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NAVAL POSTGRADUATE SCHOOL
Monterey, California



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AN APPLICATION OF A MANAGEMENT PERFORMANCE
AUDIT PROGRAM.

by

10 Stephen P. Folan

11 Dec 1980

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Thesis Advisor:

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An Application of a Management Performance
Audit Program

by

Stephen P. Folan
Captain, United States Marine Corps
B.S., Indiana University, 1975

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

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ABSTRACT

As part of the Navy Postgraduate School's community service program, this study was conducted to determine the effectiveness and efficiency of the management of the Monterey Peninsula Transit system, Monterey, California. Initially, a brief history of public transportation in the United States is provided. The criteria for this performance evaluation was a model developed by the Institute for Urban Transportation, Indiana University. Embellished with additional material provided through the author's research, the model provided a perspective for each of the functional areas, such as marketing, maintenance and personnel, within the transit system.

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I. INTRODUCTION

A. GENERAL

Depending upon an individual's perspective, the term "mass transit" or "mass transportation" evokes a multitude of images. For many, the terms create a picture of myriads of faceless commuters compressed into filthy, dimly-lit subway cars or noisy, antiquated buses where walls are covered with advertisements proclaiming cures for the common man's most vexing ills. Others view mass transit as an undesirable by-product of metropolitan activity where the preponderance of patrons are the aged, indigent, or members of a racial minority. Even the media, with its concern for "factual reporting," has tended to emphasize the lurid side of urban mass transit through what appears to be exclusive coverage of transit strikes, accidents, and crime. While these impressions may be valid for some, it is hoped that this has become less the norm for the majority of Americans as a direct result of a massive transit revitalization program undertaken by local, state, and federal governments within the last decade. Millions of dollars are channeled annually into transit operations, capital expansion, and research and development programs across this nation in an effort to encourage ridership; in essence, to provide an attractive and viable alternative to the auto. Mass transit, be it in the form of light or heavy

rail, motor bus, trolley coach, cable car, ferry boat, or commuter railroad, refers to the collective assemblage of devices designed to facilitate the movement of the general public.

Once a lucrative enterprise, mass transportation, like some now-extinct civilization, suffered from innumerable maladies that, over time, produced almost irreversible consequences. Profits evaporated as a result of such conditions as strict city franchises that required transit-financed road maintenance, the inability to recover a larger percentage of operating costs due to legislation preventing fare increases, the reduction of the standard five and a half day work week to five days, and the proliferation of the affordable automobile. Rising operating expenses and decreased revenues prohibited the replacement of severely worn equipment. Transit management's simplistic "remedy" called for increased fares that would generate more revenue. Yet the demand elasticity resulted in decreased patronage and therefore a loss of additional revenue, which meant a greater reduction in service, greater loss of patronage, and so forth. As a result of this vicious cycle, privately-owned systems were driven to extinction or to the point where services were so abbreviated and undependable as to discourage usage. By default, cities, counties, and municipalities began to assume transit operations in an effort to provide service to that segment of the population whose sole source of mobility was public transit.

Eventually, federal, state, and local legislation was formulated to authorize the use of public funds for the subsidization of these ailing systems. Despite numerous capital grant programs that helped finance operations, facility improvement and expansion and research/feasibility studies, transit ridership continued to decline as the transit deficit increased annually. The decades of system neglect and the convenience of the auto had a synergistic impact that created a formidable obstacle toward the recruitment of patrons. Owing to the urban sprawl created in part by the automobile, public transit was placed at a great disadvantage in trying to serve a decentralized populace. Clearly much more was required than capital improvements if mass transit was to attempt to regain the ridership it once possessed. Management was thrust into an environment almost entirely different from the time when mass transit enjoyed an almost monopolistic existence. Rider attitudes, population density and distribution, and industry location were but a few of the variables that had changed significantly.

Because of limited sources of funding, transit management had to judiciously allocate capital among the most promising alternatives which required a thorough analysis of the environment. While this may appear fundamental to any business, it must be remembered that transit had at one time been almost solely operations-oriented with little or no effort devoted to planning or analysis. Additionally, because of the use of

public monies to finance a significant portion of the public transit industry, legislators began to request feedback in an attempt to ascertain the utility of subsidization.

Much like private industry had done in prior years, mass transit management began to formulate a series of analytical techniques to assist the operational decision-making process and provide justification for continued funding to external entities. A series of ratios have been designed to measure transit efficiency and effectiveness. Similarly-sized systems or routes within a system can then be compared or changes in a system's performance can be evaluated over time through trend analysis. While extensive study has been conducted in an effort to determine the most valid performance indicators, there is no general consensus among transportation experts. In an effort to further assess system performance, management performance audit programs have been developed specifically for mass transit. Essentially, this audit encompasses:

- (a) An examination of financial transactions, accounts, and reports, including an evaluation of compliance with applicable laws and regulations.
- (b) A review of efficiency and economy in the use of resources.
- (c) A review to determine whether desired results are effectively achieved.¹

¹ U.S. General Accounting Office, Standards for Audit of Governmental Organizations, Programs, Activities and Functions, quoted in Felix Pomeranz et al., Auditing in the Public Sector (Boston: Warren, Gorham and Lamont, 1976), p. 285.

B. OBJECTIVE

The primary objective of this thesis is to conduct a performance evaluation of the management of the Monterey Peninsula Transit system (MPT) of Monterey, California. A secondary objective, contingent on the first, is to assist management in upgrading future operations.

C. METHODOLOGY

The evaluation of environmental influences as well as the internal procedures of the MPT are the focus of this study. Examination of items such as current financial reports and budgets, correspondence files, procedural manuals, statements of short and long range objectives are supplemented with interviews of personnel within and outside the system to enable the author to obtain a "working knowledge" of the MPT. Through an on-site review, the system's operations are evaluated utilizing a series of standards and preferred practices developed by the Institute for Urban Transportation, School of Business, Indiana University. Trend analysis is employed as an additional measure of system performance. Deviations from preferred practices or problems stated by those interviewed are the subject of more detailed analysis. Possible improvements and cost reductions are formulated to enhance management performance.

To capture the essence of the mass transit industry's demise and subsequent resurrection, this study examines the

development and present operation of the Monterey Peninsula Transit system. The MPT was selected for several reasons: 1) proximity to the Naval Postgraduate School campus since travel reimbursement limitations prevented extensive traveling; 2) the system's size is compatible with manpower available for research; 3) the positive reputation the system has in professional and academic spheres ensures a valuable learning experience; and 4) the system's history typifies the Phoenix-like existence of this country's mass transit systems.

D. ORGANIZATION

Initially, this treatise traces the history of urban mass transportation in the United States through the twentieth century. The second section of Chapter II provides a brief history of mass transit on the Monterey Peninsula. The third chapter establishes the model created by the Institute for Urban Transportation which specifies the standards and preferred management practices inherent within the functional areas of a creditable mass transportation system. The present operation of MPT and the assessment of departures from the criteria contained in the model are the issues of the fourth chapter. Additionally, this chapter contains recommendations to enhance system operation/management performance. The fifth and final chapter summarizes the thesis, presents conclusions, and provides potential topics for future research.

II. BACKGROUND

A. A NATIONAL PERSPECTIVE

1. General

If one is to comprehend the requirement for mass transit subsidization, examination of the history of mass transportation, particularly in this century, is prudent. There are several reasons this country's transit systems changed from powerful monopolies to tottering, financially and managerially bankrupt concerns that became publicly owned and controlled.² The first part of this chapter presents the major catalysts that prompted this metamorphosis during the nineteenth and twentieth centuries and examines the role of the federal government in providing assistance to these ailing systems. The remainder of this chapter discusses the history of mass transit on the Monterey Peninsula and briefly reviews the state of California's methods of assisting transit properties.

2. Pre-Twentieth Century

a. Nineteenth Century Urban America

Traffic congestion is not a twentieth century malaise. The streets of large American cities such as New York and Boston were choked daily with innumerable pedestrians,

² George M. Smerk, ed., Readings in Urban Transportation (Bloomington, Indiana: Indiana University Press, 1968), p. 8.

horses, and carriages in the early 1820's. At the time, the radii of even the largest urban communities were limited to the distance men could comfortably walk to work. Therefore, the marketplace, businesses, theatres, and residences were confined to an area that extended approximately two-and-a-half miles from the center of the city. One can visualize the masses making the daily migration to work on foot while produce-laden wagons and carriages vied for space on the narrow streets.

b. Brower's Omnibus

The first public transit service in the United States was offered in 1827 by A. Brower of New York City. For a one schilling fare, passengers could forego the often muddy trek through the street and ride Brower's 12-seat, horse-drawn carriage or omnibus which is Latin meaning "for everyone."³ Because the majority of the populace could not afford to own horses, public transit service rapidly became a popular innovation that spread to several cities. However, the jarring ride over unpaved, rugged streets prompted the search for a smoother, less tortuous journey.

c. Horse-Powered Street Railways

Since the railroads had obtained a relatively stable ride using steel rails and wheels, this method was

³ American Public Transit Association, "A Short History of Transit in the United States," by Peter C. Weiglin, Transit Fact Book '75-'76 Edition (Washington, D.C.: APTA Statistical Department, 1976), p. 9.

deemed feasible for intra-city use. Again, New York City was the proving ground and in 1832 the first street railway was placed into operation. In addition to the smoother ride, average vehicle speed increased from three to four-and-a-half miles per hour since the horse or mule did not have to pull the car over an uneven surface. The 50% increase in speed permitted people to reside further from their place of work and thereby encouraged urban expansion. Despite the merits of the street railway, it did not appear in other cities, with the exception of New Orleans, until the 1850's.⁴ A greater capital investment than that required for the horse-drawn carriage was necessary to install and maintain the railway in addition to the purchase of cars specifically designed to operate over the track.

d. Franchise Requirements

Because of the larger investment required, these street railway companies initially served only one or two streets. There was not one firm offering city-wide service, only a multitude of independent transit firms competing for the passengers. Prior to initiating service, each firm obtained a franchise from the city, or in some instances, the state.⁵ The franchise granted the company permission to operate on a public thoroughfare. A monopoly was created as no

⁴ Ibid., p. 13.

⁵ George M. Smerk, "The Traction Barons," in Essays in Transportation, ed. George M. Smerk (Bloomington, Indiana: Graduate School of Business, Indiana University, 1975), p. 636.

other railway company could operate on the same street without permission from the firm possessing the franchise. However, the franchise was not without stipulations that placed limitations on transit management's capacity for decision-making.

The amount of service to be operated and the fare to be charged, usually not exceeding five cents, were frequently stipulated in the franchise. Street railway companies were commonly responsible for maintenance of the street between the rails and for some distance on either side; there was a bridge maintenance requirement as well. In some places companies were required to sprinkle the streets for dust control in the summer and to clean them of snow in the winter.⁶

e. Incidentals of Animal Propulsion

Though the steam engine had long been applied to the nation's railroads, the associated noise and smoke made it undesirable for urban transit and extremely unpopular with horses who were justifiably terrified of the device. Several cities had ordinances which prohibited the use of the steam engine within city limits.⁷ Thus horses and mules were the primary source of propulsion during most of the nineteenth century. However, animal population was not without disadvantages. While mules had greater endurance than horses and horses had a greater resale value, both were expensive to employ as they required a tremendous quantity of feed. The animals' by-product, while posing no threat to the upper atmosphere and providing additional revenue from sales to

⁶ Smerk, Urban Transportation, pp. 8-9.

⁷ Weiglin, "Transit in the U.S.," p. 13.

farmers, was a source of irritation to nearby residents and made for putrid streets. As with any organism, these animals were subject to a variety of infirmities that could incapacitate the animal. Never was this fact so clearly demonstrated as during the Great Epizootic of 1872. Comparable to the Black Plague that ravaged medieval Europe, this highly contagious flu killed a significant number of horses in the eastern United States. Many transit firms lost more than half their livestock as a result of the flu with some resorting to human propulsion until new horses could be acquired.⁸

f. Development of the Cable Car

High operating expense, excrement, and the Great Epizootic compelled management to devise alternate means of propulsion. Dry ice, ammonia, and compressed air were a few of the methods developed but unreliability, high installation costs, and operating expenses thwarted the acceptance of these novel approaches. The large influx of immigrants following the Civil War quickly filled the horse car lines to capacity and urban streets were congested as never before. In the 1870's, elevated steam railways, or "Els," were constructed in New York in an attempt to relieve street congestion but mammoth construction expenses prohibited development of the "El" elsewhere until 1892.⁹ Finally, an enterprising manufacturer of steel cables borrowed an Irish technique that

⁸ Ibid., p. 11.

