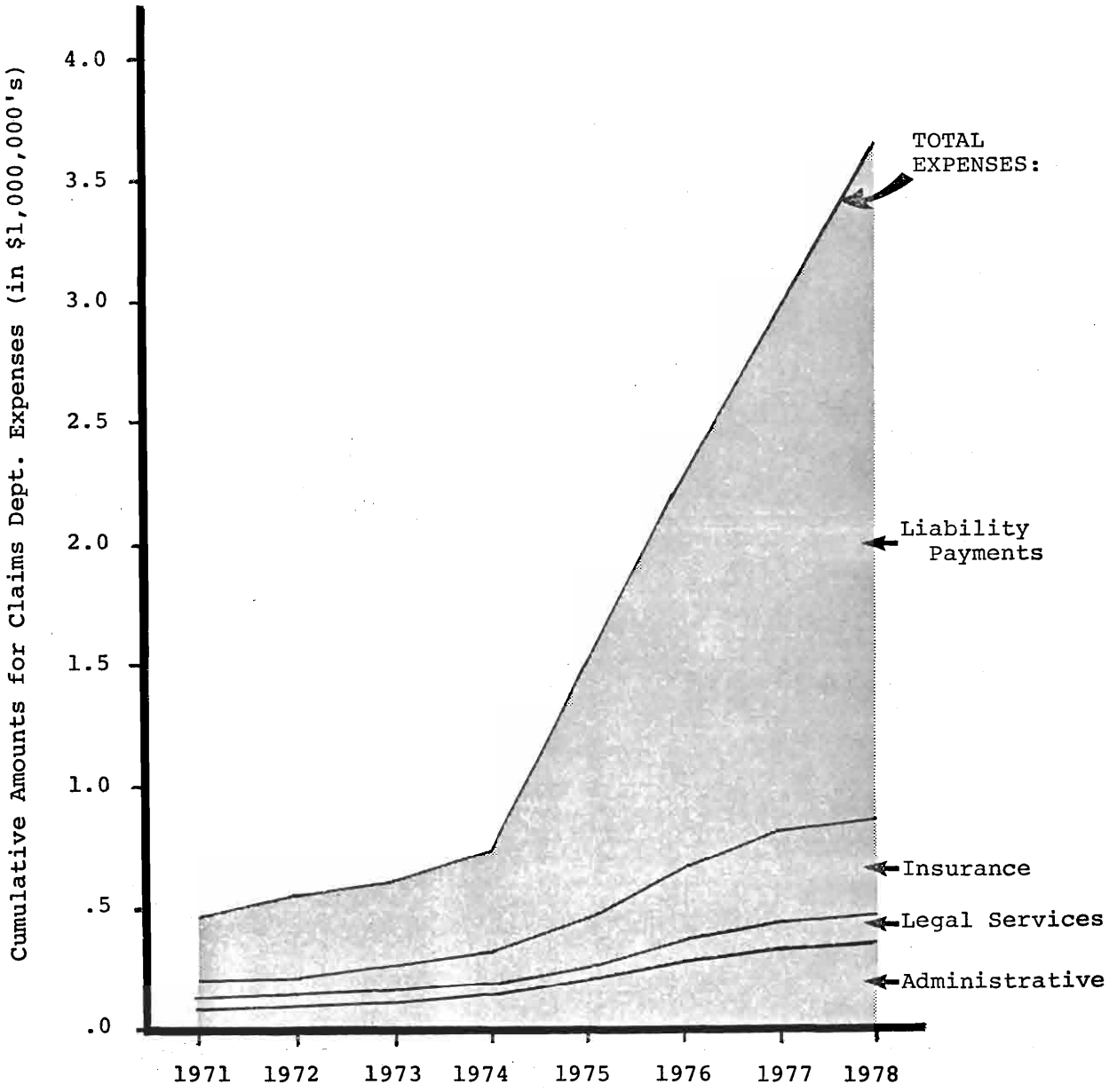


EXHIBIT 8

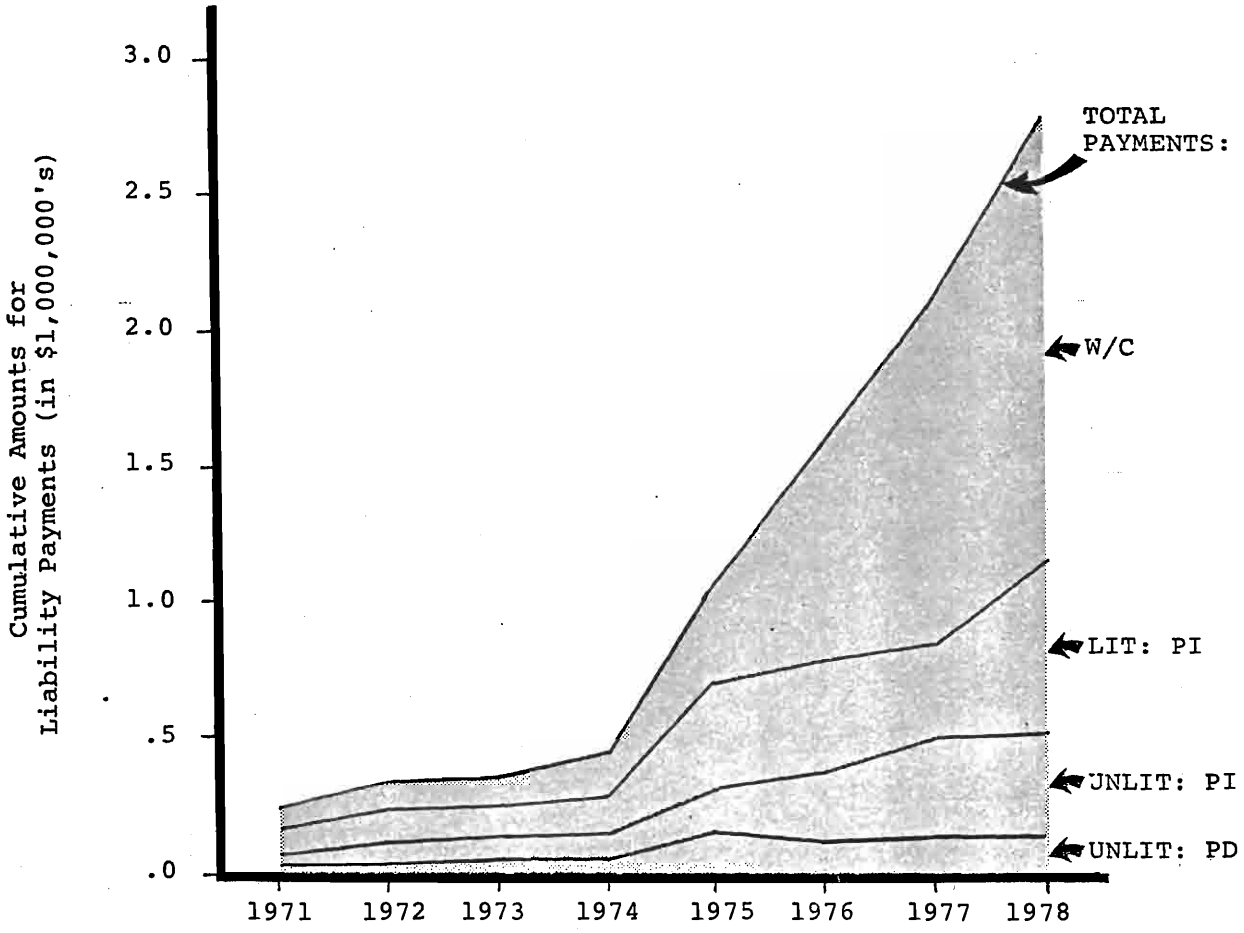
BREAKDOWN OF TOTAL CLAIMS DEPARTMENT
EXPENSES: 1971 - 1978



DATA SOURCE: MTC, 1979.

EXHIBIT 9

BREAKDOWN OF LIABILITY PAYMENTS: 1971 - 1978



KEY:

W/C	-	Workers' Compensation
LIT: PI	-	Litigated, mostly personal injury
UNLIT: PI	-	Unlitigated, personal injury
UNLIT: PD	-	Unlitigated, property damage

DATA SOURCE: MTC, 1979.

From 1971 to 1978, MTC's workers' compensation payments increased eleven-fold. For this reason, our investigation of MTC's claims liability focused solely on the increase between 1974-1978, when MTC's workers' compensation expenses began to rise significantly (see Exhibit 9). The first section which follows presents our conclusions and findings regarding the factors which have contributed to the increase in workers' compensation expenses since 1974. In the second section, we examine the administration of workers' compensation claims by Claims Department personnel.

B. CONCLUSIONS AND FINDINGS

1. MTC PERSONNEL CITE INCREASING BENEFITS DUE TO INFLATION, THE ADDITION OF NO-FAULT INSURANCE BENEFITS IN 1975, AND A GREATER NUMBER OF CLAIMS AS REASONS FOR THE INCREASES IN WORKERS' COMPENSATION EXPENSES SINCE 1974.

