

through the use of a transportation improvement plan, from a position of continual apology for MTA's deficits to one in which a service plan is discussed at public hearings of riders and others affected by the operations of the MTA so that they have greater control over MTA

services. At the same time, MTA must review its internal management and operations to ensure the best use of its resources and to develop a structure that is responsive to the citizens of the region.

## Case Study of New York City Transit System: Part 2

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The Metropolitan Transportation Authority (MTA) is a complex and enormous system. Each constituent agency has its own legal background, each has its own internal auditors, each has a budgetary process, each produces its own final annual report, and each is largely autonomous in almost every aspect of day-to-day operation. Some aspects of their operations, some of the data-processing controls, and some of the purchasing and other overhead activities have been centralized but, by and large, the service, marketing, management, budgetary and fiscal restraints, and many other functions are separate and unique to each constituent organization.

The total current MTA transit deficit is something more than 35 percent of the national transit deficit: About one-third of all the deficit funding that is provided in the United States goes to support the public transit system of New York. In addition, New York's percentage of total transit ridership is slightly higher than the national average. So it is a massive problem that is continually getting more difficult to deal with.

The New York system operates in an atmosphere in which labor is very strong. There is a great outside interest in the ability of management to conceive and carry out cost controls. There is a very high level of demand for service, and such a high level of political support for that demand in some places that, to some extent, service is provided regardless of cost. Fare policies are a very critical element, particularly in the city. There is great resistance to the notion of the graduated fare in New York City, because the people with lower incomes tend to need to pass through more fare zones within the city's own limits.

There is a climate of enthusiasm within MTA's management for controlling costs but, because of day-to-day operating problems, there has rarely been an opportunity to launch major efforts to do anything about improving cost controls. The problems of daily operation are severe; the recent power outage, for example, is only a very visible example of the kind of problem that has many smaller counterparts.

Another problem is the lack of cohesiveness in national transit policy. There is no solid energy policy under which transit might be excepted from the impact of the increased cost of fuel; at the same time, there is greater consumption of fuel because of more sophisticated transit vehicles, air conditioning, heavier vehicles, environmental control kits, and other innovations in transit. All of these are essential parts of marketing and other aspects of the operation, but all have a very clear negative impact on operating expenses. Federal officials who are increasingly hard pressed to defend the growing costs of transit programs in Con-

gress should think about these issues before they cast the first stone at transit managers who seem unable to deal with problems at the local level.

The study of MTA's management has three basic criteria for selecting cost-saving projects. One is their impact on cost reduction; that is, what is their potential for cost reduction? The second is the likelihood of their being implemented: Is it a practical idea? Can it be done? An important aspect of that is whether management thinks it can be done. Management endorsement is not required of all proposals before they are investigated, but there must be a reasonable response from management that a proposal could possibly be implemented. The third criterion is the time required for implementation. If it can be done, will it take 6 years, as required in federal statute? Will it require a merger of organizations? Will it involve capital funds that require a referendum, and what then is the time implied?

The study program is concerned with major areas of expenses—planning activities, capital improvements, bus and rail operations, and the more subjective areas of management and organization. The key objective is cost reduction and control of the rate of cost increase. The improvements proposed should have a minimal negative impact on the quantity of service, and cost savings should not be in the form of some deferred expense that will pass today's problems on to become tomorrow's crisis.

The first set of projects is in the planning area, which will absorb about 20 percent of the overall effort. The first aspect of this activity will be to examine the uses of capital funding and try to direct these funds into rehabilitation, safety, or renewal projects that will reduce or eliminate a condition that entails some penalty on operating expenses. For example, there are 21 bus garages within the New York City Transit Authority. One of them was built for the centennial celebration in Philadelphia and was moved to New York in the late 1890s to serve as a sports center, a far cry from its current purpose.

Many of those facilities are in terrible condition, which places a substantial operating penalty on the system. Our basic question is whether we can develop a substitute for the standard criterion on return on investment that would permit the dedication of a certain proportion of capital funding each year to capital investments that will produce a reduction in operating costs within a foreseeable period of time. To get a bus garage built in Schenectady with no constraints probably takes about 2½ years; to get one built in Manhattan, considering all the problems of land use, availability, and neighborhood reaction, can take just about forever.

Thus, implementation time may affect the extent to which some projects are practicable.