⁹ John A. Garraty, The American Nation, A History of the United States Since 1865, 2nd ed. (New York: American Heritage Publishing Co., Inc., 1971), p. 126.

utilized a stationary steam engine to drive a cable beneath the street. Through the use of a grip mechanism, a car could be pulled along city streets and detach at the operator's will to load and unload passengers. Successfully employed in San Francisco in 1873, the cable car eventually operated in 29 cities at a total investment of \$125 million. Within approximately 30 years the majority of cable car lines had vanished because of the development of the electrically-powered railway.¹⁰

g. Electrically-Powered Intraurban Railways

The first reliable electric line was painstakingly developed by a retired naval officer named F. J. Sprague in Richmond, Virginia. After the public demonstration on February 20, 1888, the electric trolley soon became the principle means of urban transit in the United States. "By 1895 some 850 intraurban lines were busily hauling city dwellers over 10,000 miles of track, and mileage more than doubled in the next decade."¹¹ With operating speeds in excess of ten miles per hour, the radius of the big city expanded from two-and-a-half to six miles or more. Massive redistribution of urban population occurred as those who could afford it, moved to the less-cluttered areas on the perimeter of the city. The immigrants and poor now occupied the older dwellings of the

¹⁰ Weiglin, "Transit in the U.S.," pp. 13-14.

¹¹ Garraty, American Nation, p. 127.

inner-city and ghettos began to develop. As the trolley lines extended, so did the middle class populace, leaving more dwellings for those of a lower economic status.¹² Thus, the trolley was as much a catalyst for urban growth as it was an aid to mobility.

The efficiency of the electric lines was evinced in the lower operating costs. While the horse car cost approximately 20 cents per mile and the mule and the cables about 15, the electric trolleys were about 10 cents per mile.¹³ Also, the initial investment was substantially less for the electrics than horse or cable. Table I presents a cost estimate made in 1889 for the installation of 10 miles of line and 15 cars for either cable or electric railway. Note that in this example, the installation expense of the electric railway is approximately 23% of the cable installation. With operating speeds doubled, operating costs half that of horse-drawn cars, construction costs a fraction of cable lines, and the incessant immigration to cities, the electric trolley appeared to be entrenched in urban America. As discussed below, security manipulation schemes, initiated in the latter half of the nineteenth century, had begun to undermine the financial stability of scores of the larger transit companies.

¹² Ibid.

¹³ Weiglin, "Transit in the U.S.," p. 14.

TABLE I
 INSTALLATION COST ESTIMATE, c. 1889
 FOR 10 MILES OF LINE

Cable Railway:	
Conduit, cable & track	\$700,000
Power plant	125,000
Cars	<u>15,000</u>
	\$840,000
Electric Railway:	
Roadbed	\$70,000
Wiring	30,000
Power plant	60,000
Cars	<u>30,000</u>
	\$190,000

Source: Lecture by George M. Smerk, Indiana University
 Bloomington, Indiana, 23 January 1974.

h. Intraurban Consolidation and the Traction Barons

As with almost any industry in a capitalist economy, there are enormous benefits to be derived from consolidation. Mass transit was no exception. The futility of competition between firms and the tremendous start-up costs for cable and electric lines made the merger of these numerous one and two route systems a necessity. Some entrepreneurs regarded the consolidation of railway lines as a means of reaping substantial personal profit; their goal far removed from service to the public. Beginning in the 1870's, these "traction barons" began the process of merging transit

properties in large cities such as Chicago, St. Louis, Pittsburgh, Baltimore, Philadelphia, and New York. With the acquisition of each additional company, a new series of stocks and bonds would be issued to a public that eagerly purchased them. The majority of the investors' money was channeled to the personal coffers of these "barons" through such means as phony construction companies. These companies were established to conduct "modernization and expansion" projects that in reality were performed on a scale far less than the investment indicated. As a result, several of the largest transit firms in the nation were grossly overcapitalized by the end of the nineteenth century. The following examples demonstrate the magnitude of these schemes.

By 1897, the Union Traction Company of Philadelphia was capitalized at \$242,280 per mile while the actual construction cost per mile was approximately \$76,400.¹⁴ Twelve million dollars was furnished by the stockholders of New York City's Metropolitan Street Railway for the electrification of 80 miles of railway in 1902. Five years later only 36 miles had been completed and the funds had disappeared.¹⁵ There are limits to the earning power of a firm's assets and the heavily diluted securities were a guarantee of the eventual inability of these conglomerates to pay interest or dividends, which ultimately led to bankruptcy.

¹⁴ Smerk, "The Traction Barons," p. 640.

¹⁵ Ibid., p. 655.

3. Early Twentieth Century

a. Financial Woes of the Intraurbans

As urbanization continued at a phenomenal rate, ridership on the intraurban lines heightened. Many businessmen continued to utilize these firms as a means of deriving profit with almost complete disregard for the daily management of transit operations. As an example, the electrics were used to promote real estate ventures. Without consideration for future profitability, a line would be established to provide access to a real estate promoter's property. The resultant profits from the land sales made this a popular undertaking about the turn of the century.¹⁶ The abuse meted to the American intraurban railways in the methods previously discussed began to have a substantial impact on these properties, particularly during the first two decades of the twentieth century. In essence, the ability to tolerate environmental changes was virtually nonexistent. By 1910 several urban transit firms were having serious financial difficulties.

b. Inflationary Prices and Management's "Remedy"

Broad-based industrial expansion made labor a precious commodity and salaries began to reflect this fact. Rising labor costs consumed a greater portion of dwindling

¹⁶ Council on Municipal Performance, City Transportation, Municipal Performance Report 1:6 (New York: Council on Municipal Performance, 1975), p. 5.

profits as transit management attempted to retain their motormen and conductors. The inflationary spiral fostered by the First World War equated to a general increase in the price of all goods and services; the cost to operate or build a line was greater than ever before.¹⁷ Bank loans were difficult to obtain as were funds from private investors since both lenders could receive higher rates of return on capital invested in an assortment of thriving industries.

One of the few options available to management was the postponement of preventative maintenance on facilities and right-of-way, thereby "eliminating" substantial fixed costs. Eventually this measure had tremendous consequences such as schedule unreliability due to frequent equipment breakdowns, unattractive, worn-out rolling stock, and safety hazards that would drive away the most dedicated commuter. Firms were still required to obligate precious dollars for the maintenance of roads, bridges, and other responsibilities stipulated in the franchise agreements.¹⁸ With fares limited to a nickel by these franchises, urban transit companies were unable to generate revenue sufficient to meet rising expenses despite the continued annual increase in ridership. The intraurban railways were truly between the proverbial "rock and a hard spot." At the end of the Great War,

¹⁷ Federal Elective Railway Commission, "Report to the President, 1920" in Readings in Urban Transportation, ed. George M. Smerk (Bloomington, Indiana: Indiana University Press, 1968), p. 23.

¹⁸ Ibid., p. 20.

approximately 50 intraurban firms that represented over half of the total streetcar mileage in the United States were bankrupt, with several other firms on the verge of receivership.

c. Dawn of the Automobile

Because of the industry's profound effect on urban growth and mobility and as a source of employment for thousands and the fact that hundreds of millions of transit securities were outstanding, the intraurban's predicament was of concern for many. In 1919, President Woodrow Wilson, at the urging of his Secretaries of Commerce and Labor, created the Federal Electric Railways Commission to investigate the situation.¹⁹ While providing convincing testimony, the Commission's recommendations to abate the street railway's worsening condition were lost in the inertia associated with the private auto. Because of assembly-line production, the automobile became affordable to the general public in approximately 1920. There was now an alternative to the electric trolley. Road construction subsidized by tax funds furthered the auto's popularity. While there had been 8,000 automobiles registered in the United States in 1900, the number had bounded to 17.5 million by 1925. As the auto increased in popularity, so did street congestion, which lowered the street railway's schedule speeds, making the intraurban an

¹⁹ Ibid., p. 10.

even less attractive form of transportation. Transit ridership peaked in 1923 and, except for the duration of World War II, began a steady decline until 1972.²⁰

d. Death of the Intraurban Railways

The automobile stimulated an exodus to the suburbs that resulted in decreased population density along the street railway routes. Once profitable transit lines now were not, and service cutbacks provided little relief. Though several firms were permitted to raise fares during the twenties, many discovered a resultant decrease in ridership with total revenue less than before. The deferrance of needed railways and equipment maintenance continued in an effort to reduce costs. Widespread unemployment during the Depression meant a loss of revenues which all but eradicated the intraurbans.

e. The Motor Bus and National City Lines

The absence of large fixed costs and the government's subsidization of motor vehicle use through large scale road construction and improvement projects made the bus an attractive replacement. However, the intraurban was not to disappear without enabling some businessmen one final opportunity for profit. The replacement of the trolley was welcomed by the manufacturers and suppliers of buses and bus accessories. Many discovered that a guaranteed market was

²⁰ Weiglin, "Transit in the U.S.," p. 17.

available for their products and services if they hastened the substitution process by providing capital to those firms acquiring the railway systems. Of particular notoriety was National City Lines, Incorporated, a transit holding company that evolved from a modest two bus operation in 1920 to the eventual ownership of 46 transit systems in 45 cities in 16 states in 1947.

National City Lines acquired defunct or nearly insolvent street railway companies and instituted bus service. The majority of the capital used to obtain the firms was furnished through the purchase of City Lines' preferred stock at prices in excess of prevailing market prices by General Motors, Firestone, Standard Oil of California, Phillips Petroleum, and Mack Truck Company. In exchange for their "generosity,"

... the respective supplier defendants (General Motors, et al.) entered into separate ten-year contracts with City Lines under which all of the busses, tires, tubes, and petroleum products requirements of the City Lines operating companies were purchased from the suppliers with an agreement not to buy any part of the same from any party competing with them. They provided, in short, that existing purchase contracts of all operating companies with other competitive suppliers should be terminated at their earliest possible moment.²¹

Once again, the profit motive overshadowed any thought of public services.

Further abandonment of the intraurbans was postponed during the Second World War as gasoline rationing, tire

²¹ "United States v. National City Lines, Inc., et al., 1951" in Readings In Urban Transportation, ed. George M. Smerk (Bloomington, Indiana: Indiana University Press, 1968), p. 35.

shortages, and the curtailment of auto production severely altered the driving habits of the nation. Hordes of commuters returned to mass transit as evidenced by total passenger ridership increasing from approximately 13 billion in 1940 to 23 billion in 1945.²² Dilapidated equipment as a result of years of neglect was placed back into service to fulfill demand. Once again, transit firms were making respectable profits; yet, the cessation of hostilities brought a rapid reduction in ridership and a return to the pre-War challenges posed by the private auto.

4. Post World War II

a. The Automobile and Urban Sprawl

Following the conclusion of the Second World War, there was an unprecedented population shift to the suburbs. Stimulated by federally-funded mortgages, millions sought higher quality dwellings on spacious lots. War-related inflation meant higher personal incomes; many who had previously been unable were buying these suburban homes. Additionally, most could afford "to pay more for transportation and thus to secure the actual or fancied conveniences of automobile commuting."²³ Many businesses also transferred to suburban

²² American Public Transit Association, Transit Fact Book, '78-'79 Edition (Washington, D.C.: APTA Statistical Department, 1979), p. 26.

²³ John P. Doyle, "The Doyle Report," National Transportation Policy, 1961, in Readings In Urban Transportation, ed. George M. Smerk (Bloomington, Indiana: Indiana University Press, 1968), p. 52.

locations to take advantage of low-cost land and reduced taxation. The automobile was the catalyst that created this amorphous mass, suburbia. No longer was growth an orderly, semi-controlled evolution that traced the intraurban and commuter railways. Low density, sprawling communities were evidence of man's enrapture with private transportation. In a reactionary fashion, the federal, state, and local governments fully sanctioned the use of the auto through massive construction measures.²⁴ Bridges, tunnels, parking lots, and highways - it was as though the engineering effort of the era was absorbed in accommodating the automobile.

b. Loss of Off-Peak Ridership

The altered mobility patterns in America were strikingly evidenced by leisure activities. No longer was the inner-city an exclusive area for shopping and entertainment as stores and theatres appeared at neighborhood shopping centers. The advent of television further reduced the number of riders using transit as a means to reach a destination other than work. In fact, the loss of off-peak ridership accounted for a large portion of total passenger losses succeeding World War II levels.²⁵ This loss of ridership in conjunction with the continued reliance on mass

²⁴ Helen Leavitt, Superhighway-Superhoax (New York: Doubleday and Company, 1970), pp. 6-10.

²⁵ Peak period refers to those temporal segments when demand for mass transit is greatest, usually that time of day when the public is commuting to and from work. Off-peak, therefore, refers to any other time when service is offered.

transportation for the daily commute to and from work created significant productivity problems. Equipment and manpower needed to fulfill demand during the morning and evening rush hours laid idle the remainder of the day. The problem of excess capacity was further aggravated by the trend of employers to eliminate the half-day of work on Saturday. For example, "in the Boston metropolitan area in 1946, the number of Saturday transit riders was 93% of the average number of weekday riders....By 1952, however, the five-day week had reduced Saturday transit patronage to only 74% of the weekday average."²⁶ Transit productivity was also degraded by the maddening automobile by-product, congestion. As streets became increasingly clogged with private vehicles, transit operating expenditures such as fuel and labor, rose without a corresponding increase in passenger revenue.

c. Rising Expenses Cut Dwindling Profits

Labor expenses assumed a greater portion of total operating cost as transit was forced to compete for workers. Management did not readily concede to worker demands for higher wages and associated compensation as illustrated by a total of 811 labor strikes from 1947 to 1963. In many cities the cost of labor doubled during the same time. Also, there were proportional increases in the prices of such items as

²⁶ Edward Dana, "Statement before the Committee on Metropolitan Affairs of the Massachusetts Legislature" cited by Wilfred Owen, The Metropolitan Transportation Problem, rev. ed. (Washington, D.C.: The Brookings Institution, 1966), pp. 84-5.

fuel and repair parts.²⁷ Franchise taxes and the costs associated with road maintenance continued to drain the transit industry's dwindling profits. Attempts to raise fares to a level reflecting a greater portion of the cost of service resulted in decreased patronage. The public was unwilling to pay more for a service that had been historically underpriced. At a time when gasoline was under 20 cents a gallon, this rationale could hardly be disputed. Why should commuters pay more for the same ride on a crowded bus when they could enjoy the privacy and independence of their own automobile?