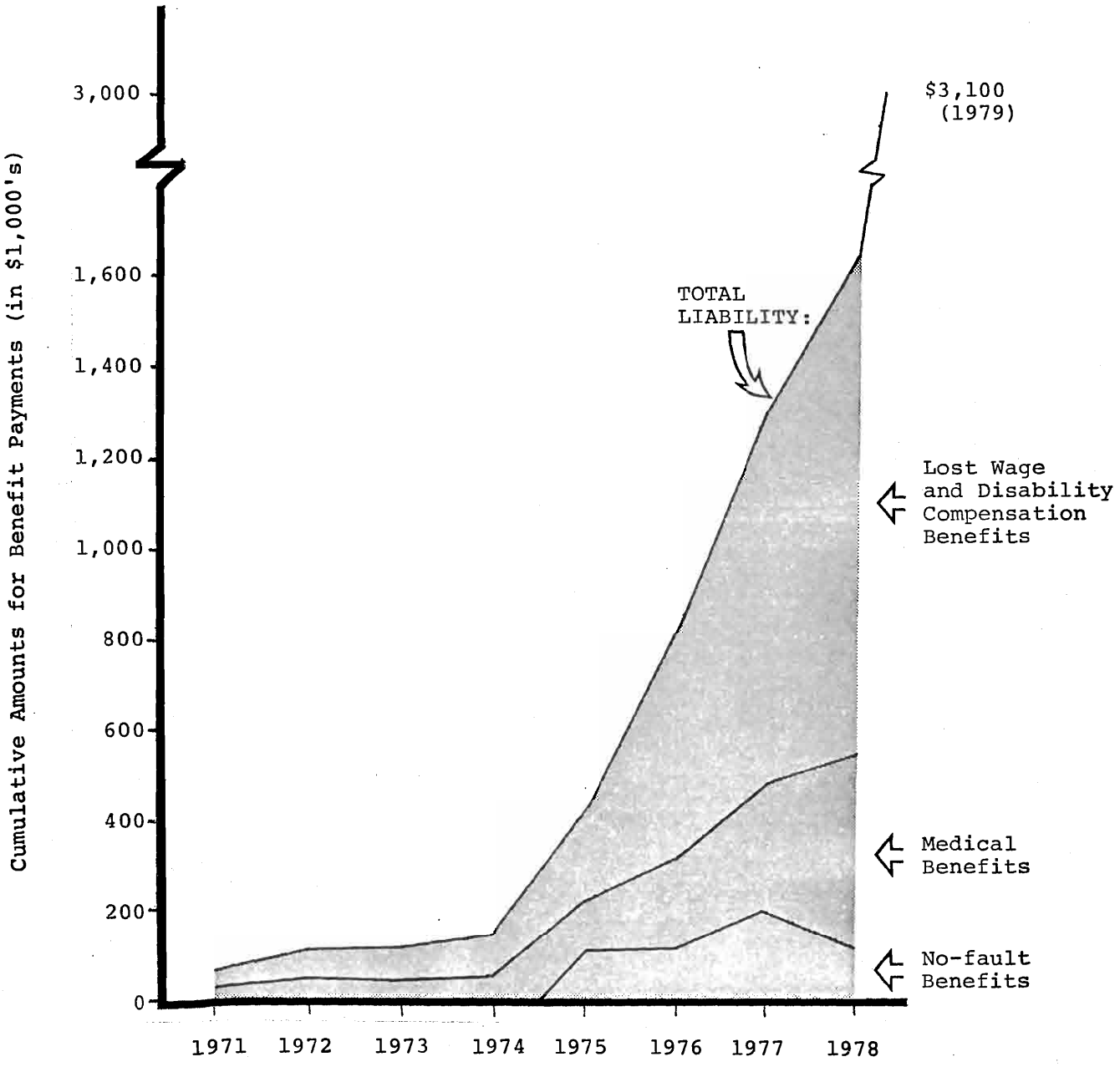
An important factor contributing to MTC's increased workers' compensation costs since 1974 has been increases in disability benefit levels. Workers' compensation benefits for injured workers are based on their individual weekly wages and the state average weekly wage (injured workers receive two-thirds of their wages up to a maximum equivalent to the state average wage). The maximum weekly compensation has increased with inflation from $100 in 1974 to just over $225 in 1979. In 1975 Minnesota's no-fault law went into effect, establishing a second set of disability benefits in addition to those already available under workers' compensation. Under no-fault insurance, supplementary disability and income loss benefits can be as high as another $200 per week. Under the current formula for computing combined workers' compensation and no-fault insurance benefits, the weekly maximum dollar amount an injured MTC operator could receive more than tripled from $100 in 1974 prior to no-fault to $353 in 1979 with no-fault. Of equal significance is that MTC wages upon which workers' compensation and no-fault benefits are computed have also increased--by approximately 66 percent since 1974.

In 1979 MTC incurred an additional $1.5 million in workers' compensation liability when the Minnesota Supreme Court decided that MTC's computation method for determining combined no-fault insurance and workers' compensation benefits was not consistent with the intent of the no-fault law. As a result, in future years MTC will probably have greater no-fault insurance expenses instead of a continuation of the decreasing no-fault costs it had experienced since 1977 (see Exhibit 10).

Another significant contributor to MTC's workers' compensation liability is an increase in the number of claims filed by MTC mechanics and bus drivers. From 1974 through 1979 the number of mechanics increased 43 percent, while the number of claims they

EXHIBIT 10

MTC PAYMENTS UNDER WORKERS' COMPENSATION AND NO-FAULT LAWS: 1971 - 1978



DATA SOURCE: MTC, 1979.

filed increased 262 percent. For bus operators during the same period, the increase was even greater: a 31 percent increase in the number of drivers compared with a 314 percent increase in the number of claims they filed. We found that traffic accidents do not explain the increased number of claims by bus operators. Between 1974 and 1979, the rate of claims by operators per mile driven increased 228 percent while traffic accidents per mile driven did not change significantly.

2. INSUFFICIENT ANALYSIS AND INVESTIGATION OF WORKERS' COMPENSATION CLAIMS MAKES IT DIFFICULT FOR MTC TO CONTROL ITS INCREASING LIABILITY COSTS.

MTC has not devoted sufficient additional staff resources to the administration of workers' compensation cases even though the number of claims filed and paid has increased dramatically since 1974. The increase in the number of claims, without sufficient corresponding additions to staff, had two effects. First, investigation and interviewing activities have been curtailed so that claims do not backlog; second, there is no staff time available to tabulate individual claimant file data into information useful for monitoring workers' compensation costs and directing cost reduction efforts.

Currently, the Claims Department only collects and summarizes data on the total number of claims initiated by mechanics and operators and on the total dollars paid for workers' compensation, medical, and no-fault benefits. The Claims Department does not relate claimants to doctors, attorneys, and accident locations and records. It does not produce annual injury and accident cost figures or cross-index workers' compensation costs to particular accidents, or relate accounts payable to individual claims.

As part of our investigation we surveyed the Claims Department at Milwaukee County Transit, a bus company which was identified by PMM&Co. as being successful in controlling workers' compensation liability and expense. Out of 21 transit properties with more than 500 operators, MTC has the third highest workers' compensation costs per operator while Milwaukee ranks 15th. MTC's costs are almost 400 percent higher than the median cost for the 21 properties.

While some differences in costs may be attributable to differences in benefit levels or court decisions in each state, we learned that compared to MTC, Milwaukee County Transit more diligently polices and follows-up each claim file. Milwaukee County Transit staff carefully scrutinize employees' post-accident activities and medical treatments and frequently question employees about their progress toward recovery. The activities to which Milwaukee attributes its relative success are the very ones which MTC has curtailed.

C. RECOMMENDATIONS

1. The Claims Department should intensify and increase its claim investigation and claimant interview activities, and MTC management should evaluate the personnel requirements and capabilities within the Claims Department to determine whether additional staff are needed to perform essential investigation, interviewing, and information analysis activities. If additional staff or resources are utilized, MTC management should assess the cost-effectiveness of these additional resources after a reasonable trial period.

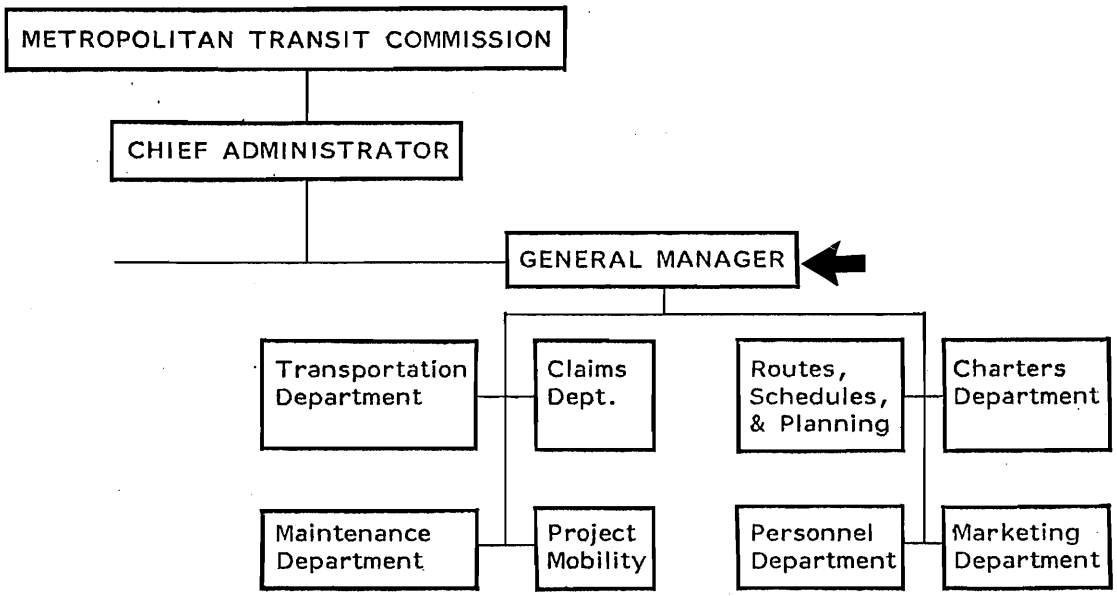
2. Until such time as a computerized information system is available, the Claims Department should develop a manual information system capable of producing monthly tabulations of financial, claimant, and accident data in order to support monitoring of expenses, investigation of claims, contesting of cases, and development of safety and cost-reduction programs.