The second major project in the planning area will take a look at how service decisions are made. Again and again, cost reductions require announcements that a certain line, route, or frequency will be changed. These changes are not well understood by the riding public, the general citizens, or the public officials who appropriate the funds. Even management will concede that the basis on which they make those decisions is poor; the data that are available, the consistency with which decisions can be made, and the time allowed to make rational decisions all leave a great deal to be desired. Further, each of the MTA affiliates has a different way to make these decisions. Collectively, it is very difficult to make a decision about a budget reduction at the MTA level so that it will equitably affect the whole range of consumers who use MTA services, because each affiliate has a different source of financial support.

The final project in the planning area is to find some systematic and systemwide way to predict operating-expense requirements on the basis of various assumptions about service levels and other factors. There have been some very good efforts in this area by both the city and the state. MTA's Board of Directors needs an institutionalized basis for examining its operations in light of various operating and financial policies over a long period of time. It should be able to take a longer term look at the financial impact of its short-term operating decisions.

The study's second major topic is bus operations. The study will focus on two rather self-evident problems in bus operations. One is effectiveness in the assignment of personnel. More effective scheduling is one way to improve the productivity of the operators within the existing work force. There are currently wide variations in the relationship of platform hours to pay hours. The amount of time an operator spends driving a bus in revenue service, picking up passengers, may be only half the number of hours for which he or she is paid. This situation is rather common, and it is not at all an indictment of the management; it is a result of how transit operates.

The interesting thing about this time relationship in New York City is that the range varies from location to location. The study will include a differential analysis to pick out the limited segments of the system in which low utilization of labor occurs. It will then focus on the people who are preparing those schedules and try to set up a better system.

A similar project, which was passed up, involved doing something about street speeds. This is another way to improve the performance of the bus operation. If something could be done to improve street speeds in lower Manhattan, the productivity of bus service could be improved by as much as 30 to 35 percent.

The other area of bus operations to be studied is the potential for fairly simple cost-reducing work methods and productivity improvements in the garages that have the lowest performance in terms of certain indicators. Unreliability of equipment on the street, for example, creates significant cost penalties. The study uses rather simple indicators to test such performance. For example, in two garages in which the average age of the fleet is the same and the distance traveled for the vehicles is fairly similar, the number of mechanics per bus and other indicators may vary by 30 to 40 percent; fuel consumption and oil consumption may also vary significantly. Our industrial engineers will look at the ones that have low performance to see what can be done to get better performance and more work out of

the staff at those facilities.

In regard to rail transit and commuter rail, the third major aspect, the study will look at the scheduling of the rapid transit and commuter rail operations. The assignment of staff and crews are rather different from other kinds of operations. There are institutional variations between the practices of the Consolidated Rail Corporation, over which MTA has relatively little control, and those of the Long Island Railroad (LIRR), which is owned and largely controlled by the MTA.

The performance in the Transit Authority System's rail operations—the biggest part of the problem in terms of total dollars—is fairly good. However, the proportion of platform hours to pay hours—in this case cab time to pay hours—varied among about 33 test cases in this division of the system from about 44 percent to close to 100 percent. To some extent, that is a function of the way the system operates, but differential analysis will be used to examine portions of the system that are very similar but have very different indicators.

The study will also examine car maintenance, as it does bus maintenance, in regard to individual worker productivity, individual methods, and individual garages in rapid transit facilities.

Finally, the more subjective areas will be examined—organization, management systems, training and development, and cost reductions in the management staff; e.g., the LIRR, which has about 6000 employees, has about 650 management posts.

One of the typical problems in MTA is the monthly report that the various operating authorities make to the chairman; each is about 4 cm (1.5 in) thick. The tendency is to include the different reports of all the managers of an operation for the last 30 years. If a manager had 10 predecessors, there are 10 separate reports, all covering related things.

Probably one of the most significant things management has done in New York was to incorporate in the last labor contract a joint labor-management committee on productivity. This indicates a high level of recognition by management and is an interesting gesture on the part of labor to recognize that it also has a responsibility in this area. Management is also making productivity improvements in the escalator and elevator divisions, the maintenance-of-way departments, and so forth. Functions such as maintenance of way and maintenance of buildings, at least in the Transit Authority System, are very much under control.

Observations from current management studies in about six transit systems around the country permit some general conclusions. A committed management is essential to cost control; if cost control is going to become effective, it has to have management's support, and the more support it has, the better. About half the management studies that are now being conducted were initiated by the managers themselves.