Decades of cost cutting, of using equipment better suited for the scrap heap had done nothing for the image of mass transit. There had never been a marketing strategy, no attempt to provide an attractive alternative to the auto.²⁸ Traditionally, management had assumed a defensive posture of curtailing unprofitable service whenever politically feasible. Instead of projecting consumer demand or preference, the industry merely reacted.

d. An Era of Financial Insolvency

Conservative management, securities manipulation, consumer preference, the automobile, inflation, franchise requirements, government-funded road construction, and a

²⁷ Wilfred Owen, The Metropolitan Transportation Problem, rev. ed. (Washington, D.C.: The Brookings Institution, 1966), p. 86.

²⁸ Tabor R. Stone, Beyond the Automobile - Reshaping the Environment (Englewood Cliffs, N.J.: Prentice Hall, 1971), pp. 98-114.

multitude of other factors had slowly but steadily exerted force on the mass transit industry. From a financial perspective, the disproportionate, inverse relationship between cost and revenue had eventually shattered the private urban transit firms of the United States. Between 1954 and 1962 approximately 350 transit companies were sold or abandoned. While limited service had been restored in the majority of instances, "in 83 cases no replacement had been made at all,"²⁹ The situation had deteriorated to a level where, if any urban mass transit system was to remain viable, then no less than a federally-sponsored program providing financial subsidy was necessary.

5. Sixties, Seventies, and Beyond

a. Incipience of Federal Assistance

The formulation of federal policy in regard to urban mass transit and the associated legislation was precipitated by the Transportation Act of 1958. The Act was to permit financially-troubled railroads to abandon unprofitable passenger operations. Many of the passenger trains scheduled for removal were used for commuter service. Fearful of losing commuter rail service and of the subsequent addition of more autos to presently crowded streets, representatives from larger urban areas began to seek financial

²⁹ "Statement of Harrison A. Williams, Jr., A Senator from the State of New Jersey," Urban Mass Transportation-1962, in Readings in Urban Transportation, ed. George M. Smerk (Bloomington, Indiana: Indiana University Press, 1968), p. 75.

aid for their ailing systems. With little response from state and local levels, the mayors of these cities began, in 1958, to lobby Congress through the U.S. Conference of Mayors and National League of Cities for some form of federal assistance.

b. Housing Act of 1961

Three years later Congress passed the Housing Act of 1961 which provided a \$42.5 million appropriation for low interest loans and grants of up to two-thirds cost for demonstration projects.³⁰ The loans augmented depleted money assets, thus permitting the purchase or improvement of equipment and facilities. The demonstrations tested novel and diverse, yet practical methods for tackling the mobility problem. Different price, marketing, and service strategies were explored as were new or modified hardware developments. Besides attempting to encourage patronage, some projects sought to improve internal operations with modified management techniques and data processing assistance.³¹ With the realization that an integrated approach to transportation planning was essential if cities were to prudently construct roadways, Congress passed the Highway Act of 1962. If cities

³⁰ "Controversy Over Federal Methods of Financing Aid to Urban Transit Systems, Pro and Con," Congressional Digest, 1969 in Problems of Mass Transportation, ed. Diana Reische (New York: H.W. Wilson Co., 1970), pp. 24-27.

³¹ George M. Smerk, "Hope for Mass Transportation," in Transportation Horizons, 2nd ed., ed. George M. Smerk (Bloomington, Indiana: Graduate School of Business, Indiana University, 1970), pp. 281-82.

with populations of 50,000 or more wished to receive federal assistance for highway construction, then a comprehensive transportation plan was to be formulated prior to disbursement of funds. Yet, the Act failed to provide additional funding to support the planning requirement.³²

c. Urban Mass Transportation Act of 1964

While the utility of the demonstration projects was not to be disputed and the low cost loans denoted Congressional concern, a stronger, more substantial federal assistance program was required. The Urban Mass Transportation Act of 1964 was the bona fide beginning for such relief. In addition to continuing the loans and demonstration grants of the 1961 Act, the law provided federal grants of up to two-thirds of the net cost of capital investments for those public entities that drafted "a coordinated urban transportation system as part of a comprehensive plan for the region." The Act authorized the expenditure of \$375 million in this manner for a three year period.³³ In 1966, the Act was amended to include funds for management assistance programs, planning, and research and development efforts unlike those of the demonstration projects. And in 1970 Congress authorized an additional \$3.1 billion for capital improvement projects.³⁴

³² George M. Smerk, "An Evaluation of Ten Years of Federal Policy In Urban Mass Transportation," in Essays in Transportation, ed. George M. Smerk (Bloomington, Indiana, Graduate School of Business, Indiana University, 1975), p. 742.

³³ Owen, Transportation Problem, p. 112.

³⁴ Smerk, "Ten Years of Federal Policy," p. 742.

d. Operating Expenses Burden Local and State Governments

There was no opposition to the requirement to improve transit equipment and facilities. Years of neglect had meant nothing less than new equipment in many cities. If management was to attempt to recapture a portion of lost patronage, then they had to market a palatable product. Increased ridership beginning in 1972 was evidence that federal, state, and local financial assistance for improvement and expansion measures had begun to influence public preference. However, the combination of rising operational costs and declining ridership continued to force several firms out of business.

While publicly subsidized and operated transit systems had carried as many passengers as privately owned companies before 1950, public systems were rapidly assuming the lead.³⁵ By 1967 publicly owned systems transported 62% of the total passengers carried by the industry and 90% by 1974.³⁶ Local governments were forced either to assume operations or simply do nothing to fill the void. Choosing the latter course meant political suicide while the former was a veritable enigma. The majority of questions concerned the sources of financial support. The annual operating deficit

³⁵ John R. Meyer and Jose A. Gomez-Ibanez, Improving Urban Mass Transportation Productivity, final report (Springfield, Virginia: National Technical Information Service, 1977), p. 4.

³⁶ APTA, Fact Book '78-'79 Edition, p. 39.

of many of these systems alone represented a substantial portion of any city's budget. With labor, fuel, and associated costs continuing to rise, the severity of the situation would only intensify.

e. Urban Mass Transportation Act of 1974

After two years of revision and compromise within Congress and between the legislative and executive branches, the Urban Mass Transportation Assistance Act of 1974 was signed by President Gerald Ford. The original bill, which had been a two year, \$800 million measure, was broadened to authorize \$11.9 billion over six years for capital investment and operating expenses. In a further effort to reinforce integrated, well-conceived transit systems, the Act required statewide transportation planning, and to fill the "data gap" in available information systems, a uniform accounting and reporting system was mandated.³⁷ Specifically, the Act authorized \$4 billion for capital or operating grants and \$7.8 billion for capital grants during fiscal years 1975 through 1980.³⁸ The law required the federal government to

³⁷ U.S. Congress, "\$11.9 Billion Mass Transit Bill Signed," 93rd Congress, 2nd session, 1974, Congressional Quarterly Almanac, Vol. XXX, p. 694.

³⁸ A capital grant is funding used to assist in the purchase of equipment, construction of facilities and defraying a portion of costs associated with transportation planning, research and development and management training. An operating grant is financial assistance to pay a portion of those costs directly attributable to transit operations.

subsidize 50% of a system's operating costs in cities where the population exceeds 50,000 and 80% of the total cost of capital improvement projects. Operating assistance was to be disbursed according to a formula based half on population and half on population density.³⁹ Finally, local government had received federal funding to defray a portion of mass transit's enormous operating expenses.

f. Federal Public Transportation Act of 1978

Despite President Jimmy Carter's campaign pledge to ensure that the completion of new urban mass transit systems would be a top transportation priority, he had several doubts about his sincerity within weeks of assuming office. His omission of mass transit from his 1977 energy conservation program and his decision not to seek new funding for mass transit systems before the 1980 fiscal year revealed his preference for the modification of existing systems without additional construction. At approximately the same time, Congress expressed concern regarding the utility of rail transit systems.⁴⁰ In spite of early indications, additional mass transit legislation was signed by President Carter on November 6, 1978. The Federal Public Transportation Act of 1978 authorized \$15.6 billion in mass transit aid over five years. Among several initiatives was a reorganized discretionary grant program involving approximately one-half of

³⁹ Ibid., p. 689.

⁴⁰ "A Dark Tunnel Ahead For Mass Transit," Business Week, April 18, 1977, p. 121.

the total mass transit appropriation. The program permits the Transportation Secretary to utilize funds as deemed necessary to finance mass transit projects presently representing significant federal investment. Consistent with Carter's policy in regard to new rapid transit systems, the Act "required that at least \$350 million of total funds in the program be spent on the reconstruction and improvement of existing public transit systems."⁴¹ Additionally, cities of less than 50,000 people became eligible for operating subsidies.

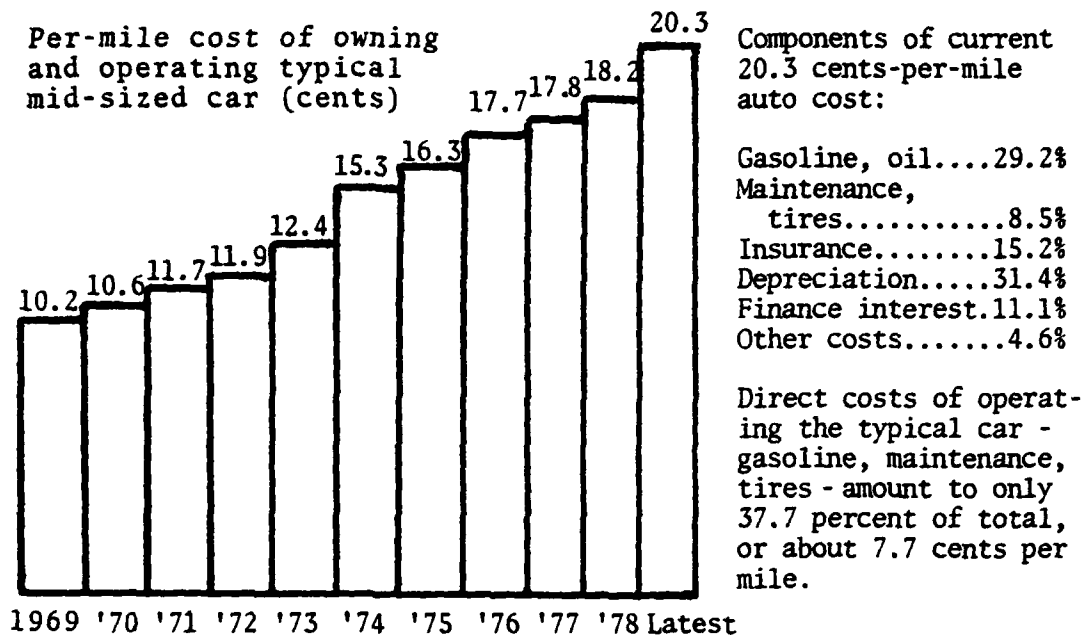
g. Automobile Operating Costs in Recent Years

The gasoline shortages in the spring of 1979 not only precipitated an increase in fuel prices, but a new rationale for most Americans. Perhaps for the first time since the private automobile became the mode of transportation in this country, drivers have become increasingly aware of an "incidental" that has plagued the mass transit industry for more than 80 years. The "incidental" is operating cost. Every stop for fuel, with the subsequent outlay of \$20, \$30 or more has underscored just how costly it is to drive a car. As shown in Chart A, automobile operating costs per mile have almost doubled between 1970 and 1979.

⁴¹ U.S. Congress, "Carter Signs \$54 Billion Highway Bill," 95th Congress, 2nd session, 1978, Congressional Quarterly Almanac, Vol. XXXIV, p. 540.