V. TRANSIT MANAGEMENT SERVICES

A. INTRODUCTION

Minnesota statutes authorize MTC to enter management contracts in lieu of directly operating any public transit system itself. The statutes further provide that such contracts may be entered into "for such period or periods of time, and under such compensation and other terms and conditions as shall be deemed advisable and proper by the commission..." [Minn. Stat. § 473.405, subd. 2 (1978).]

MTC has contracted with ATE Management and Service Company since 1970 to manage the daily operations of its transit system. Under the conditions of the contract, ATE has provided five permanent on-site personnel who, at the beginning of our study, filled the positions of the general manager, two assistant general managers, and the directors for transportation and maintenance. The positions in the Transit Operating Division to be filled by ATE are selected by the general manager and approved by the commission. The general manager reports to the chief administrator, as indicated in the diagram below, but in practice he frequently reports directly to the commission.



ATE also provides some services from its headquarters in Cincinnati. These include on-site visits and consultation in various areas of both transit operations and general management.

We did not attempt to evaluate the performance of individual ATE personnel. Because they are key administrators in MTC's bus operations, we simply assumed that they would share in the credits and criticisms of our general assessment of MTC's operational performance. However, we did review the costs of MTC's contract with ATE and tried to determine whether self-management would be less costly. Second, we tried to determine what services beyond the permanent on-site personnel ATE has provided to MTC in fulfilling its contract.

B. CONCLUSIONS AND FINDINGS

1. SELF-MANAGEMENT WOULD LIKELY REDUCE MTC'S DIRECT COSTS FOR THE MANAGEMENT OF TRANSIT OPERATIONS. HOWEVER, INDIRECT COSTS FROM CONVERSION TO SELF-MANAGEMENT MIGHT MAKE OVERALL SAVINGS NEGLIGIBLE.

We estimated the financial breakdown of the ATE-MTC contract based upon a partial disclosure of costs provided by ATE. We also estimated what similar provisions through self-management might cost MTC. The comparison of these estimates is shown below:

COMPARISON OF DIRECT MANAGEMENT COSTS (IN $1,000s)

	Current Management With ATE	Self-Management	Savings Through Self-Management
Salaries	$225	$220	
Fringe Benefits	43	42	
ATE overhead including central services and profit	71	--	
Equivalent consulting services	--	25-50	
Total	$339	$287-312	$27-52

ATE provided the 1979 salary ranges for each of the MTC positions recently held by ATE staff; fringe benefits for resident personnel amount to an average 19 percent of gross salaries. The remainder of the contract amount, totalling approximately $339,000 in 1979, covers all other overhead costs including central services, corporate profit, and a share of ATE's general administrative costs.

We estimated transit personnel salaries using data provided by Peat, Marwick, Mitchell & Co. for eight self-managed

systems in 1978, multiplied by 1.10 as an adjustment for inflation in transit management salaries during 1978. (See Exhibit 11.) In order to ensure that we did not underestimate MTC's probable direct costs we selected salaries above the averages for the survey to reflect the qualifications that might be needed to replace the ATE people in view of the relatively large size of MTC's operation. To estimate the cost of providing consulting services equivalent to ATE's, we used a range of 500 to 1,000 hours of service per year provided at $50 per hour. The resulting cost ranges from $25,000 to $50,000 per year. This range reflects the range in the value of services provided by ATE over the past few years.

Based on the data in the table above, MTC could save from $27,000 to $52,000 per year in direct costs by replacing ATE personnel and central office services with MTC employees and consultant services. However, indirect costs from conversion to self-management might make the overall cost savings negligible. These indirect costs are difficult to estimate but would include such items as recruitment, moving expenses, training and orientation programs, and more frequent consultant services bid solicitation and review activities.

2. IF MTC CHANGED TO SELF-MANAGEMENT, DIRECT COSTS FOR TOP MANAGEMENT COULD BE REDUCED BY COMBINING THE POSITIONS OF CHIEF ADMINISTRATOR AND GENERAL MANAGER.

According to Peat, Marwick, Mitchell & Co., many self-managed transit systems have a single chief executive officer who fills the roles corresponding to both MTC's chief administrator and the general manager. If MTC changed to self-management, approximately $60,000 per year could be saved by combining these two top management positions. This would require reorganizing the responsibilities of MTC's current chief administrator, general manager, and two assistant general managers.

3. THE SERVICE TO BE PROVIDED BY ATE HEADQUARTERS IS NOT SPECIFIED IN THE CONTRACT AND VARIES FROM YEAR TO YEAR AT THE DISCRETION OF ATE'S ON-SITE PERSONNEL.

MTC pays ATE a fixed annual fee in return for five on-site management personnel and consulting services to be provided by ATE headquarters. The amount of consulting services is not, however, specified by contract. The amount of service provided varies from year to year at the discretion of ATE's on-site general manager.

EXHIBIT 11

SURVEY OF 1978 TRANSIT MANAGEMENT WAGES
(in $1,000s)

NUMBER OF BUSES	CHIEF ADMINISTRATOR/GENERAL MANAGER		MANAGER-DAILY OPERATIONS		MANAGER MARKETING		MANAGER TRANSPORTATION		MANAGER MAINTENANCE	
	Actual	Range	Actual	Range	Actual	Range	Actual	Range	Actual	Range
1,000	-----	37-45	-----	38	-----	18-21	-----	26-31	-----	26-32
968	46	-----	38	36-44	26	23-28	27	26-31	27	26-31
826	-----	None	-----	36-40	31	28-31	36	34-38	36	33-36
1,050	49	-----	38	-----	22	-----	28	-----	27	-----
1,100	65	-----	42	-----	32	-----	35	-----	32	-----
650	48	-----	46	-----	32	27-34	-----	30-39	-----	19-24
836	44	-----	40	-----	28	26-28	33	-----	33	-----
769	55	42-63	46	33-50	35	23-36	36	23-36	36	23-36
Average	51	40-54	42	36-43	29	24-30	32	28-35	32	25-32

DATA SOURCE: Peat, Marwick, Mitchell & Co.

NOTE: Transit systems include: Atlanta, Cleveland, Detroit, Oakland, Pittsburgh, St. Louis, San Francisco, and Seattle.

ATE does not routinely report to MTC how much work central staff have performed for MTC either on-site or at headquarters; thus it is not possible to measure exactly how much service has been provided. However, MTC is required by the contract to reimburse ATE for such expenses as travel, meals, and telephone calls which result from providing central services. From MTC's financial records, we found that from 1971 to 1973, expenses averaged $18,980 per year, and from 1976 to 1978 expenses averaged $13,725 per year, for a decrease of 28 percent. ATE provided larger amounts of service than usual in 1974 and 1979, but the long-range pattern of reimbursements for related expenses suggests that ATE is reducing the amount of central service provided on-site.

From 1976 to 1979, ATE sent home office personnel to MTC to conduct studies and provide consultation in at least ten major functional areas. There are, however, two areas covered by the contract in which ATE could provide assistance and yet which are not reflected in either ATE or MTC records: planning and grant application assistance. ATE central services are usually provided at the general manager's request. Because the general manager confines his activities to his own area of responsibility, i.e., the Transit Operating Division, and because planning and grantsmanship lie outside the Transit Operating Division, it is understandable that ATE has not provided service in these two areas. Nonetheless, there are no provisions in the contract which suggest that the commission or the chief administrator could not also request the provision of ATE services in these areas.

4. THE STATE SALARY LIMIT MIGHT MAKE IT DIFFICULT FOR MTC TO HIRE ITS OWN COMBINED CHIEF ADMINISTRATOR/ GENERAL MANAGER.

When MTC first decided in 1970 to hire a transit management firm, there was no statutory limit on the salaries of local public employees. However, in 1977 the Minnesota Legislature enacted a law which provided that no salary of a person employed by a public agency, including regional and metropolitan agencies, could exceed the salary of the state Commissioner of Finance. The law was amended in 1979 and now the ceiling is 105 percent of the Finance Commissioner's salary, which made the effective limit $50,400 in 1979. The survey of eight transit systems in 1978 revealed that the average salary for the chief administrator/general manager position was $51,200. The comparable figure for 1979, adjusted for inflation in transit management salaries, would be $56,300. Thus, we conclude that should MTC wish to hire its own combined chief administrator/ general manager, its recruitment effort might be hindered by the statutory salary limit.