The local communities must accept the need for fiscal restraint and equity if cost controls are to be instituted and effective; managers cannot do it by themselves. Public officials cannot demand both cost controls and more service in the same speech. There can be better service and cost controls or more service and more costs, but there cannot be all of those things at the same time. The cost controls have to have a reasonably balanced impact on the riders and on the employees. The greater the managers' sensitivity to this, the more likely they are to get results. Riders cannot take all of the cuts—less frequent service, lower quality of service, and so forth—in order to improve the situation of operating employees. Sooner or later, the system will wither and die—or be destroyed.

Finally, management, with public-policy and political

support, must be able to convince employees that their future security rests in their willingness to provide a

full day's work for a full day's pay. Labor simply must do more for what it is earning if transit is to survive.

## Controlling Transit Costs in Medium-Sized Cities

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There has been a recent reemphasis on increasing productivity and controlling costs. The objective, in broad terms, is to develop, maintain, and operate the most efficient and most cost-effective transportation system possible, within the institutional and policy constraints.

Transit management, which has been defined as the acquisition, allocation, and control of resources (human, physical, financial, and informational) to achieve given standards for transit service, has undergone a significant transformation during the last 10 years. The focus and orientation of transit have acquired a public-service dimension that has introduced new complexities and demands for transit management. The transit manager has a new role; he or she must balance the need for efficiency and productivity with a growing public commitment to serve the totality of urban mobility needs.

This expanded view of transit management combines the responsibilities of effective business management with those of public service. It attempts to reconcile the operation of transit with the needs of the marketplace, while seeking to maximize efficiencies and economies of operation.

Between 1970 and 1976, total transit operating costs increased 101 percent; transit passenger revenue increased only 24 percent. Total transit operating expenses went up 27 percent in 1974 and 14 percent in 1975 but only increased 8.5 percent in 1976, as did transportation account expenses. Maintenance and garage expenses increased 10 percent in 1976. Although the energy crisis has had some impact on transit, it cannot be assumed that further energy crises will significantly affect the situation.

It is becoming clear that transit, even with the support of federal and state governments, needs efficient management in order to increase productivity and control costs. There are areas of potential productivity gain and cost control in every transit operation. The challenge to management is to identify those specific areas and assess their potential for improvement. Some examples follow.

### TRANSPORTATION

1. The ratio of staff to peak-service buses.
2. The effective use of employee overtime—Many systems are spending too much money on overtime; they could hire some additional drivers—even at the cost of 30 to 40 percent in fringe benefits—and still save money.
3. Absenteeism due to sickness, oversleeping, and general misses.
4. Evenhandedness in the dispatching process—Both favoritism, which occurs almost everywhere, and dealing with grievances, which consumes time, cost money.
5. Vehicle accidents—Better safety and operating procedures and training and retraining programs can control costs and save money.

6. Cash control and fare-handling procedures—Better methods can prevent the diversion of revenue.

7. Service planning and bus scheduling—By studying the system, developing a good data bank, and learning more about the service product, the same or better service can be offered at a lower cost.

8. Run cutting—Computerized scheduling can permit cutting runs in order to save significant amounts of money.

### MAINTENANCE

1. Servicing ratios—The ratio between buses and maintenance employees is important, but it is more important to know the number of maintenance hours required per distance traveled.

2. Scheduling staff—Can regular employees be used at night or on weekends, and what is their pay scale? Are drivers on duty when the buses should be being serviced?

3. Equipment servicing—The maintenance program holds important savings potentials.

4. Training and industrial safety.

5. Purchasing, stores, and inventory control—Many operations have inventories they will never use.

6. Garage layout, design, and servicing equipment.

7. Assignment of supervision responsibility—Having too many supervisors raises the wage bill; working foremen often can get the work done at less pay.

8. Such other areas as absenteeism in the maintenance shop, heating and cooling of garages, fleet retirement, location of garages, deadheading, and the number of buses used out of each facility.

### LABOR RELATIONS AND PERSONNEL

1. Application of the labor agreement to operations—If it is possible, wage dollars should be matched in negotiations to some productivity items. The wording in the labor contract should be examined and its precise meaning understood.

2. Contract negotiation, pricing, and analysis—Many operators never find out until later what has really been given away in union negotiations.

3. Work rules—Many rules are not strictly applied; informal understandings become the rules.

4. The size of the administrative staff required to support the overall operation.

5. Pension programs—Many managements are giving away more than they have to in administering their pension programs.

6. Management organizational structure.

7. Management information systems and computerized employee files—These are important tools in problem identification.