CHART A

COST OF DRIVING - 20.3¢ PER MILE



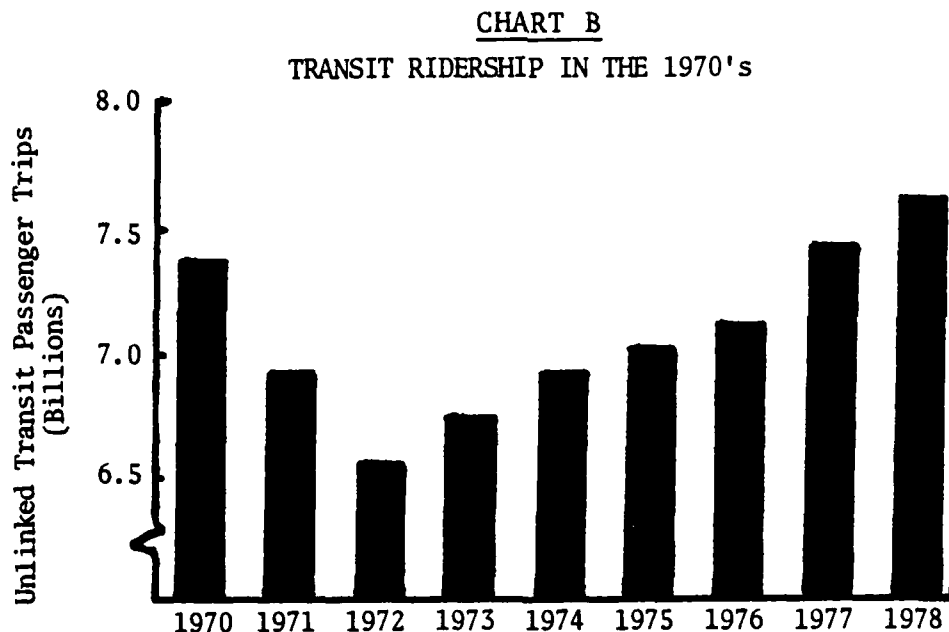
Note: Figures assume a mid-sized, eight-cylinder car equipped with air conditioning, automatic transmission and other normal options, and driven 15,000 miles a year in an urban area.

Source: Caroline Mayer, Fred Frailey, and Kenneth Sheets, "Changes in the Way You Will Travel," U.S. News and World Report, July 2, 1979, p. 53.

h. A Viable Alternative

Many have become weary of the side-effects of society's automobile addiction, of the congestion, pollution, and seemingly endless stretches of concrete roads and asphalt parking lots. Several cities, while not declaring open season on the auto, have attempted to portray mass transit as a practical and attractive alternative. Free ride zones in the

center of town, employer-subsidized monthly commuter passes, and exclusive bus lanes are but a few of an endless number of actions employed in cities today.⁴² However, with rising fuel costs transit management must concentrate on meeting demand as more and more people leave their cars for public transportation. Chart B displays the annual ridership levels since 1970.



Source: American Public Transit Association, Transit Fact Book '78 - '79 Edition (Washington, D.C.; APTA Statistical Department, 1979), p. 25.

⁴² Detailed explanations of a variety of techniques are found in Public Technology, Inc., Transit Actions: Techniques for Improving Productivity and Performance (Washington, D.C.: U.S. Department of Transportation, 1979).

i. A More Prominent Role

A strong analogy can be drawn between this nation's mass transportation system and the Egyptian mythological bird, the Phoenix, that consumed itself by fire and rose renewed from its ashes. For some time, urban mass transit had no equal and the system survived despite ineptitude and wanton neglect. Sufficiently weakened by these maladies, it eventually fell prey to a host of environmental factors. As evidenced earlier, with federal, state, and local assistance the once-decimated system began to once again assume a more prominent role in urban America.

B. THE MONTEREY PENINSULA

1. General

The California coastline south of San Francisco makes a gradual, eastwardly concession to the Pacific Ocean for approximately ninety miles. Then coast and sea form a large, sweeping arc known as the Monterey Bay. The southern waters of the bay are partially shielded from the force of occasional ocean storms by a craggy, steeply sloped peninsula that juts into the Pacific at a northwestern angle. The Monterey Peninsula's commanding height over the relatively calm water has made this terrain a prime location for military installations during much of California's history. The military continues to be of regional economic significance through the Defense Language Institute at the Presidio of

Monterey and the Department of Army's Fort Ord which is located seven miles north. Sardine canneries were once of prime importance to the local economy until overfishing doomed the industry by 1950. However, the region's primary source of revenue emanates from tourism. The area's scenic beauty, temperate climate, and relative seclusion have drawn countless tourists since the late nineteenth century. In fact, tourism could be designated as the catalyst that gave rise to public transportation on the peninsula.

The history of public transit on the Monterey Peninsula offers an illustration of the countless alterations sustained by the American nation's transit systems. From technological innovation to post-World War II labor strife, from private proprietorship to public subsidy and eventual ownership, this particular epic is replete with incidents that closely parallel national trends. By examining the predecessors to the Monterey Peninsula Transit system, the reader obtains a greater understanding of the developments that ultimately led to public ownership of the peninsula's mass transit system. Also, because of the State of California's effort to assist public transit properties is one of the few state-initiated programs of its kind, the state's Transit Development Act of 1971 is briefly reviewed in this section.

2. Early Developments

a. Horse-Powered Street Railway

Public transit service had its inception on August 12, 1890, when the Monterey and Pacific Grove Railway received permission to install narrow guage (3'2") track in accordance with the provisions of City Ordinance 27. As discussed previously, the impetus for the peninsula's mass transportation was tourism. The first railway line connected the plush Del Monte Hotel with downtown Monterey and Pacific Grove to the west. Utilizing ten new horse-cars, revenue service began on August 5, 1891. After less than two years of successful service, the company was reorganized as the Monterey and Pacific Grove Street Railway and Electric Power Company (M and PG) in 1893. Despite erratic service, revenues from operations permitted the regular payment of dividends to stockholders.⁴³

b. Conversion to Electricity

As the majority of this nation's horse-drawn urban transit lines were converted to electricity at the turn of the century, so was the M and PG. The effect of electrification on urban development discussed in Part A of this chapter was evidenced on the Monterey Peninsula as well.

"Without question, the greatest factor in the building of Monterey and Pacific Grove was the conversion of the old

⁴³ Erle C. Hanson, "Monterey and Pacific Grove Railway," The Western Railroader, 22 (September 1959): 3.

horse-car line between the two cities into a modern electric street railroad."⁴⁴ In addition to electrification, new routes were laid to: 1) provide service from downtown Monterey into the Presidio, then known as Ord Barracks; 2) expand service in downtown Monterey; and 3) provide service to the Southern Pacific depot located in that city. With the conversion of all line and rolling stock, electric service began in August 1903. Fares on the line ranged from a nickel on the Ord Barracks line to 20 cents on the Pacific Grove to Del Monte route.

c. Expansion and the "Del Monte"

In 1905, the railway was converted to standard guage (4'8-1/2") and purchased by the Byllesby Syndicate Company of Chicago. The Pacific Grove line was extended to that city's Southern Pacific depot and in May 1905 the entire system was reopened. To capitalize on the scenic grandeur of the Del Monte to Pacific Grove route, a luxuriously outfitted parlor car dubbed "Del Monte" was purchased the same year. Passengers enjoyed the magnificent vista on this "Bay Shore Line" while the "Del Monte's" grammophone played "In Old Monterey."⁴⁵ Like the intraurbans of several cities during the early twentieth century, real estate promotion became the impetus for construction on the peninsula.

⁴⁴ Ibid., pp. 3-4.

⁴⁵ "Monterey: Growing With Success," Passenger Transport, April 11, 1980, p. 1.

In 1912, a land developer founded the region's second street car company which consisted of approximately three miles of track. The Monterey and Del Monte Heights Railway Company offered service from the eastern terminus of the M and PG line to the town of Del Monte Heights which is presently Seaside. Equipment for the railway was rented or leased from the M and PG. Service was discontinued following about one year of operation with final abandonment in 1914.⁴⁶

d. Initiation of Bus Service and the
End of Electric Railway Service

Despite attempts to encourage ridership through dances and other events, revenues began to decline in 1914 as road improvement, jitney competition, and the private automobile attracted increasing numbers of former passengers. Though World War I sent passenger revenues soaring to record levels because of the large influx of recruits to Ord Barracks, the cessation of hostilities quickly brought ridership to pre-war levels.⁴⁷ In desperation, management terminated certain routes and lengthened vehicle headways in an attempt to reduce operating cost.⁴⁸ Because the M and PG had failed to make specific improvements ordered by the Railroad Commission, A. J. Mason and associates received certification to duplicate

⁴⁶ Frank J. Lichtanski, "Monterey Peninsula Transit," Motor Coach Age, January 1980, p. 4.

⁴⁷ Hanson, "Railway," p. 14.

⁴⁸ Headways refer to the time between transit vehicles operating on a scheduled route.

the streetcar line in February 1922. Soon the Bay Rapid Transit Company began service using three Model-T Ford buses operating on 20-minute headways. Though the bus fare was twice the nickel trolley fare, bus drivers attempted to attract patronage "by racing the streetcars to major stops, intentionally blocking the tracks, or cutting short the route in order to make an extra trip."⁴⁹ While these tactics were bold in nature and execution and made for an exciting ride through town, they were ineffective against the electric trolley. Eventually Bay Rapid Transit was permitted to reduce its fare to a nickel and it was through this tactic that the M and PG was dealt a fatal blow. The equalization of fares meant a substantial reduction in patronage and the end of the electric trolley on the Monterey Peninsula on December 5, 1923.⁵⁰

3. Bay Rapid Transit Company

a. Service Expansion

With trolley service terminated, the Bay Rapid Transit Company (BRT) became the primary public transit system for the peninsula. During the remainder of the twenties management sought to expand service and consolidate with the remaining "independents" of the region. Consolidation was accomplished in 1927 with BRT's acquisition of the Monterey-Carmel Bus Line and a C. E. Shelby's firm that linked

⁴⁹ Lichtanski, "Monterey Peninsula Transit," p. 5.

⁵⁰ Ibid., pp. 5-6.

Monterey, Carmel, and the Carmel Highlands Inn. Also, the firm contracted for school bus service to supplement operating income.

b. The Effects of the Depression

The Depression greatly curtailed ridership with total daily revenues as low as \$60.⁵¹ The firm sought relief through fare increases and discontinuance of service to the Carmel Highlands Inn. Despite repeated requests by residents of East Monterey, BRT management would not consider service expansion under such unfavorable economic conditions. As a result, an obtrusive and ill-mannered local resident founded the East Monterey Bus Lines in 1932. Initially operating without certification, Bryant Guernsey's two Plymouth station wagons and one used Reo bus served Seaside, Fort Ord Village, and the Monterey Airport. The Second World War brought a tremendous surge in ridership for both firms as servicemen once again saturated the local military installations. Additionally, employees of the booming sardine industry made extensive use of public transit facilities.

c. Reduced Revenues and Financial Vexation

In retrospect, the six years following World War II could be viewed as particularly harsh for the peninsula's transit companies. While several environmental factors impacted heavily on the systems with little opportunity for

⁵¹ Passenger Transport, p. 1.

management recourse, the East Monterey Bus Lines' demise was a direct result of its owner's eccentricities. It was as though passenger abuse and discomfort were primary objectives of the line. Irritants such as dilapidated equipment, nonexistent schedules, and surly drivers possessing complete disregard for passenger safety precipitated a series of public hearings that resulted in the revocation of the firm's certification in May 1947. Although the BRT offered less stimulating service, it was beset with a series of incidents which undermined its financial stability. First, the conclusion of the war with the reduction of military personnel on the peninsula meant a substantial diminution of revenue. Secondly, the school district's purchase of buses terminated BRT's contract service. Additional revenues were lost when the abrupt disappearance of sardines in the Bay forced the cannery industry into insolvency. The end of gasoline rationing and the increased availability of automobiles drew even more riders from public transit. Ridership peaked in 1951 and thereafter began to decline. For the first time since 1934, fares were increased in an attempt to widen a rapidly diminishing profit margin.⁵²

d. Problematic Events of the Fifties and Sixties

During the fifties, Bay Rapid Transit was beleaguered not only by declining patronage, but by bitter labor disputes as well. Between the summer of 1952 and

⁵² Lichtanski, "Monterey Peninsula Transit," pp. 9-10.

the fall of 1953, vehicle operators struck for a total of 18 weeks. Higher operating costs forced the discontinuance of service to Pacific Grove until 1958 and resulted in a 100% fare increase on local and Carmel routes (\$.10 to .20 and \$.15 to .20, respectively).⁵³ Over the next 20 years ownership of the BRT changed several times. Though a lucrative charter service subsidized public transit operations, costs continued to rise while ridership fell. As was happening elsewhere, massive road construction and inexpensive gasoline made the automobile an increasingly attractive mode of transportation. While the situation worsened, management continued to reduce service and, by 1965, the general manager of BRT recommended to the California Public Utility Commission that public subsidization or ownership were the only solutions short of complete elimination of service.⁵⁴ Yet, subsidization was not to occur for another decade. Charter service continued to subsidize operations while financial losses mounted and routes became severely truncated.

e. Joint Powers Agency

In July 1972, management received permission from the state Public Utility Commission to abandon service unless local subsidization was forthcoming. In response, the local governments of Carmel, Del Rey Oaks, Monterey, Monterey

⁵³ Ibid., pp. 10-11.

⁵⁴ "Bus Line Pleas for Service Cut," Monterey Peninsula Herald, January 7, 1965, p. 1.