C. RECOMMENDATIONS

1. Though we do not have a definitive recommendation to make on MTC's contract with ATE, we do suggest that MTC should periodically assess ATE's performance and the value of alternative management arrangements. Options worth reviewing include:

   - phasing out ATE employees and replacing them with MTC employees;

   - reducing the number of top management personnel by combining the responsibilities of the chief administrator and the general manager;

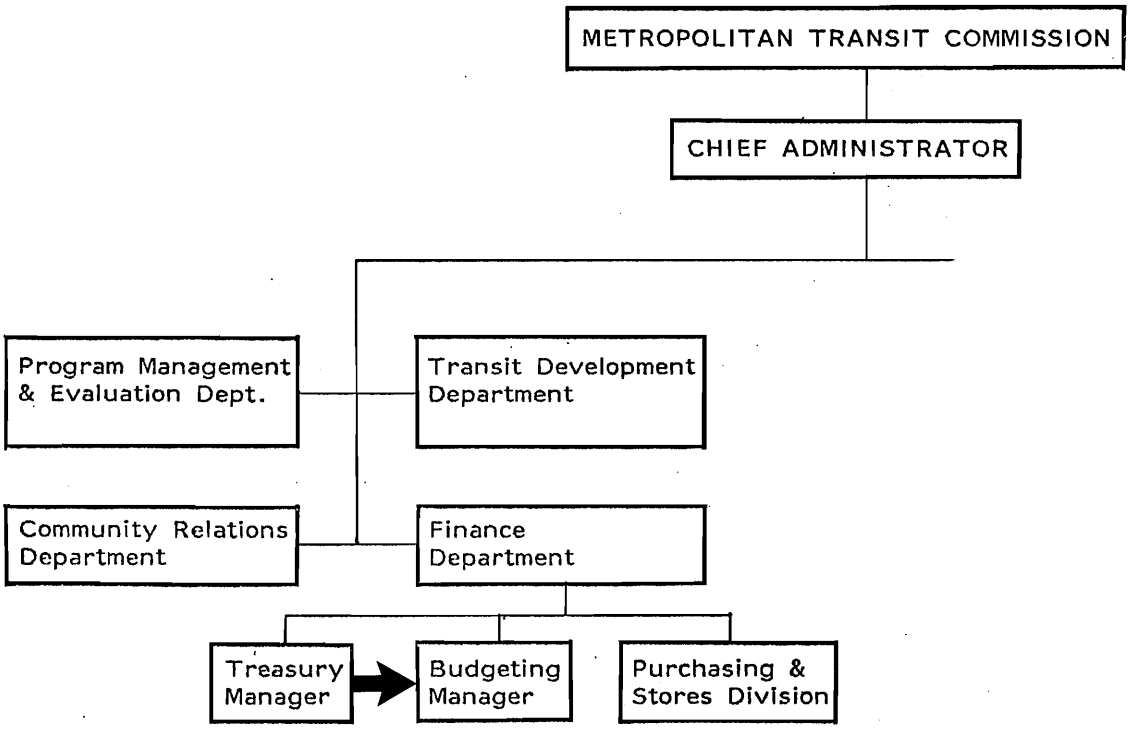
   - expanding the management responsibilities of ATE staff to include some or all areas outside the Transit Operating Division while reducing the total number of top management personnel; and

   - making greater use of ATE home office services.

VI. BUDGETING

A. INTRODUCTION

MTC has two major budgets: one for operating costs, the other for capital projects. Our study focused primarily on MTC's operating budget, which for 1979 amounted to nearly $71 million. Over 90 percent of this budget was devoted to regular transit service provided by the Transit Operating Division. Traditionally the general manager has directed the development and review of the budgets for those departments in the Transit Operating Division, and the chief administrator has directed the same activities for those units outside the Transit Operating Division. The chief administrator also oversees the integration of both divisions' budgets (see diagram below).



Both divisions had their own finance unit prior to July 1978, when they were combined and placed in the Governmental Division. At about the same time, MTC was converting from its old chart-of-accounts to a new, federally mandated chart-of-accounts referred to as the UMTA Accounting System.[1] The conversion was a major project and required many months to complete. In July

[1]This system was formerly known as FARE but is now officially known as the "Urban Mass Transit Industry Uniform System of Accounts and Records and Reporting System," mandated by Section 15 of the Urban Mass Transit Act (UMTA).

1979, MTC established the new position of budget manager in its Finance Department, as shown in the diagram above, in order to facilitate various budget activities.

Budget documents produced by MTC include a program budget which is mandated by state law, a capital budget, and a biennial request. To aid managerial control, the Transit Operating Division also develops line-item budgets for its functions in consultation with MTC's Finance Department. The capital budget is currently developed under the supervision of the Program Management & Evaluation Department.

Every two years MTC submits a biennial request and a legislative program to the state. According to recently established procedures, the request goes first to the Minnesota Department of Transportation (Mn/DOT) and then to the Legislature. The request and the legislative program describe agency programs, detail the assumptions underlying the biennial request, and project MTC revenues, expenditures, and subsidy requirements for the coming biennium.

During our investigation of MTC's budgeting activities, we focused on the effectiveness of budget development procedures, the accuracy of budget projections, the utility of the budget for internal control, and the rigor of interagency reviews of MTC's budget.

B. CONCLUSIONS AND FINDINGS

1. DEVELOPMENT OF MTC'S BUDGET HAS BEEN HIGHLY CENTRALIZED AND DEPARTMENT HEADS HAVE NOT BEEN EFFECTIVELY INVOLVED.

We found that the budget development process, until recently, was highly centralized. The operating budgets were the product of the chief administrator, the general manager, and the director of Finance. Lack of input from departmental managers was typical. However, the attitudes of top managers, who previously felt that budget development was solely their responsibility, have shifted markedly, and MTC is in the midst of steady decentralization. Since July 1979, responsibility for coordinating a new budgeting system which relies more fully on departmental input has been assigned to a budget manager in the MTC Finance Department.

In past years, department heads received little information along with their budget forms beyond deadlines and simple instructions. Directors did not routinely receive historical data to aid them in producing budget estimates, though some were able to glean information from various organizational reports. During our research, however, department managers noted a marked increase in the number of items for which they were requested to make esti-

mates this year. Subsequently we were informed that as more historical data becomes available and managers learn how to use it, managers' projections will play a more significant role in budget development.

We found that the budget review process for departments in the Transit Operating Division is more rigorous than for other MTC departments. The 1980 budget estimates were reviewed repeatedly by the general manager and his assistants in special review sessions. For the other departments, we found little detailed review of budgets before the documents were compiled by the budgeting section, though reviews were conducted by the chief administrator, who met with department heads on an "as-needed" basis.

Although in 1979 the MTC commissioners formally approved a set of budget assumptions, the development of the budget was primarily a staff function. In general, we found that commissioners' questions at budget review sessions addressed the operational details of programs much more than system and program goals. As a result, budgets were not developed in order to reflect goals and policies which were first established by the commission, but rather were simple extrapolations of previous years' budgets. The Transit Operating Division did develop some budget options reflecting various service delivery strategies as a means to solicit policy decisions from the Commission but only limited response was received. Department heads have thus been left at times with insufficient policy guidance in developing budget projections.

2. PRIOR TO MTC'S LAST BUDGET CYCLE, PROJECTIONS FOR OPERATING REVENUES AND EXPENDITURES HAD BEEN GENERALLY ACCURATE. HOWEVER, PROJECTIONS FOR ITEMS UNRELATED TO REGULAR BUS SERVICE WERE MUCH LESS ACCURATE DUE PRIMARILY TO UNDERSPENDING.

From 1974 to 1979, expense variances from the Transit Operating Division's budget ranged from 0.1 percent to 7.7 percent for an average of 3.9 percent. Revenue projections usually came within 3.0 percent of actual. In contrast, expense projections in the general fund--that is, for projects other than regular bus service--were much less accurate, usually because of large amounts of unexpended funds. Variances ranged from 31.2 percent in 1974 to 73.3 percent in 1973 and averaged 50.9 percent for the years from 1973 to 1977.

Much of the unexpended money was from federal grants for such non-operating activities as planning and technical studies. During these years, MTC averaged an accumulated amount of approximately $660,000 in unexpended federal funds. In early 1979, U.S. Department of Transportation staff directed MTC to expend these funds for appropriate projects before any further grants would be approved. MTC explained that part of the problem was that the former Transit Development director encouraged the submission of more project proposals than could be completed by MTC

employees. Also, when final approval of projects has not come from the federal government until a few months into the fiscal period, MTC has understandably delayed spending anticipated revenues.

3. AN EARLY BUDGETARY SHORTFALL OF $2,673,000 FOR 1979 WAS REPORTED LAST MAY. IT WAS DUE TO A COMBINATION OF ADMINISTRATIVE AND HUMAN ERROR AND UNEXPECTED COST INCREASES.

In May 1979, MTC reported that its revenues for the current biennium would fall short of expenses by approximately $2,673,000. More recently MTC announced that it now projects a budget deficit of $23.6 million for the biennium. We had little time to consider this latest projection, but we did try to determine why the initial miscalculation occurred.

The annual operating budget for 1979 was approved by the commission in April 1978. At that time, the annual projections were not divided into monthly figures, as they usually were, because the Transit Operating Division had been quite accurate in its past predictions and because the Finance Department had committed much of its staff time to the conversion of its chart-of-accounts. As a result, it was not until May 1979 that annual figures were finally divided into monthly amounts and monthly statements of expenditures (which had been suspended for five months due to the conversion) were finally resumed. When these two events did occur, MTC realized that certain predictions were significantly inaccurate. In particular, MTC estimated that expenditures would exceed the amount budgeted for 1979 by $3,963,000. That amount was composed of the following items:

	Amount of Shortfall
• Driver Labor:	
- payroll understated by 45,000 hours	$ 361,000
- confusion about fringe benefits line-item	750,000
- clerical error	700,000
• Cost of Living Adjustment Increase	300,000
• Fuel Cost Increase	
- projection for end of 1979 changed from $.45 to $.75 per gallon	1,452,000
• Bus Part Cost Increase	400,000
TOTAL	$3,963,000

Fifty-five percent of the total dollar amount was attributable to external factors, such as unanticipated increases in inflation and the cost of fuel and bus parts. The remaining amount for "driver

labor" came from human error in the midst of system conversion. Because MTC later added another $300,000 to its expenses to reflect services being added to relieve passenger overloads on existing routes and revised revenue figures by $1,590,000 to reflect increases in ridership and fare increases for seniors and youth, the deficit was reduced to $2,673,000. Since MTC received $896,000 more than expected in 1979 from federal sources, the net deficit was further reduced to $1,777,000.

More recently, MTC has projected a budgetary deficit of $23.6 million for the 1979-1981 biennium. When MTC compiled its original estimates in October 1978, it projected that anticipated revenues and expenditures for operating purposes would both be approximately $132 million for the biennium. By December 1979, MTC reported that its expenditures would be nearly $33 million larger:

Expenses	Increase (in millions)
Fuel	$10.55
Labor	6.40
Workers' Compensation	2.30
Other Bus Operating Expenses	1.70
Additional Service	11.75
TOTAL	$32.70

Because MTC also reported a $9.1 million increase in estimated revenues, its net projected deficit was reported to be $23.6 million.

Given the difficulty that MTC has recently had in projecting expenses, it is noteworthy that MTC has not established routine contingency planning as part of its long-range budget development process.

4. THE UTILITY OF BUDGETS FOR MANAGEMENT CONTROL HAS BEEN LIMITED, BUT MTC PLANS TO MAKE ITS FINANCIAL REPORTING SYSTEM MORE USEFUL.

We found that MTC efforts to make the budget more useful for management purposes are in transition. Until 1976 the entire MTC budget was developed by line-item. In that year, MTC converted to a program budget system as required by the Legislature which emphasizes the goals and objectives of projects. At the same time, MTC reduced the level of financial detail reported to its managers. While the program budget has been useful for policy makers, it does not provide the line-item detail traditionally used for managerial control. While MTC has made considerable progress

in departmental reporting, managers have generally been unable to monitor the financial situation for single departments or projects. MTC Finance staff informed us that monthly project and department statements will ultimately include all the necessary data items as cited in their management information system design. Also, since October 1979, project reports have been produced to assist department and project directors.

5. THE REVIEW OF MTC'S BIENNIAL BUDGET REQUEST HAS NOT BEEN SUFFICIENTLY RIGOROUS AND FORMAL.

The most recent inter-agency review process, which took place in 1979, was informal and involved only a few high-level officials from the Minnesota Department of Transportation (Mn/DOT) and the state Department of Finance. Though people report good working relations with MTC, it is clear that MTC assumptions, data, and calculations were accepted with few questions. In fact, no member of any executive agency noted more than a cursory review of MTC's biennial request once it was determined that the governor's cost guidelines had been met. Though MTC programs were reviewed more thoroughly than usual in the Legislature last session, legislative staff for both the House and Senate assume that review of the MTC budget is largely the responsibility of Mn/DOT, since MTC now reports through the Mn/DOT legislative request. In short, once the governor's guidelines were taken into account, MTC's management, operations, or budgetary calculations were not examined in detail.

The cursory nature of the MTC review contrasts with the process for state agencies, in which the state Department of Finance has a larger monitoring role. These more extensive reviews of state departments by the Department of Finance are expedited by the fact that all state agencies are in the statewide accounting system. Assumptions are more thoroughly investigated and Finance staff are more likely to do independent investigations and calculations. Many legislative and agency staff suggested that the Legislature had requested MTC to report through the Mn/DOT budget in order to ensure that a technically expert review takes place. To date, that review has been hindered by a lack of readily available data on MTC, the tendency of the Legislature to deal directly with MTC, and insufficient Mn/DOT staff.

We find that the Mn/DOT review role has not been well developed. Routine communication has not been established; the lack of MTC data hinders any genuinely critical review of MTC's legislative program; and requests for data from MTC have not always been answered in a timely manner.

C. RECOMMENDATIONS

1. MTC should ensure that its managers have the information necessary to develop reliable budget projections, and it should provide them with monthly statements of expenditures to aid them in monitoring and controlling costs.

2. MTC should refine its methods for projecting expenditures. At the same time, because some costs are so difficult to predict, MTC needs to develop contingency plans which will prepare the commission for responding quickly and effectively to sudden changes in service trends and costs. Cutting back pre-selected service in the event of insufficient revenues is one example.

3. Mn/DOT and the state Department of Finance should develop more active roles in the review of MTC's budget. Routine communication between these two bodies and MTC should be established; Mn/DOT and Finance should inform MTC as to what data they need and when. This will aid them in conducting a rigorous, dependable review which would ensure that MTC's budget projections are as sound as possible.

VII. CASH MANAGEMENT

A. INTRODUCTION

A transit property's financial viability depends not only on the amount of its revenues and expenditures, but on the timing of their arrival and payment as well. When revenues lag behind expenditures, additional operating cash is required. The additional cash in reserve is needed in order to ensure that operating expenses are paid on time.

Because some of its revenues lag behind expenditures, MTC needs a cash reserve. While MTC's expenditures are rather evenly distributed throughout the year, some of its revenues are not received in advance of the time that expenses must be paid. For example, the major portions of MTC's property tax revenue are not received until July and December of each year. Property tax revenues accounted for 26.6 percent of MTC's total revenues in 1979. In the same year, a Section 5 grant from the federal government, accounting for approximately 18 percent of MTC's revenues, was not received until August.[1] The receipt of state performance funding grants is also unequally distributed throughout the year. In order to pay for expenses occurring prior to receipt of these funds, MTC maintains its cash reserve.

MTC determines its beginning of the year reserve requirements annually. The reserve requirement has generally been computed on the basis of the following formula:

Beginning of the Year Reserve Requirement	=	55% of Annual Property Tax Revenues	+ 16% of Annual Federal and State Grants

The actual amount of reserves varies, however, from day to day, depending on the amount of expenses paid and revenues deposited that day. The variation in reserves over a year can be quite large. Based on reserves on hand at the end of each month, MTC's reserves during 1978 varied from a low of $1,988,000 at the end of April to a high of $18,148,000 at the end of July. Exhibit 12 shows MTC's reserve balance from January 1977 through the end of August 1979. The lowest actual reserve balance MTC has experienced during this period is somewhat less than shown because the

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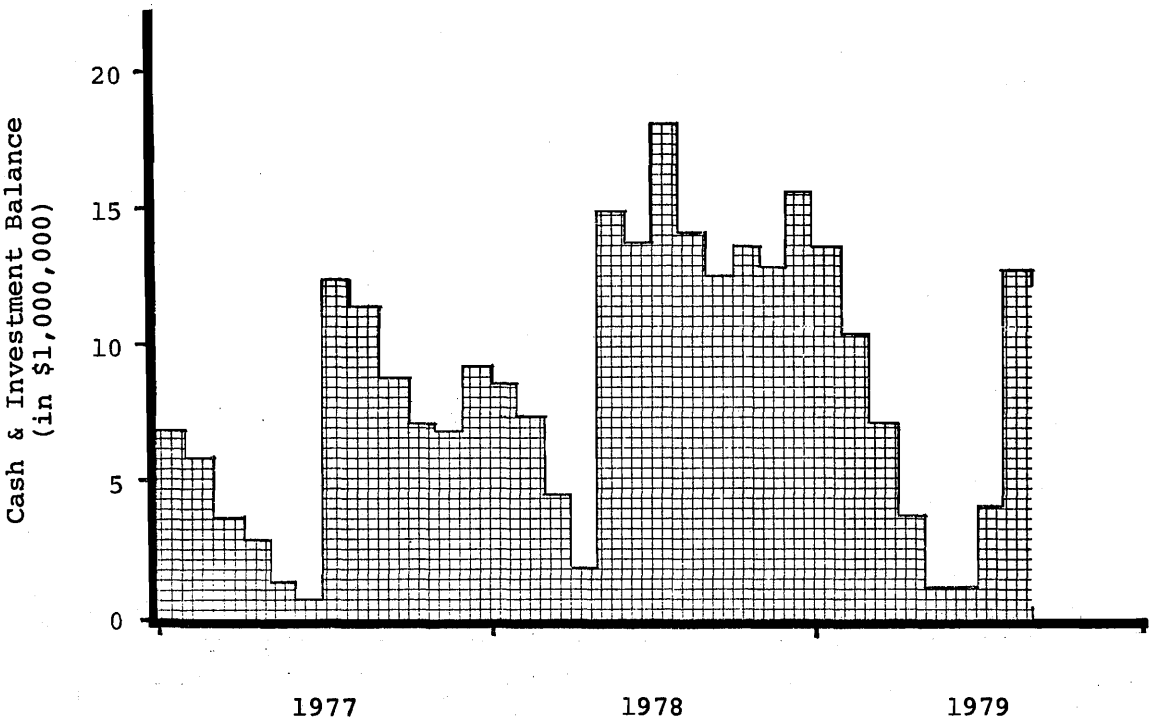
[1] Approximately 90 percent of the operating grants MTC receives from the federal government are made pursuant to Section 5 of the 1964 Urban Mass Transportation Act, as amended.