County, Pacific Grove, and Seaside formed the "Monterey Peninsula Public Transit System Joint Powers Agency" (JPA) to subsidize BRT for one year using general funds.⁵⁵ Despite the \$3,000 monthly assistance, costs continued to rise and the quality of service became increasingly unsatisfactory. His request for the doubling of subsidization denied, BRT's owner filed for abandonment of services following 11 months of public assistance. The Public Utility Commission granted the owner's request which allowed the JPA 30 days to formulate a viable substitute for BRT.⁵⁶ In response, the JPA rapidly established a publicly owned transit system. Financial resources came from a portion of the state sales tax that was created by the Transportation Development Act of 1971.

f. Transportation Development Act of 1971

Before continuing with the history of public transit on the Monterey Peninsula, a brief review of this Act is appropriate. While California may be thought of as the state that brought the nation such cultural "amenities" as smog, endless permutations of the drive-in, and 16-lane freeways, these perceptions did not accurately reflect the concern among city and state representatives during the late sixties. Perhaps because of California's futile

⁵⁵ Lichtanski, "Monterey Peninsula Transit," p. 17.

⁵⁶ "Bay Rapid Gets PUC Okay to Halt Bus Runs," Monterey Peninsula Herald, August 23, 1973, p. 1.

attempts to accommodate the auto, the need for mass transit became apparent. As transit systems throughout California were forced to abandon service, public ownership was becoming increasingly common. Because federal funding could be used only for demonstration and capital investment projects, a tremendous financial burden was placed on these communities. If these municipally-owned systems were to provide a satisfactory level of service, then additional financial resources were necessary to help liquidate operating expenses.

In response, the California State Legislature passed the Transportation Development Act (TDA) of 1971. The Act created a Local Transportation Fund (LTF) in each county. The LTF represented an additional one-quarter of one percent of the existing sales tax to be used for local transportation requirements. According to the Act, LTF's can be utilized to finance street and road work, transportation planning and administration, as well as public transit. However, unmet transit needs must be satisfied prior to funding these categories. Between 1972 and 1978, more than \$1.1 billion has been provided in new transportation financing with the establishment of nearly 50 new transit systems funded in part by the Act.⁵⁷ Approximately 78 transit systems in California

⁵⁷ Report of the Office of the Auditor General to the Joint Legislative Audit Committee, Report 721, by Mike Cullen, Chairman (Sacramento, California: Office of the Auditor General, 1977), p. 6.

are authorized to receive monies from the LTF. The Act also required fiscal and management performance audits.⁵⁸

4. Monterey Peninsula Transit

Utilizing these TDA funds, the JPA leased six used buses from El Paso City Lines, appointed an interim manager, and commenced service on September 26, 1973, the day after BRT had terminated operations.⁵⁹ By the end of the first day, four of the six buses had broken down. Despite these minor setbacks and the lack of such basics as a maintenance facility, mechanics, tools, and repair parts, the JPA was firmly committed to satisfactory public transit for the region. Community support was evidenced in the unanimous agreement among all local governments that the new bus system would receive 100% of their local transportation development funds for as long as necessary.

Of particular significance during the Monterey Peninsula Transit's (MPT) development has been agency and management employment of integrated planning in almost every phase of operations. Beginning with a county-wide transit study that qualified MPT for federal funding, the system underwent a deliberate evolution of service expansion and capital equipment acquisition. Extensive use of federal capital grants

⁵⁸ Report of the Office of the Auditor General to the Joint Legislative Audit Committee, Report 295, by Mike Cullen, Chairman (Sacramento, California: Office of the Auditor General, 1977), p. 11.

⁵⁹ John Hallisey, "'New' Buses Ready to Roll Wednesday," Monterey Peninsula Herald, September 25, 1973, p. 1.

has permitted the construction of a \$1.3 million administration/maintenance facility, progressive purchase of 28 new buses, bus stop shelters, two-way radios, automobiles, and office equipment.⁶⁰ Community satisfaction and response to higher gasoline prices are evidenced in the annual patronage figures contained in Table II.

TABLE II
ANNUAL PATRONAGE LEVELS

<u>Fiscal Year*</u>	<u>Total Passengers**</u>
1974	364,107
1975	804,242
1976	1,061,789
1977	1,396,797
1978	1,592,248
1979	1,897,719
1980 (est.)	2,500,000

*July 1 - June 30

**includes transfers

Source: Monterey Peninsula Transit, Annual Report, Fiscal Year 1979, Monterey, California, December 1979, p. 6.

While the majority of publicly-owned transit systems were expanding service throughout California, operating expenses skyrocketed. Many legislators became concerned about the interrelationship of subsidy and service deficit. More subsidy provided greater service. Yet, this subsidy meant

⁶⁰ Everett Messick, "From Forced Jump Start, MPT Rolls Into Sophisticated System in 6 Years," Monterey Peninsula Herald, September 25, 1979, p. 17.

greater operating expenses, greater deficit, thus requiring an even larger subsidization. In an attempt to more effectively manage transit subsidization, the California legislature passed Senate Bill 620 in 1979. The Bill made several amendments to the TDA of 1971. One of the most significant amendments requires that a certain percentage of operating expenses be recovered through farebox receipts as a prerequisite for the receipt of LTF monies. The Bill also established a three-year appropriation of funds for a series of transit programs that include commuter rail, inter-city bus, as well as the State Transit Assistance Fund which is allocated through regional agencies on a population basis.⁶¹

Many changes have been made by the JPA and the management of Monterey Peninsula Transit since the inception of public service as reflected by schedule and service improvements and other techniques designed to enhance customer satisfaction. Evident in the design of this system has been the attempt to provide the local populace with a viable alternative for mobility. However, the immediate future poses challenges to management. Increased ridership, greater reliance on farebox revenues as mandated by legislation with proportionately less public subsidy, and rising operating costs are but a few of the contingencies that will demand a flexible, yet clearly directed style of management.

⁶¹ Monterey Peninsula Transit, Minutes of Meeting of the Board of Directors, meeting of May 1980, (typewritten).

C. SUMMARY

A thorough account of the history of urban mass transit in the United States facilitates comprehension of the present condition of said systems. Whether reviewing the history of mass transportation in general or that of a specific system, certain conditions can be cited as determinants that precipitated the demise of privately-owned urban transit companies. The development of the affordable automobile, government financed road construction, rising operational expenses, financial manipulation, and inflexible city franchise requirements are but a few of the conditions that damaged a once thriving industry. Though these factors made for a harsh environment, transit management's inability to guide the firm under such circumstances can be cited as yet another reason for the ultimate failure of the industry. Reactive, solely operations-oriented management had failed to respond to environmental changes, to provide the public with a suitable alternative to the automobile, and to incorporate customer preference in the development of any phase of operation.

In an effort to avoid the repetition of past mistakes, present transit management has adopted a new approach to public service while employing managerial techniques and principles not unlike those used in the private sector. Chapter III provides the reader with a basic understanding of the functional areas and associated responsibilities inherent in effective mass transit management.

III. MODEL

A. GENERAL

Sound management practice requires a periodic or continuous review of operations in order to ascertain system performance. The findings are then compared to predetermined objectives or standards and if appropriate, corrective action is initiated to rectify discrepancies. This method of management control is defined by Anthony and Herzlinger as "the process by which managers assume that resources are obtained and used effectively and efficiently in the accomplishment of an organization's objectives."⁶² The review process is by no means limited to the private sector. By virtue of such developments as dwindling tax bases and tax payer "revolts" all levels of government are compelled to ensure that funds are obligated in a manner that provides the greatest benefit to the public in general.

As discussed in Chapter II, history has demonstrated that public subsidization is imperative to ensure the survival of mass transportation. The tremendous fiscal assistance devoted to the country's urban mass transit operations in an attempt to attain a sometimes undefined level of service becomes a question of how much is enough. As a result, there has become

⁶² Robert N. Anthony and Regina Herzlinger, Management Control in Nonprofit Organizations, Willard J. Graham Series in Accounting, (Homewood, Illinois: Richard D. Irwin, Inc., 1975), pp. 16-17.

an increasing demand to evaluate transit performance, in essence, to determine if the public is getting the most for its money.⁶³ The management performance audit is an evaluation technique that contributes significantly to the fulfillment of such demands. The State of California was one of the first to employ the performance evaluation as a requisite for the funding of transit properties. With the initiation of operating assistance through the Transportation Development Act of 1971, the California legislature mandated periodic fiscal and management performance audits.⁶⁴ The California Public Utility Code requires that all transit properties receiving Local Transportation Fund (LTF) monies undergo a performance audit by July 1, 1980 and triennially thereafter. Specifically, the statutes state that "the performance audit shall evaluate the efficiency, effectiveness, and economy of the operation of the entity being audited..."⁶⁵

The main thrust of the evaluation/audit is the examination of the entity's performance in relation to generally accepted practice as well as internally or externally-formulated goals and objectives. While environmental conditions

⁶³ Gordon J. Fielding, Roy E. Glauthier, and Charles A. Lave, Development of Performance Indicators For Transit, final report (Springfield, Virginia: National Technical Information Service, 1977), pp. 1-4.

⁶⁴ Report of the Office of the Auditor General to the Joint Legislative Audit Committee, Report 707, by Mike Cullen, Chairman (Sacramento, California: Office of the Auditor General, 1977), pp. 7-13.

⁶⁵ California, Public Utilities Code, Statutes (1977), Sec. 99245-47.

place certain constraints on a transit system that make for specific policies or procedures, effective management has specific characteristics that transcend these influences. This chapter contains an assemblage of these preferred practices that has been developed by the staff of the Institute for Urban Transportation of Indiana University. Based upon a number of performance audits of mid-western transit properties and associated research, the Institute has developed a series of guidelines for the functional areas of a transit system. These guidelines are just that and they are not "hard and fast" rules that must be adhered to in order to ensure success. However, this guidance provides the operational auditor with a sound base from which to develop and subsequently conduct a performance evaluation.

While the Institute's model encompasses an examination of the transit system's particular environment, the model to be discussed focuses solely on the organization and functional areas. As was discussed in Chapter I, the primary objective of this thesis is to evaluate the management of the Monterey Peninsula Transit system. The second objective is to assist management in upgrading future operations. Therefore, the model contained within this chapter and the subsequent evaluation in Chapter IV concentrate on those areas where transit management determines the outcome. In short, those areas where management has control. To reiterate an important theme, credible management techniques transcend environmental impact. Only when an environmental factor influences

management action in such a manner as to produce questionable or uncommon procedure is the related condition reviewed.

B. MANAGEMENT

The basic, innate character of a transit system is directly attributable to the manner in which it is managed. Management is responsible for the coordination of the entity's activities toward the fulfillment of objectives. It is the general manager and his assistant that orchestrate activity. They integrate the various subsystems in the achievement of specified or implied tasks, as well as enable the organization to respond to new situations.⁶⁶ Basically, transit management has six tasks:

1. Establishing Objectives

Management must possess an intimate knowledge of the system's strengths and weaknesses. Only with such information can the manager make recommendations to the transit system's governing body as to potential, realistic goals. Such advice from management helps the governing body determine those goals that best satisfy community requirements for transportation service. Once the governing body establishes goals, management formulates corresponding objectives and policies. These objectives and policies are, in essence, quantifiable translations of the body's goals. The basic

⁶⁶ Seymour Tilles, "The Manager's Job: A System Approach," in Policy, ed. Walter H. Klein and David C. Murphy (Boston: Little, Brown and Company, 1973), pp. 63-64.

criteria for any objective are: "1) clear, concise and unambiguous; 2) accurate in terms of the true end-state or condition sought; and 3) consistent with policies, procedures, and plans as they apply to the unit."⁶⁷ Additionally, management is involved in the establishment of departmental objectives by recommending policies which are consistent with the organization's objectives. A periodic review of these policies, objectives, and goals is necessary to ensure appropriateness as conditions change.⁶⁸

2. Setting Priorities

Because resources are limited, priority decisions must be made in regard to allocation. Depending on the community's needs, certain objectives are deemed more important than others. "Setting priorities allows management to concentrate by considering problems sequentially rather than simultaneously."⁶⁹

3. Structuring the Organization

An organizational structure should be configured in a manner that facilitates the accomplishment of system objectives and is adapted to the environment in which it exists

⁶⁷ Robert L. Katz, "Skills of an Effective Administrator," in Policy, ed. Walter H. Klein and David C. Murphy (Boston: Little, Brown and Company, 1973), p. 71.

⁶⁸ George M. Smerk et al., Handbook For Management Performance Audits, Vol. 1, final report (Bloomington, Indiana: Institute for Urban Transportation, Indiana University, 1979), p. 16.

⁶⁹ Ross A. Webber, Management: Basic Elements of Managing Organizations, rev. ed. (Homewood, Illinois: Richard D. Irwin, Inc., 1979), p. 273.