EXHIBIT 12

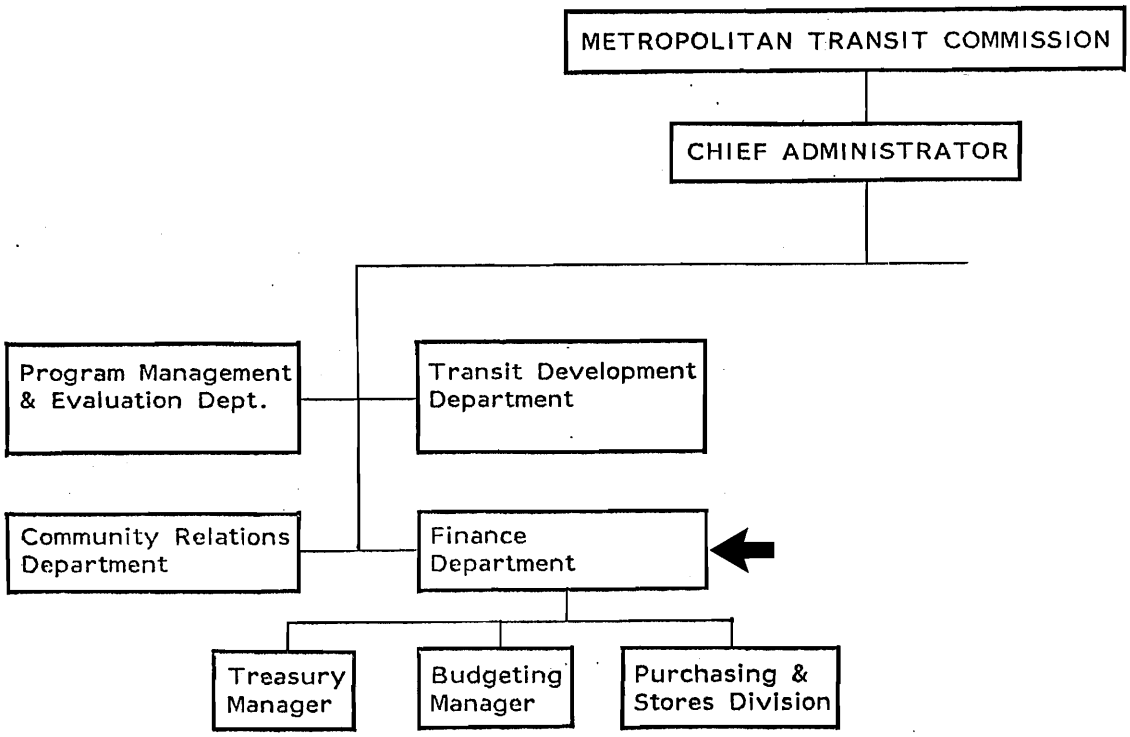
RESERVE BALANCES BY END-OF-MONTH: 1977 - 1979



DATA SOURCE: MTC, 1979.

exhibit reflects only end-of-month balances, while the balance fluctuates daily. The lowest daily balance in 1978, for example, was $579,000.

MTC's reserve funds are invested in interest-bearing assets which can be quickly converted to cash. According to MTC staff, MTC is currently receiving interest of about 11 to 12 percent on its reserve funds. The investment of reserves, as well as the estimation of budgetary reserve requirements, is the responsibility of MTC's Finance Department (see diagram below).



This chapter examines a key issue relating to the size of MTC's reserve:

- Could any of MTC's revenues be received earlier in the year, thereby reducing the amount of public funds which need to be devoted to MTC's reserve?

Because we find that MTC's cash reserve requirements can be reduced, we also explore in this chapter the connection between our findings and MTC's current financial difficulties. In particular, we attempt to explain how implementing our recommendations affects MTC's projected $23.6 million budget deficit for the 1979-81 biennium.

B. CONCLUSIONS AND FINDINGS

1. EARLIER APPLICATION FOR THE FEDERAL SECTION 5 GRANT WOULD PERMIT MTC TO EARN AN ADDITIONAL $100,000 TO $300,000 IN INVESTMENT INCOME EACH YEAR.

In recent years, MTC's lowest daily reserve balance has occurred between May and June. These low points generally come just prior to receipt of the federal Section 5 grant. In 1977, the lowest balance occurred in June, while the federal grant was received in July. In 1978, the low point came in early May, and the federal grant was received later in May. Last year, the lowest daily balance occurred in June, while the federal grant arrived in August. Late receipt of the federal grant in 1979 caused MTC to request metropolitan counties to advance a portion of the property tax revenue generally received in July.

Receiving the grant by April or earlier would enable MTC to avoid the annual low point in its reserve balance. Receipt of the federal grant by April would thus permit MTC to reduce its reserve requirements.

Beginning in 1980, MTC will avoid this annual low point in its reserve balance by receiving federal grants earlier than it has in the past. MTC expects to receive its 1980 federal grant by April 1980. This enables MTC to reduce its reserve requirements somewhat.

We found, however, that MTC could receive its federal grant even sooner if it applies for the grant earlier than it has in the past. According to the administrator of the regional Urban Mass Transportation Administration (UMTA), federal agencies can begin to process grant applications in August even though Congress may not appropriate funds until the following December. In the past MTC has not applied before November. According to UMTA, applying in August would enable MTC to receive the grant as early as January. Although MTC management personnel do not believe the grant would be received in January, they do agree that applying earlier would result in receiving the grant in March--which is one month earlier than if MTC continues to apply for the grant in November.

Although receipt of the grant any earlier than April will not affect MTC's reserve requirements, MTC could earn additional interest if the grant is received earlier. If the grant is received in January as UMTA predicts, MTC could earn an additional three months' interest on the grant funds. On a grant of approximately $12,000,000 and at a 10 percent rate of interest, this would result in additional investment income for MTC of $300,000 each year. If the grant is received in March as MTC management predicts, MTC would only earn an additional one month's interest. Even using this more conservative estimate, however, MTC would earn an additional $100,000 by applying in August rather than November.

2. CHANGING THE CURRENT PROCEDURES AFFECTING THE TIMING OF STATE PERFORMANCE FUNDING GRANTS WOULD PERMIT AN ADDITIONAL REDUCTION IN MTC'S RESERVE REQUIREMENTS.

Receipt of the federal grant by April or earlier would likely cause the low point in MTC's reserve balance to shift to late November or early December of each year. The reserve would be particularly low in early December of the first year of the state's fiscal biennium.

The cash flow problems would be particularly acute at that time because, under current Mn/DOT procedures, MTC does not receive its first state performance funding grant for the biennium until late December.[1] Current state law requires that performance funding payments be made bi-monthly. However, under current Mn/DOT procedures, MTC would not receive a payment for July and August, the first two months of the biennium, because MTC receives a large amount of property taxes in July. MTC would receive a payment for September and October, because no major amounts of local or federal funds are received during those months. The payment would not reach MTC, however, until late December or early January. It takes about two months in total for MTC to apply for the state grant, Mn/DOT to approve payment, and the state Department of Finance to make payment.

The result is that MTC would receive the state grant at about the same time it is also receiving a large amount of property tax revenue. In fact, most other performance funding payments throughout the biennium would likely be received at about the same time that other large amounts of revenue are received. Although Mn/DOT's procedures permit payment to MTC for the months in which MTC's local and federal revenues are low, the delay in payment caused by processing time causes receipt of state funds to coincide with the receipt of substantial revenues from other sources. This means that more funds must be devoted to MTC's reserves than would be the case if state funds were actually received in those months in which MTC's other revenues were low.

The following are two alternatives to Mn/DOT's current procedures which the Legislature could consider:

- Advance payment of the first performance funding grant of the biennium so that it is received in September and October when revenues from other sources are low.

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[1] Mn/DOT is responsible for contracting with MTC for the payment of state performance funding grants. See Minn. Stat. § 174.28.

- Budget payments throughout the biennium based on ridership and revenue projections so that MTC receives state funds during the periods in which its revenues from other sources are low.

Adoption of either alternative would reduce MTC's reserve requirements and thus reduce the amount of public funds which must be devoted to MTC's reserve.

To ensure that MTC does not receive more than the maximum amount of funds permitted by law, payments to MTC under the second alternative could be monitored by Mn/DOT. MTC should still be required to submit monthly figures on ridership and should also submit monthly figures on revenues received from federal and local sources. These figures could be used by Mn/DOT to monitor MTC's subsidy requirements and to revise the budgeted payment schedule if necessary. The budgeted payments could also be subject to a retainer to ensure that the state can recover any excessive payments should an audit of MTC's figures by Mn/DOT disclose any errors.

3. THE MAJOR EFFECTS ON MTC'S RESERVE REQUIREMENTS OF RECEIVING THE FEDERAL GRANT BY APRIL HAVE BEEN INCORPORATED INTO MTC'S CASH FLOW PROJECTIONS FOR THE CURRENT BIENNIUM. A PERMANENT CHANGE IN THE TIMING OF PERFORMANCE FUNDING PAYMENTS WOULD, HOWEVER, REDUCE MTC'S RESERVE REQUIREMENTS AND MIGHT REDUCE THE AMOUNT OF ADDITIONAL STATE SUBSIDIES NEEDED DURING THE CURRENT BIENNIUM.

MTC has estimated that its expenditures will exceed its revenues by $23.6 million during the current biennium. It has generally been assumed that MTC must receive additional revenues of $23.6 million by the end of the biennium in order to remain solvent.[1]

This is not the case. A cash flow analysis prepared by MTC projects a cash reserve deficit of only $15.3 million by June 30, 1981. While MTC estimates it will spend $23.6 million more than it will receive in revenues during the biennium, MTC will not have a deficit in its cash reserve at the end of the biennium if it receives the entire $23.6 million by then. Instead, MTC will have a cash reserve surplus of close to $8.3 million.

The Legislature could choose to provide MTC with additional state and local funds (and/or require service cutbacks and additional fare increases) amounting to only $15.3 million through

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[1]Alternatively, MTC could reduce expenditures and/or receive increased revenues by a combined amount equal to $23.6 million.

the end of the current biennium. In fact, the Legislature could provide even less funding and thus require MTC to use tax anticipation borrowing on the property taxes it expects to receive in July, 1981. [1]

Either alternative would solve the immediate problem of keeping MTC solvent through June 30, 1981. However, MTC would likely have severe cash flow problems during the next biennium because it would be starting the biennium with little or no cash reserve. In addition, MTC would not be receiving any substantial amounts of state, local, or federal revenue from August through the middle of December. The property taxes received in July 1981 would not even cover MTC's expenses through August at the current mill rate. If the mill rate was increased by 75 percent, the July receipts might last through the end of September or until mid-October.[2]

It may be possible, however, to provide MTC with a sufficient cash reserve to begin the next biennium without providing the full $23.6 million that MTC has requested. The effects on MTC's reserve requirements of receiving the federal Section 5 grant by April of each year have already been incorporated into MTC's cash reserve projections for the current biennium. Changing the timing of performance funding payments, as outlined in the previous section, could, however, mean that MTC could enter the next biennium with a cash reserve of less than $8.3 million.[3]

The amount by which this figure could be reduced depends on the ways in which MTC's current deficit and its next biennial budget are financed. In other words, it depends on the relative contributions made by additional state grants, increased property taxes, increased fares, and service cutbacks. In general, the greater the contribution of fares, and service cutbacks, the lower the reserve need be at the beginning of the next biennium.

It should be noted that our discussion of MTC's $23.6 million budget shortfall and the cash reserve needed by MTC on June 30, 1981 is contingent on MTC's expenditure projections through the end of the current biennium. If expenditures again exceed MTC's projections or the estimates we used for the following biennium, then the figures for the deficit amount and cash reserve will change. Our general conclusion that changes in the timing of performance funding grants will improve MTC's cash flow will, however, still remain true.

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[1] According to MTC staff, the annual rate of interest paid on tax anticipation notes would be at least 10 to 11 percent.

[2] The July property tax revenues would not last that long if tax anticipation borrowing was used to finance the deficit in the current biennium.

[3] Based on current projections, the $8.3 million is the cash reserve which would result if MTC receives an additional $23.6 million by the end of the current biennium.

C. RECOMMENDATIONS

1. In order to keep its reserve requirements low and to earn additional investment income, MTC should give high priority to obtaining federal grants as early as possible. In particular, it should complete its application for federal Section 5 funds by August, the earliest time that federal agencies will begin processing applications.

2. The Legislature should review the Mn/DOT procedures which affect the timing of performance funding payments. Permanent changes in these procedures could reduce MTC's reserve requirements and, under certain conditions, would reduce the amount of additional revenues needed by MTC during the 1979-81 biennium below the $23.6 million requested.

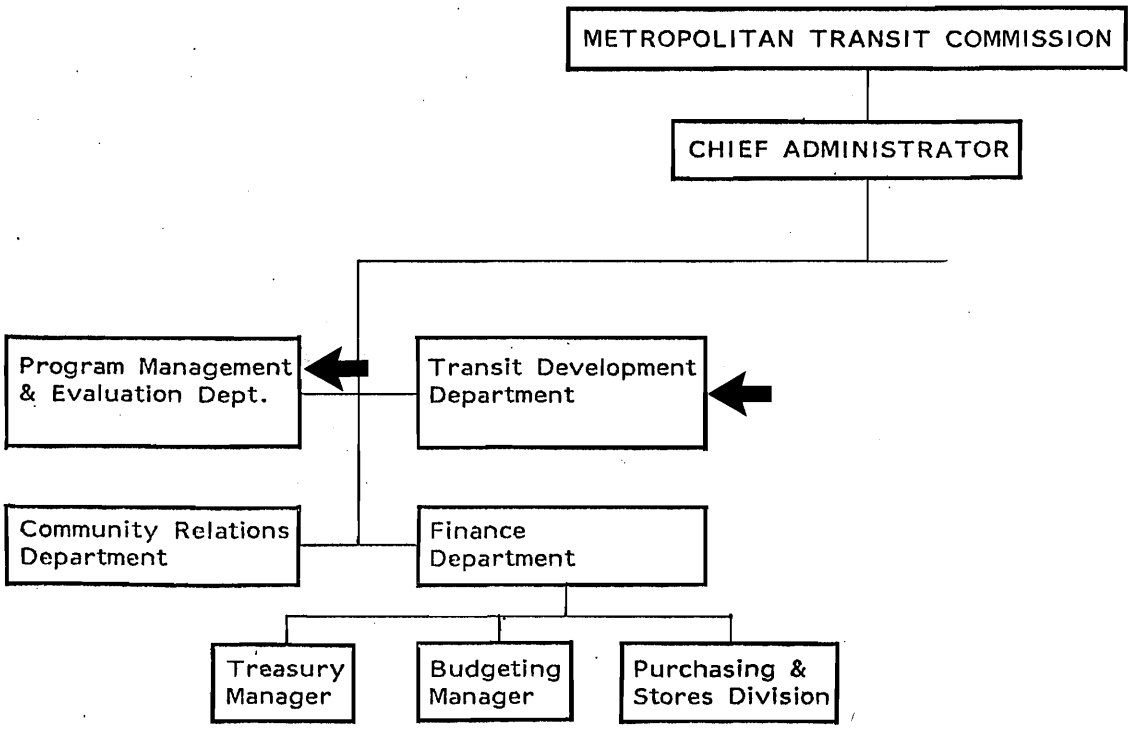
3. In this year and in future budget years, the Legislature should require MTC to submit projections of its cash reserve balances along with its budget request.

VIII. PLANNING

A. INTRODUCTION

Planning serves several vital functions. Plans require an agency to specify its expected accomplishments, the means to achieve them, and the required resources. Planning allows an organization like MTC to consider alternative system developments and the implications of change. It is a method to prepare for the future. Plans also guide the implementation of the programs and services necessary to achieve organizational goals. Lastly, reviews of MTC plans by other agencies ensure that MTC's efforts conform to broader regional goals and legal requirements.

Primary responsibility for planning at MTC is within the Transit Development Department. Its activities include producing MTC's Transportation Development Program and Transportation Improvement Program as described below. The Program Management & Evaluation Department also has certain planning responsibilities including planning for the acquisition of buses and the expansion of bus facilities and preliminary engineering for various projects. As the diagram below indicates, the directors of these two departments report directly to the chief administrator. Other limited planning activities also occur irregularly throughout the organization.



From 1976 to 1979, MTC budgeted from 0.4 to 1.2 percent of its operating budget for comprehensive planning amounting to an

average of $500,000 per year, and another 0.9 to 3.2 percent for product planning amounting to an additional $900,000 per year.

Several provisions of the Metropolitan Reorganization Act of 1974 altered the metropolitan transportation planning structure. The act designated the Metropolitan Council as the Metropolitan Planning Organization, in accordance with federal transportation laws, and thereby required it to prepare or endorse an annually updated list of specific projects, called the Transportation Improvement Program, to implement its long-range plan. The Reorganization Act also created the Transportation Advisory Board to fulfill federal requirements that a forum be provided for elected local officials. The advisory board consists of 30 members, 17 of whom are county or municipal officials, and it is supported by a coordinator and a committee of technical staff from state, regional, and local agencies. Lastly, the act empowers the Metropolitan Council to appoint MTC commissioners, with the chairman to be appointed by the governor. A final adjustment in planning responsibilities occurred when the Minnesota Department of Transportation (Mn/DOT) was created in 1976 with a statutory mandate to provide the state with a balanced and coordinated multimodal transportation system.

Following are brief explanations of transit plans relevant to our findings:

(a) The Transportation Policy Plan is the Metropolitan Council's long-range transportation plan for the region. The first plan developed under the Metropolitan Reorganization Act was adopted in 1976 and will be updated every four years.

(b) The Transportation Development Program is the responsibility of MTC according to the 1974 legislation and constitutes MTC's implementation program for the Metropolitan Council's long-range plan. The first Transportation Development Program was adopted by MTC and approved by the council in 1978 and is to be updated every two years.

Our study focused on the effectiveness of MTC's internal planning activities and whether MTC's plans correspond to the Metropolitan Council's regional development guidelines as required.

B. CONCLUSIONS AND FINDINGS

1. MTC'S LONG-RANGE PLANNING LACKS COORDINATION AND LEADERSHIP AND GENERALLY HAS NOT BEEN EFFECTIVE.

MTC lacks a unified, comprehensive, long-range planning strategy. The current Transportation Development Program is not

useful as a long-range planning document because its information became outdated too quickly and the format focuses on financial planning more than operational planning. It does not include information ordinarily in an operational plan such as fleet size, manpower requirements, and bus storage needs.