(i.e., political and social climate, economic conditions, etc.).⁷⁰ Management is responsible for an appropriate meshing of work assignment with authority, responsibility and skill. "Organizing is concerned with establishing the proper relationships among work, people, and the work environment."⁷¹ Job descriptions should clearly delineate responsibility and authority for each position. Also, a current organizational chart should present the billet inter-relationships as well as illustrate the "chain of command."⁷²

4. Directing Performance

With the objectives and priorities established, management concentrates on the accomplishment of the related operations. Through meetings and informal contacts with subordinates, management communicates personal expectations regarding performance. In short, management provides continuous leadership to the organization.⁷³

5. Monitoring Performance

As the transit system is engaged in efforts to accomplish overall objectives, management is appraised of progress through a variety of monitoring devices. Performance indicators,

⁷⁰ Ibid., p. 389.

⁷¹ John F. Mee, "Management Philosophy for Professional Executives," in Policy, ed. Walter H. Klein and David C. Murphy (Boston: Little, Brown and Company, 1973), pp. 46-47.

⁷² Smerk, Handbook, Vol. 1, p. 17.

⁷³ Richard A. Goodman, "A System Diagram of the Functions of a Manager," in Policy, ed. Walter H. Klein and David C. Murphy (Boston: Little, Brown and Company, 1973), pp. 57-58.

periodic meetings with personnel, rider surveys, financial reports, and other means provide the manager with the information necessary to compare performance with specific goals. External or internal disturbances may create a disparity between actual effort and desired results. Therefore, management uses this information to initiate action to correct behavior or to modify goals.⁷⁴

6. Ensuring Good Communication

In each of the preceding tasks, communication is vital to success. Information must flow between the components of the transit system, management, and the governing body as well as "between the system and the community it serves."⁷⁵ Regardless of the method of dissemination or collection, information must be received by the designated entity in a timely manner. Management should continuously encourage this flow of information in an attempt to ensure subordinate comprehension of tasks, monitor performance, and remain responsive to environmental demands. Also, management's communication with the news media increases public awareness of the transit system and helps to portray mass transit as a viable, essential part of the community.⁷⁶

⁷⁴ Webber, Management, pp. 297-99.

⁷⁵ Smerk, Handbook, Vol. 1, p. 17.

⁷⁶ Ibid., p. 18.

C. SERVICE PLANNING

"Plans are the means by which objectives are ultimately achieved."⁷⁷ The planning function is a continuous process whereby management selects "a predetermined course of action over a specified period of time which represents a projected response to an anticipated environment."⁷⁸ Thus service planning is that crucial function in which the transit firm's objections are transformed into quantifiable, concrete courses of action. The four tasks associated with service planning are:

1. Conducting Research

Judicious planning is founded upon a thorough knowledge of the environment. Therefore, the ability to collect and analyze data concerning such items as a community's socioeconomic characteristics and mobility patterns assists in the prediction of the region's transit requirements and allows management to more soundly plan to satisfy these needs. Additionally, the assemblage of usage data associated with present service levels facilitates evaluation and, if necessary, timely modification of the service. The transit system's research effort should be coordinated with the efforts of the metropolitan planning organization or the state

⁷⁷ Robert G. Murdick, "Nature of Planning and Plans," in Policy, ed. Walter H. Klein and David C. Murphy (Boston: Little, Brown and Company, 1973), p. 224.

⁷⁸ Ibid., p. 226.

planning agency. Intra-system research efforts should also be coordinated with the scheduling and marketing functions.⁷⁹

2. Meeting Federal Planning Requirements

A transit system's eligibility for federal funding is contingent upon the fulfillment of certain planning requirements. Legislation requires that transit systems in urbanized areas where the population is greater than 50,000 coordinate planning with and receive endorsement from the metropolitan planning organization (MPO) to become eligible for federal funds. "The MPO should provide a forum where negotiations could take place among local transit, highway, and other government officials to arrive at the most efficient allocation of the region's financial resources."⁸⁰ In areas where the population is less than 50,000, transit must cooperate with a comparable state planning agency or department of transportation in the formulation of transportation plans.

For urbanized areas, the transportation plan has both short and long range components. The short range element or transportation improvement program (TIP) lists a five year schedule of proposed projects for improving regional transportation. Additionally, the TIP provides a list of operating and capital improvements to be accomplished within the

⁷⁹ Smerk, Handbook, Vol. 1, p. 18.

⁸⁰ U.S. General Accounting Office, Office of the Comptroller General, Stronger Federal Direction Needed to Promote Better Use of Present Urban Transportation Systems, publ. CED-79-126 (1979), pp. 26-27.

next year. Included within this annual element is the transportation system management (TSM) component which is supposed to identify low-cost capital improvements in existing transportation facilities and thus provide almost immediate benefits.⁸¹ "The TSM plan is aimed at coordinating automobiles, public transit, taxis, pedestrians, and bicycles to improve the system as a whole."⁸² The long range component forecasts community transit requirements within the next 20 years and recommends corresponding actions.

Transit systems in areas of less than 50,000 people are required to compile a transit development program (TDP) in cooperation with the state. The TDP delineates transit improvements for the next five years. Both the urbanized area's transportation plan and the smaller city's TDP must be periodically reviewed and updated to retain Urban Mass Transportation Administration certification and eligibility for federal funds.⁸³

3. Preparing Grant Applications

As might be expected, the application for federal monies is not without a large quantity of paperwork. Because this financial assistance is of consequence to a system's planned level of service, the service planning function is responsible for the preparation and monitoring of

⁸¹ Smerk, Handbook, Vol. 1, pp. 18-19.

⁸² U.S. GAO, Federal Direction, p. 2.

⁸³ Smerk, Handbook, Vol. 1, p. 19.

grant applications. The applicant must provide a justification for funding as well as meet a number of additional requirements that the grantor has established to promote such matters as system efficiency and service to the aged and handicapped. Comprehensive preparation and thorough review ensure the timely completion of an accurate application and therefore expedite the receipt of funds.⁸⁴

4. Evaluating and Improving Service

If a transit system is to effectively compete with the automobile, then an attractive alternate means of transport must be provided. The service planning function must continuously compare actual against planned performance. If there is a "performance gap," then action must be initiated to improve service within financial limitations. In short, this function links actual or perceived public need with transit service. Major improvements requiring large capital outlay or alteration of service may require the governing body's approval while the less costly or minor improvements are implemented at the discretion of management.⁸⁵

D. SCHEDULING

The scheduling function is a complex process that attempts to utilize transit resources in the manner that will best satisfy the needs of the public and the accomplishment of

⁸⁴ Ibid.

⁸⁵ Ibid.

system goals. It requires a delicate balance between public needs and system constraints. There are basically six public needs that merit consideration:

- 1) trip purpose (work, shopping, medical, school, etc.);
- 2) peak versus off-peak hours of transit demand;
- 3) travel time of transit versus the automobile;
- 4) route accessibility;
- 5) schedules that get riders to their destinations on time;
- 6) the need to transfer between buses.⁸⁶

The service constraints are:

- 1) length of routes;
- 2) capacity of vehicles, number of vehicles, and condition of vehicles;
- 3) number of drivers available; and
- 4) route characteristics, such as traffic signals, railroad crossings, traffic patterns, street widths, and so forth.⁸⁷

Scheduling is fundamental to the success of every transit system; it is the physical embodiment of public demands. If these demands are not satisfied, then the system will ultimately fail. The three tasks that compose the scheduling function are:

1. Conducting Research

Prior to modification of schedules, management must have a starting point, that is, what level of service is currently being provided. The transit system must possess accurate data on every route in regard to "the length of the route, headways (the time between buses), time points,

⁸⁶ George M. Smerk et al., Handbook For Management Performance Audits, Vol. 2, final report (Bloomington, Indiana: Institute for Urban Transportation, Indiana University, 1979), p. 138.

⁸⁷ Ibid.

adherence to schedules and number of vehicles and drivers used."⁸⁸ The periodic compilation of this data not only facilitates the cost allocation process, but enables management to match actual performance against established standards.

2. Developing Schedules

Schedule development involves a series of trade-offs between public need and resource constraint. A transit system cannot satisfy every demand for service. Through scheduling, management attempts to make optimal utilization of system resources in efforts to meet public need. Thus, scheduling is a combination of management policy and public desideratum. Quantifiable service standards should be established for each schedule. Service standards include:

a. Frequency of Service

Frequency of service is defined in terms of vehicle headways. "The trade-off is between the efficiency of operating with full loads and the convenience to the user of more frequent transit service."⁸⁹

b. Load Factors

Load factor is the ratio of passengers to bus seats, "measured at the maximum load point on each route. The trade-off is between cost-effectiveness and passenger comfort and convenience."⁹⁰

⁸⁸ Smerk, Handbook, Vol. 1, p. 20.

⁸⁹ U.S. Department of Transportation, Urban Mass Transportation Administration, Proceedings of the First National Conference on Transit Performance, (Springfield, Virginia: National Technical Information Service, 1977), p. 76.

⁹⁰ Ibid., p. 77.

c. Service Reliability

Service reliability is the adherence of bus service to published schedules. "The policy trade-off is between those costs associated with high levels of service reliability and the effects of service unreliability on the ability and willingness of individuals to use the transit system." ⁹¹

3. Cutting Runs

Because labor costs account for the largest portion of the transit industry's operating expenses, efficient use of transit employees is essential to controlling these costs. "Run-cutting" refers to the process of scheduling bus drivers for work. "To cut runs, a scheduler divides the routes into segments, and then reconstructs the segments to form as many 8-hour runs as possible. Longer runs call for overtime; shorter runs cause split shifts."⁹² However, this attempt to increase labor productivity is not without constraints. Work rules contained within transit-labor contracts limit such items as the number of part-time employees and split shifts. Therefore, run-cutting is a complex process whereby the scheduler attempts to establish the optimal number of employees within limitations posed by the design of routes and the provisions of labor contracts.⁹³

⁹¹ Ibid., p. 78.

⁹² Smerk, Handbook, Vol. 1, p. 20.

⁹³ David H. Hinds, "Rucus: A Comprehensive Status Report and Assessment," Transit Journal 5 (Winter 1979): pp. 18-20.

E. TRANSPORTATION

The transportation function is the nucleus of every transit system, for this is the tangible aspect of scheduling, service planning, and marketing. Quite simply, this is the business of running the buses. To be able to effectively compete with the automobile, buses must adhere to published schedules. The public does not patronize a bus system that provides unreliable service; people expect buses to arrive and depart on time.⁹⁴ The three tasks constituting the transportation function are:

1. Assigning Buses and Drivers

Personnel and buses are assigned in accordance with the "run-cutting" task of the scheduling function. Thus, for every shift there is a bus and driver assigned on every route. Consideration of scheduled vehicle maintenance and unscheduled driver absence is a necessary portion of this process. A reserve of personnel, known as extra-board drivers who do not have any assigned route, act as replacements for absent drivers.⁹⁵

2. Monitoring Daily Operations

As discussed in the management section, performance must be continually monitored to ascertain any deviation from desired objectives. The two most common methods of

⁹⁴ Anthony R. Tomazinis, Productivity, Efficiency and Quality in Urban Transportation Systems, (Lexington, Mass.: D.C. Heath and Company, 1976), pp. 19-20.

⁹⁵ Smerk, Handbook, Vol. 1, p. 21.

monitoring daily operation are through the radio dispatcher and road supervisor.

Radio dispatchers operate two-way radios to check drivers' on-time performance at certain points along the routes and to help in emergencies. Radio dispatchers also inform drivers of weather and road conditions, and they may work with local radio stations to inform the public of traffic conditions.

Transit systems also supervise operations by sending road supervisors to monitor drivers' adherence to routes and schedules.⁹⁶

3. Handling Emergencies

Response to buses suffering mechanical malfunctions while in service is coordinated by the radio dispatcher. The dispatcher performs the following tasks: a) attempts to diagnose mechanical problems; b) sends maintenance personnel to assist/repair the incapacitated bus; and c) dispatches a replacement bus to assume the disabled bus' schedule. "Dispatchers also alert police of crimes or accidents. When buses are equipped with two-way radios, transit systems can handle breakdowns, crime and accidents promptly."⁹⁷

F. MAINTENANCE

The maintenance function ensures that a transit system possesses a sufficient number of vehicles in satisfactory operating condition to meet scheduled service.⁹⁸ The repair of vehicles after breakdown, the work performed to prolong

⁹⁶ Ibid.

⁹⁷ Ibid.

⁹⁸ Meyer and Gomez-Ibanez, Improving Productivity, p. 125.

the service life of equipment and the efforts to minimize breakdown are the primary responsibilities of maintenance.⁹⁹ In addition, maintenance is required to maintain extensive records of vehicle service and repair to facilitate cost estimation and evaluation of equipment reliability.¹⁰⁰ The four tasks of the maintenance function are:

1. Planning Maintenance Work

Through the use of a work order system, the planning and scheduling of the majority of maintenance operations is accomplished. "Under this system long- and short-term maintenance schedules are supported by individual work orders containing estimation of personnel and material requirements for each maintenance task to be performed. The estimates are based on the entity's preventative maintenance policy and on past experience."¹⁰¹ Thus, the allocation of manpower, equipment and material is facilitated by this scheduling process. Formulation of work schedules must incorporate operational priorities so that maintenance will not interfere with scheduled bus service.