Lack of coordinated plans is the result, mainly, of MTC's organizational structure. Too many departments do some sort of planning, i.e., Transit Development; Program Management & Evaluation; Marketing; and Routes, Schedules, & Planning. Some of these departments report to the chief administrator, others to the general manager. No department has been designated as the prime collector or repository for technical data monitoring all aspects of organizational performance, and furthermore, the Transit Development Department has been without a permanent director for over a year.

Although few MTC departments have developed overall goals and targets, the Transit Operating Division has taken some steps in that direction by implementing management-by-objectives for its department managers. In addition, the general manager's staff compiles and tracks detailed information for all departments in the Transit Operating Division. They ultimately hope to condense such information into a 12 to 14 item indicator system for monitoring and planning system performance.

However, MTC currently lacks a system of service indicators which are monitored to assess systemwide performance. MTC's service data collection efforts are used for trouble shooting rather than periodic assessment of progress toward system goals. For example, substantial data are collected on loads and on-time performance. The data are used to isolate problem runs but not to routinely track systemwide performance on loading or schedule adherence standards. Although much service related data are collected, little is routinely monitored.

The lack of comprehensive, long-range plans makes it difficult for departmental directors to develop more immediate strategies in the form of budgets and annual objectives which are in accordance with MTC's overall goals. The development of long-range and top management goals and policies can be an effective method by which MTC commissioners inform staff on what changes should be made in the system, particularly when trade-offs between costs and service are involved.

2. WORKING RELATIONS BETWEEN MTC AND THE METROPOLITAN COUNCIL HAVE IMPROVED; HOWEVER, MTC'S PLANS STILL REFLECT A PERSPECTIVE THAT IS IN PART DIFFERENT FROM THE COUNCIL'S LONG-RANGE REGIONAL PLANS.

Relations between MTC and the Metropolitan Council have improved in the last year. Officials from both agencies character-

ized current relations as fair to good and noted recent improvements. Council staff believe that council members are more cognizant now of the constraints which transit operators face than they were in 1976 when the first Transportation Policy Plan was developed. In addition, the departure of some key people central to a mid-1970s planning dispute over fixed guideway transit has helped to ease tensions.

Reasonably good consensus exists regarding the division of most planning responsibilities between MTC and the Metropolitan Council. MTC accepts the legitimacy of the council's development planning role and the council, in turn, accepts MTC's right to plan bus operations. The remaining conflict centers on the gray area often called "implementation planning." Some responsibilities of both agencies overlap, and it is unlikely that these overlaps can be completely eliminated. Some transit personnel and legislators have even suggested that a small degree of overlap can actually foster healthy disagreements which result in creative solutions.

Although the Metropolitan Council approved MTC's first Transportation Development Program, which was produced in 1978, some Council staff are dissatisfied with it. The dissatisfaction is caused by:

a. The document's format. The current document contains highway plans and federally mandated Transportation Improvement Program projects. These items are now largely developed by the state Department of Transportation and, according to Council staff, they tend to obscure material more directly related to mass transit.

b. The document's focus. Council staff state that the document was intended to look at alternative strategies for meeting transportation needs. Instead, the document emphasizes financing the current system plus some incremental changes. Council staff believes that MTC has not yet given adequate attention to alternatives to regular bus service and alternative designs of the current bus system.

In our review we found that portions of the transit system outlined in the Transportation Development Program are not consistent with the Metropolitan Council's Transportation Policy Plan, even though by statute MTC's program is intended to help implement the council's regional development strategy. We found differences in such areas as providing feeder bus service within subregions, all-day express bus service between subregions and metropolitan centers, and circulation bus service within metropolitan centers.

Differences result from:

a. Conflict between Metropolitan Council policies and legislative incentives. The Council's plans encourage innovation and experimentation while legislative performance funding and subsidy limits encourage more routine and traditional approaches to providing service.

b. Conflict between Metropolitan Council policies and traditional alignment and scheduling practices. Metropolitan Council policies would extend transit service to areas where proven demand does not currently exist. In addition, the Council plan would increase the need for transfers and waiting time for some passengers.

MTC has made some efforts to test important Metropolitan Council concepts such as subregional transit. However, MTC personnel are convinced that some of the of the Council's concepts are impractical and would involve unacceptable financial risk.

C. RECOMMENDATIONS

1. MTC should assign clear responsibility to a specific department which will integrate various planning efforts throughout MTC, to ensure that plans are based on similar assumptions and that they complement each other.

2. A task force of Metropolitan Council and MTC members and staff should be formed to examine the applicability of the council's long-range plans to transit problems and costs.

IX. MANAGEMENT INFORMATION

A. INTRODUCTION

We did not initially intend to assess MTC's management information function but did nonetheless learn about various information system development projects and staff perceptions about management information needs. A "management information system" is a computerized system for processing data which will aid staff in their daily work and assist management in making decisions.

Two of MTC's most expensive investments in management information systems are the RUCUS (Run-Cutting and Scheduling) Project, which will cost $900,000 to develop and $170,000 a year to run, and the Management Information System (MIS) Project, which will cost $1,300,000 to develop and $650,000 a year to run. Because of the amount of money MTC is planning to spend on these projects and because the projects are being designed to provide information that is necessary for the successful operation of MTC's programs, we wish to report the following observations.

B. CONCLUSIONS AND FINDINGS

1. INADEQUATE DATA PROCESSING IS FREQUENTLY BLAMED FOR CAUSING PROBLEMS OR PREVENTING MTC FROM ADDRESSING PROBLEMS.

As we investigated MTC's various functions and what MTC management is doing to address problems, we were frequently informed that solutions were contingent upon better data and data processing. Examples are as follows:

a. Routes, Schedules, & Planning collects extensive data on bus operations, but the data usually focuses on trouble-prone routes in order to isolate and solve problems. Little data is collected and analyzed on a systemwide basis to assess such organizational goals as overall schedule adherence.

b. Maintenance has had difficulty in re-establishing its preventive maintenance and inspection schedule programs because it currently has no reliable procedure for estimating mileage for vehicles.

c. Department heads are not routinely provided historical data to aid them in developing their budgets, nor are

they routinely provided detailed budget and actual cost information which would allow them to monitor their own effectiveness and thereby take corrective action.

2. WHILE MTC STAFF ATTITUDES ABOUT THE NEW MIS PROJECT VARIED, IT WAS COMMON FOR INDIVIDUALS TO ADMIT UNFAMILIARITY WITH WHAT IS BEING PLANNED.

During our research, we frequently interviewed people who play key roles in various functions--people an MIS Project designer would need to interview. Such staff were normally asked what data they currently generate, what their standard procedures are, how they relate to other activities, and what information they need to conduct daily operations, managerial control, and planning. Some of these people said that they had never been asked by those developing the MIS Project what data they collect or require (Procurement); that they do not know what information will be provided (Claims); that managers disagree on the information they need; and that programs are designed before procedures are modelled (Finance).

Some staff expressed concern about the seemingly low priority assigned to the development of MIS Project components relating to their function. Also, during their research, Peat, Marwick, Mitchell, & Co. noted a general lack of cost-benefit analyses which could aid MTC in comparing various hardware and software packages and in setting priorities for system development. At least one commissioner of the MTC expressed confusion about the function and relationship of certain software items recommended for purchase to the overall MIS Project. A manager who is central to the MIS Project estimated that of MTC's top dozen managers, only about half have demonstrated serious commitment to its development. Peat, Marwick, Mitchell, & Co. also noted that top management at MTC has not been intimately involved in the project, and that this may lead to risks in faulty design and lack of top-level support.

C. RECOMMENDATIONS

1. MTC should ensure that various data processing projects, including the management information system, are adequately explained and communicated throughout the organization in order that personnel correctly specify what information they require and in order to prevent misplaced reliance on the new system.

2. Top-level managers at MTC should become more intimately involved in the development of the MIS Project in order to further ensure adequate design and also to provide the support that will be necessary if the final product is to be widely accepted and used by MTC staff.

LIST OF PROGRAM EVALUATION DIVISION STUDIES

The following reports of the Program Evaluation Division can be obtained from the Office of the Legislative Auditor, 122 Veterans Service Building, Saint Paul, Minnesota, 55155.

1. Regulation and Control of Human Service Facilities, February 1977.
2. Minnesota Housing Finance Agency, April 1977.
3. Federal Aids Coordination, September 1977.
4. Unemployment Compensation, February 1978.
5. State Board of Investment: Investment Performance, February 1978.
6. Department of Revenue: Assessment/Sales Ratio Studies, February 1978.
7. Department of Personnel, August 1978.
8. State Sponsored Chemical Dependency Programs, February 1979.
9. Minnesota's Agricultural Commodity Promotion Council, March 1979.
10. Liquor Control, April 1979.
11. Department of Public Service, April 1979.
12. Department of Economic Security (Preliminary Report), May 1979.
13. Nursing Home Rates, May 1979.
14. Department of Personnel (Follow-up Study), June 1979.
15. Board of Electricity, January 1980.
16. Twin Cities Metropolitan Transit Commission, March 1980.
17. Information Services Bureau, March 1980.
18. Department of Economic Security, March 1980.
19. State Bicycle Registration Program, in progress.
20. Department of Revenue Income Tax Auditing Policies and Procedures, in progress.
21. State Architect's Office, in progress.