⁹⁹ Control of Maintenance Cost-Research Report No. 41, 4 (National Association of Accountants 1964), cited by Felix Pomeranz et al., Auditing in the Public Sector (Boston: Warren, Gorham and Lamont, 1976), p. 237.

¹⁰⁰ Public Technology, Inc., Transit System Productivity, (Springfield, Virginia: National Technical Information Service, 1977), p. 11.

¹⁰¹ Felix Pomeranz et al., Auditing in the Public Sector, (Boston: Warren, Gorham and Lamond, 1976), p. 239.

2. Performing Preventative Maintenance

"A preventative maintenance program calls for systematic servicing of machines to minimize breakdowns and to preserve machine operating efficiency."¹⁰² This program includes such tasks as the daily inspection of engine and transmission fluid levels, the cleaning of vehicles, and the periodic minor adjustment and replacement of specific parts to preclude vehicle breakdown.

The establishment of a tickler file, which is a file that indicates when a piece of equipment requires a particular service, ensures a thorough preventative maintenance program. A maintenance standing operational procedure should specify the exact service to be performed based on vehicle mileage or on intervals between services and who is responsible for conducting the maintenance work.¹⁰³

3. Reacting to Breakdowns

Despite preventative maintenance programs, bus breakdowns occur and these must be planned for by maintenance management. Contingency plans that designate work crews and vehicles to respond to breakdowns ensure timely response. As part of this task, management is responsible for the maintenance of a sufficient number of spare buses to replace any disabled vehicles.¹⁰⁴

¹⁰² Ibid., p. 240.

¹⁰³ Ibid.

¹⁰⁴ Smerk, Handbook, Vol. 1, p. 22.

4. Managing Equipment and Supplies

The significant capital investment in repair parts, associated maintenance supplies, small tools and equipment requires the establishment of some type of control system. Periodic inventories, item location cards, and issue/receipt documents should be used to facilitate the accountability process. However, the advantages of controlling these items must be balanced with the impact control mechanisms have on maintenance productivity. "The important factor is that the degree of control is appropriate for the cost of the items and that controls do not deter the delivery of services."¹⁰⁵

G. PERSONNEL

The effectiveness of any system is "largely dependent on the quality and responsiveness of the people that carry out operations."¹⁰⁶ Because of the large portion of operating expenses devoted to wages and salaries, it is imperative that personnel are employed efficiently. Aside from the pecuniary investment, transit employees represent a tangible aspect of the system's marketing effort; it is as though each employee is a public relations representative. Interaction with bus drivers and office personnel create lasting impressions that may constitute one's entire image of the transit system.¹⁰⁷

The tasks generic to an effective personnel function are:

¹⁰⁵ Pomeranz, Public Sector, p. 241.

¹⁰⁶ Ibid., p. 131.

¹⁰⁷ Smerk, Handbook, Vol. 1, pp. 24, 28.

1. Developing and Maintaining the Personnel Structure

Effective utilization of personnel begins with an identification of all functions and responsibilities associated with each position in the organization. This position classification system matches job requirements with personnel qualifications. The system also provides a proper balance of supervisory personnel for all employees and enables management to delegate responsibility and monitor performance.¹⁰⁸ Position descriptions are written for each position within the organization. These descriptions list the duties inherent with a particular job and the human qualifications deemed necessary to do the job. The job requirements include such items as education, experience, mental and physical effort, and environmental conditions. A periodic review process ensures that position descriptions remain current and therefore accurately reflect novel or modified organizational requirements.¹⁰⁹ In short, the personnel function is responsible for "integrating the technical system of the enterprise with its social system."¹¹⁰

2. Recruiting and Hiring

As organizational positions are created or vacated, they must be manned by qualified personnel. Recruiting is a

¹⁰⁸ Pomeranz, Public Sector, p. 132.

¹⁰⁹ Wendell French, The Personnel Management Process, 2nd ed., (Boston: Houghton Mifflin Company, 1970), pp. 176-79.

¹¹⁰ Ibid., p. 597.

continuous process whereby the transit system's manpower needs are communicated to the external labor force to "attract those individuals who will enhance operations."¹¹¹ These organizational needs are communicated through a variety of media such as college recruitment, newspaper, and trade journal advertisement where management attempts to secure the best qualified candidates.¹¹²

Hiring involves using a variety of techniques to select those applicants best suited for employment. Educational and work backgrounds as well as information provided from application forms and personal interviews is obtained for analysis. Depending upon the organizational positions available, this information is augmented with psychological evaluations and aptitude tests.¹¹³ Physical examinations are required for applicants of most transit systems.¹¹⁴

3. Training and Development

Training and development is "concerned with increasing the capabilities of individuals and groups in contributing to the attainment of organizational goals."¹¹⁵ Employees should be trained and retrained, as necessary, to maintain

¹¹¹ Pomeranz, Public Sector, pp. 133-34.

¹¹² French, Management Process, p. 212.

¹¹³ Pomeranz, Public Sector, p. 134.

¹¹⁴ Smerk, Handbook, Vol. 1, p. 28.

¹¹⁵ French, Management Process, p. 477.

personal skills at predetermined levels for present or future assignments. Beginning with an orientation program that educates personnel as to the basic organizational goals and objectives, as well as administrative requirements and job instruction, the training and development function is a continuous process.¹¹⁶

For bus drivers, the particular nature of the occupation requires a training program that not only focuses on such technical skills as maneuvering buses and defensive driving, but also on the fundamentals of public relations. Because of the driver's constant contact with the public, many transit systems enroll their employees in human relations programs. In regard to technical skills, the National Safety Council and the Urban Mass Transportation Administration offer examinations and courses to evaluate and strengthen the driver's skills. Mechanics receive extensive training of approximately one year duration, prior to becoming fully qualified, while office personnel receive on-the-job training.¹¹⁷

Fundamental to any transit system's training program is the promotion of safety. Employee awareness of safe work practices has reduced lost work time and injuries stemming from occupational accidents as well as reduced insurance premiums. Accidents are investigated to determine the causal

¹¹⁶ Pomeranz, Public Sector, p. 135.

¹¹⁷ Smerk, Handbook, Vol. 1, p. 24.

factors and a report is filed in the personnel records of those involved.¹¹⁸

4. Evaluating Employee Performance

The personnel function is responsible for the establishment of standards against which actual employee performance is compared. "Simultaneous purposes may be to encourage more self-direction in the development of personal goals congruent with overall objectives and to enhance creativity and job commitment."¹¹⁹ The performance evaluation should be communicated to the employee on a private basis and the employee should have an opportunity to react to this evaluation.¹²⁰ These evaluations are included in and are a basis for management decisions regarding training, compensation, promotion, and dismissal.

5. Compensating Employees

The ability of the transit system to attract and retain qualified personnel is through the provision of services and benefits in addition to basic salaries. The personnel function assists management in the job evaluation process. Briefly, this process determines the relative worth of each position in the organization and then formulates a corresponding level of compensation within the provisions of the collective bargaining agreement between the transit labor

¹¹⁸ Ibid., pp. 24-25.

¹¹⁹ French, Management Process, p. 183.

¹²⁰ Pomeranz, Public Sector, p. 136

union and management.¹²¹ "Each employee service and benefit program must have clearly defined objectives and management should periodically assess the degree to which the programs achieve these objectives."¹²²

H. PURCHASING

The traditional definition of the acquisition process is the purchase of "materials and services of the right quality, in the right quantity, at the right price, from the right source, and at the right time."¹²³ The process has ramifications for all facets of transit system operations.¹²⁴ From repair parts and office supplies to buses and the construction of facilities, the procurement process "involves planning, organizing, and managing to obtain goods and services in an efficient and economical manner."¹²⁵ Because of its status as a public entity, the transit firm is governed by a formalized purchasing procedure to ensure the proper disbursement of public funds. The purchasing function is composed of the following tasks:

1. Making Routine Purchases

There is a definite requirement for a transit system to maintain stocks of repair parts, fuel, and associated items.

¹²¹ Smerk, Handbook, Vol. 1, p. 29.

¹²² Pomeranz, Public Sector, pp. 136-39.

¹²³ Lamar Lee, Jr. and Donald W. Dobler, Purchasing and Materials Management: Text and Cases, (New York: McGraw-Hill Book Company, 1977), p. 11.

¹²⁴ Ibid., pp. 5-6.

¹²⁵ Pomeranz, Public Sector, p. 161.

Without inventories on hand, equipment lays idle until required parts arrive and the productivity of maintenance personnel is reduced.¹²⁶ However, the costs of inventory acquisition must be balanced against inventory carrying or storage costs. "A sound procurement system includes systematic procedures for determining what items are needed, based on technical and performance specifications, how much should be purchased, and how the item should be purchased."¹²⁷

2. Making Major Purchases

Because capital equipment acquisition and facility construction entail substantial pecuniary outlay and are of long life, the purchase of said assets should be governed by established policies. From the authorization to purchase to the selection of vendors, each phase of the acquisition process should be subject to formally promulgated standards.¹²⁸

3. Safeguarding Inventory

Because of the amount of capital invested in inventory, effective control of this property is a crucial portion of the purchasing function. Internal control dictates the use of a perpetual inventory system where all acquisitions and disbursements are recorded, as well as the periodic physical inventory of supplies and subsequent reconciliation with stock records. Physical security of stocks and limited access to

¹²⁶ Ken Kelley, "Maintenance and Purchasing," Mass Transit, January 1978, pp. 22-23.

¹²⁷ Pomeranz, Public Sector, pp. 162-63.

¹²⁸ Smerk, Handbook, Vol. 1, p. 24.

the supply area are but two methods employed to thwart pilferage.¹²⁹

4. Disposing of Items

Obsolete parts or equipment, surplus quantities, or scrap requires a method of disposal that provides the transit agency with the greatest financial return. Income may be realized through the sale of these items to the highest bidder or return to the original supplier.¹³⁰

I. MARKETING

As discussed in the previous chapter, the marketing function had been nonexistent in the majority of transit firms until the last decade. Recently transit management has begun to utilize marketing principles and techniques. The objective being the establishment of a service that attempts to satisfy, within economic limitations, the majority of the public's preferences and expectations, and therefore offer an attractive alternative to the automobile. Mass transit management must periodically examine the environment to ascertain market conditions that could materially affect system operation and thus result in route and schedule modifications or the alteration of the fare structure.¹³¹

Toward this end, the marketing function encompasses the

¹²⁹ Ibid., p. 23.

¹³⁰ Ibid., p. 24.

¹³¹ Meyer and Gomez-Ibanez, Improving Productivity, pp. 36-37.

collection of data, the subsequent analysis of that data, and eventually, the development of a marketing program. Marketing is, therefore, that assemblage of effort through which the transit system interacts with the environment. The three tasks of the marketing function are:

1. Conducting Research and Designing a Marketing Program

Thorough research is fundamental to the formulation of any plan. There is a basic requirement for management to thoroughly understand the transit system's strengths and weaknesses as well as environmental influences. The transit firm conducts a "business review" to ascertain marketing problems and opportunities. "The business review is an inventory of all the factors which constitute the transit system's present marketing situation."¹³² Marketing problems are internal or external in nature and thwart effective transit operations. Adverse changes in a city's mobility or housing development patterns and declines in off-peak ridership are examples of marketing problems. Conversely, transit opportunities represent favorable conditions of an internal or external nature such as increased public awareness of energy conservation or the construction of high density dwellings.¹³³ The research efforts of this function

¹³² Grey Advertising, Inc. and Lesko Associates, Transit Marketing Management Handbook, (Washington, D.C.: U.S. Department of Transportation, 1976), p. 8.

¹³³ Ibid., p. 7.

should be coordinated with the research efforts associated with the planning function.¹³⁴

The marketing program is a formalized expression of the system's specific marketing goals. These goals elaborate as specifically as possible, realistic expectations that "do not describe what is expected to happen naturally but rather what will be caused to happen as a direct result of the marketing program effort."¹³⁵ The policy plan for the system is the five-year transit plan which is updated annually and provides "the general guidance for all planning activities within the transit system."¹³⁶ Specific guidance is contained in the current year transit operating plan which "integrates all of the program activities within the transit system."¹³⁷

2. Designing and Pricing Transit Service

The development of transit service requires coordination between the marketing and planning functions to satisfy the demands of the public. Based upon market research, the marketing function recommends the quality and amount of service that the transit firm should provide.¹³⁸ Specifically, the marketing function recommends suitable levels for service

¹³⁴ Smerk, Handbook, Vol. 1, p. 25.

¹³⁵ Grey Advertising, Inc., Marketing Handbook, p. 10.

¹³⁶ Ibid., p. 1.

¹³⁷ Ibid.

¹³⁸ Smerk, Handbook, Vol. 1, p. 25.

standards such as frequency of service, load factors, and service reliability.¹³⁹ The adjustment of these standards is based on management's perception of the relative significance of each in encouraging and maintaining ridership of specific market segments.¹⁴⁰

Recommendations regarding the fare structure, to include price and collection method, are also responsibilities of the marketing function. The level of fares should strike a balance between ridership and revenue maximization.¹⁴¹

"Decisions about pricing include whether to charge a flat fare or a distance-based fare, transfer mechanism, and special discounts or premium fares for population subgroups or time-of-day travelers."¹⁴² There are a variety of methods for the collection of fares such as coins, tokens, prepaid passes, tickets, and computerized fare cards. Customer convenience and simplicity of collection are the primary considerations in fare collection.¹⁴³ Any fare changes are normally subject to the governing body's approval.¹⁴⁴

¹³⁹ Public Technology, Inc., Transit Marketing, (Springfield, VA: National Technical Information Service, 1978), p. 5.

¹⁴⁰ Ibid.

¹⁴¹ Smerk, Handbook, Vol. 1, p. 25.

¹⁴² Public Technology, Inc., Transit Marketing, p. 5.

¹⁴³ U.S. Department of Transportation, Urban Mass Transportation Administration, Small City Transit Characteristics: An Overview, (Washington, D.C.: U.S. Department of Transportation, 1976), pp. 20-21.

¹⁴⁴ Smerk, Handbook, Vol. 1, p. 26.

3. Promoting Service

"Promotional activities attempt to influence public attitudes and behavior patterns by providing relevant and understandable information to the target markets."¹⁴⁵ This information is conveyed through a variety of means: radio and television advertising, dissemination of promotional information and schedules, distribution of educational material, and the use of public speakers and programs.¹⁴⁶ Management attempts to facilitate the use of transit services for current and prospective riders through the employment of user services. User services include easily comprehended timetables, telephone information service, bus stop and station signs, park and ride lots, route maps, and user information pamphlets.¹⁴⁷ By presenting a favorable public image, educating the public as to services offered, and making the services easy to use, transit management strives to create and maintain a system that effectively competes with the automobile.

J. ACCOUNTING AND FINANCE

Limited financial resources and the use of public monies dictate sound fiscal management and control within the transit firm. Without judicious allocation and the related accounting

¹⁴⁵ Public Technology, Inc., Transit Marketing, p. 6.

¹⁴⁶ Ibid.

¹⁴⁷ Ibid., p. 7.

of funds, inefficiencies result and the accomplishment of predetermined objectives becomes hindered. Capital is a catalyst crucial to the process through which management's plans are realized. The financial function in any entity is not focused solely on funds supply but with the efficient utilization of funds as well.¹⁴⁸ A necessary complement to the financial function is a system of classification; that is, an information system that facilitates control over the organization's financial resources and the decision-making process.¹⁴⁹ An accounting system provides this structured method of accountability. "It furnishes a framework which can be fitted to assignments of responsibility for specific areas of activity and, at the same time, it supplies a basis of reporting as one means by which operations can be judged."¹⁵⁰ The four tasks constituting the accounting and finance function are:

1. Budget Formulation

As public agencies, mass transit systems "have an obligation of accountability to the general public which finances the activities of that fund ... and should, therefore,

¹⁴⁸ Pearson Hunt, Charles M. Williams, and Gordon Donaldson, Basic Business Finance, 4th ed., (Homewood, IL: Richard D. Irwin, Inc., 1971), pp. 3-4.

¹⁴⁹ Anthony and Herzlinger, Management Control in Non-profit Organizations, pp. 275-76.

¹⁵⁰ U.S. General Accounting Office, Comprehensive Audit Manual, (Washington, D.C.; U.S. Government Printing Office, 1978), pp. 9-12.

adopt a formal budget..."¹⁵¹ The budget is a plan of future operations expressed in financial terms which functions as a communication link between the department managers, general manager, and governing body. During budget formulation, department managers are able to communicate proposed plans and objectives for upper management consideration.¹⁵²

2. Monitoring Revenues and Expenditures

During budget execution, when funds are expended and received, the budget serves as a means of supervising subordinate performance.¹⁵³ Thorough records of receipts and expenditures are maintained to enable the comparison of actual versus planned financial transactions. Material deviations between the two are assessed to ascertain the causes. Beyond utilization of such dollar targets, budgetary performance standards are required to enable management to compare system performance with established objectives on a continuous basis.¹⁵⁴ The financial and accounting function utilize data supplied from the other functional areas in the preparation of performance indicators which facilitate managerial

¹⁵¹ Report to the Committee on Governmental Accounting and Auditing, Audits of State and Local Governmental Units, by Fred M. Oliver, Chairman (New York: American Institute of Certified Public Accountants, 1974), p. 23.

¹⁵² Pomeranz, Public Sector, p. 103.

¹⁵³ Ibid.

¹⁵⁴ J. Fred Weston and Eugene F. Brigham, Managerial Finance, 4th ed. (New York: Holt, Rinehart and Winston, Inc., 1972), p. 86.

evaluation of system efficiency and effectiveness.¹⁵⁵ Efficiency indicators deal with the relationship between the system inputs of labor, capital, and energy and the service or output provided by the transit system. Effectiveness indicators compare system outputs to predetermined objectives or planned output.¹⁵⁶ Thus, efficiency indicators measure output in terms of service provided while effectiveness indicators "measure the degree to which the transit service achieves individual and community mobility goals."¹⁵⁷ Appendix A provides a more complete discussion of performance indicators.

3. Supporting an Internal Control System

As defined here, internal control refers to the security measures and precautions employed by an organization "to safeguard its assets, check the accuracy and reliability of its accounting data, promote operational efficiency, and encourage adherence to prescribed managerial policies."¹⁵⁸ For example, the internal control system should specify the procedures for safeguarding fare collections or petty cash.

¹⁵⁵ Smerk, Handbook, Vol. 1, p. 26.

¹⁵⁶ Fielding, Glauthier and Lave, Development of Performance Indicators, pp. 5-7.

¹⁵⁷ Gorman Gilbert and Jarir S. Dazani, Measuring the Performance of Transit Service, (Durham, North Carolina: Institute of Policy Sciences, Duke University, 1975), pp. 9-10.

¹⁵⁸ American Institute of Certified Public Accountants, "Statements of Auditing Procedures, No. 29," quoted in Lawrence B. Sawyer, The Practice of Modern Internal Auditing, (New York: Institute of Internal Auditors, Inc., 1973), p. 145.

4. Complying With Grant Requirements

In cooperation with the planning function, the accounting and finance function supervises the grant application process and related reporting requirements. Also, this function should ensure the timely submission of grant applications to hasten the receipt of federal and state funds. Because of the requirements that all recipients of federal transit money comply with Section 15 of the Urban Mass Transit Act of 1964, as amended, the transit system must use a uniform reporting system for financial data.¹⁵⁹

K. SUMMARY

Figure 1 provides a schematic representation of the model discussed in this chapter. As energy, capital, and labor are acquired by the transit system, management allocates these resources to the functional areas according to established priorities. Functional efforts do not occur in isolation. In addition to the accomplishment of responsibilities generic to each function, there is a continuous interaction and mutual support in the pursuit of system goals and objectives of providing public transportation.

Management monitors performance through internal and external feedback sources. Internal sources include direct communication with representatives from functional areas, information provided in periodic reports and in accounting

¹⁵⁹ Smerk, Handbook, Vol. 1, p. 27.

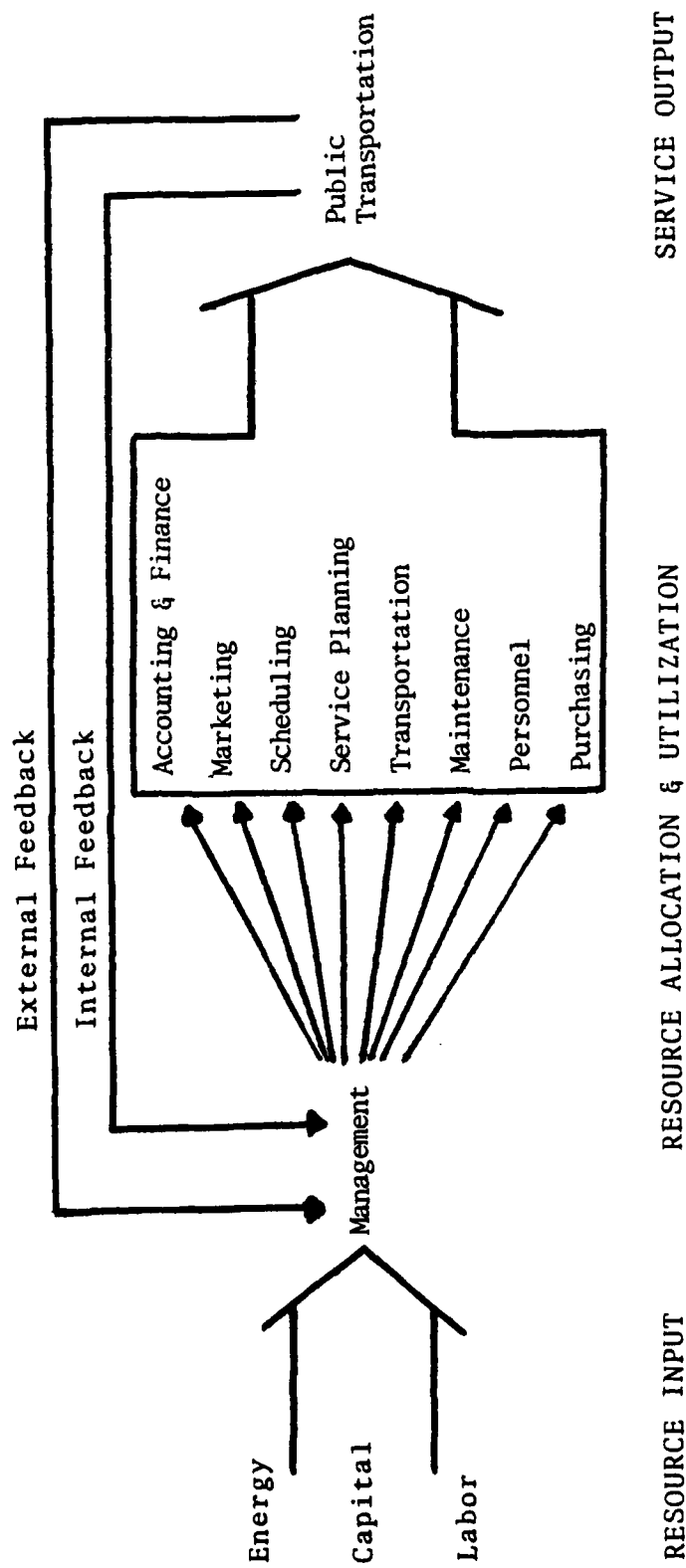


Figure 1. The Management Model

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and financial records, and the use of performance indicators. External sources refer to that assemblage of information originating from the environment and obtained through such devices as market surveys, requests from special interest groups, and governing body directives. Therefore, the feedback process enables management to ascertain the system's position relative to established objectives as well as to determine the validity of these objectives.

Though every system operates under different constraints and in different environments, the fundamental managerial practices reviewed in this chapter are applicable to the majority of mass transit firms. As discussed in the introduction, this model does not guarantee success; however, the utilization of these preferred practices is fundamental to the operation of any credible transit system. Additionally, these practices provide a sound base from which to develop and initiate a performance evaluation.

IV. ANALYSIS

A. GENERAL

The material presented in this chapter includes a description of the current organizational structure of the Monterey Peninsula Transit (MPT) system with emphasis on the operations of selected functional areas within the system. These findings are the product of a management performance evaluation conducted by the author, based on the model presented in Chapter III.

As discussed in Chapter I, the procedure utilized to evaluate the management of MPT began with a review of selected agency documents. Specifically, such items as procedural manuals, statements of goals and objectives, minutes of board meetings, maintenance documents, and dispatch sheets were examined to provide the author with a basic knowledge of the system. This information was supplemented by interviews with agency personnel and direct observation of operations. Without exception, all personnel interviewed were candid and cooperative with the author; this enthusiastic assistance facilitated the review of MPT. Departures from the criteria and responsibilities contained within Chapter III provide the basis for further examination and, if deemed appropriate, recommendations are furnished with the intent of enhancing system operation and management performance.

B. ORGANIZATIONAL STRUCTURE

To facilitate an understanding of this chapter, a discussion of MPT's current organizational structure is necessary. Figure 2 depicts the present arrangement. Though the performance evaluation focuses on the agency's internal operations, a brief explanation is devoted to the Board of Directors.

The seven member Board governs the system with a member from each of the cities and the one county that compose the Joint Powers Agency (JPA) formed in 1972. Convening on a monthly basis, the board acts in a supervisory capacity with the general manager reporting to the board. Approximately five days prior to every monthly meeting, each board member receives a packet of written material, including operating and financial data, compiled by the general manager. This information familiarizes the member with issues that comprise the agenda for the impending meeting. The board has the authority to establish agency objectives, "to determine routes and service levels, set fares, and apply for and receive state and federal funds."¹⁶⁰ Presently, the agency counsel is the city attorney for Monterey, while the treasurer is the MPT general manager.

As shown in Figure 2, the transit agency is established along functional responsibilities with transportation, administrative, and maintenance sections. While the figure depicts

¹⁶⁰ Passenger Transport, p. 20.

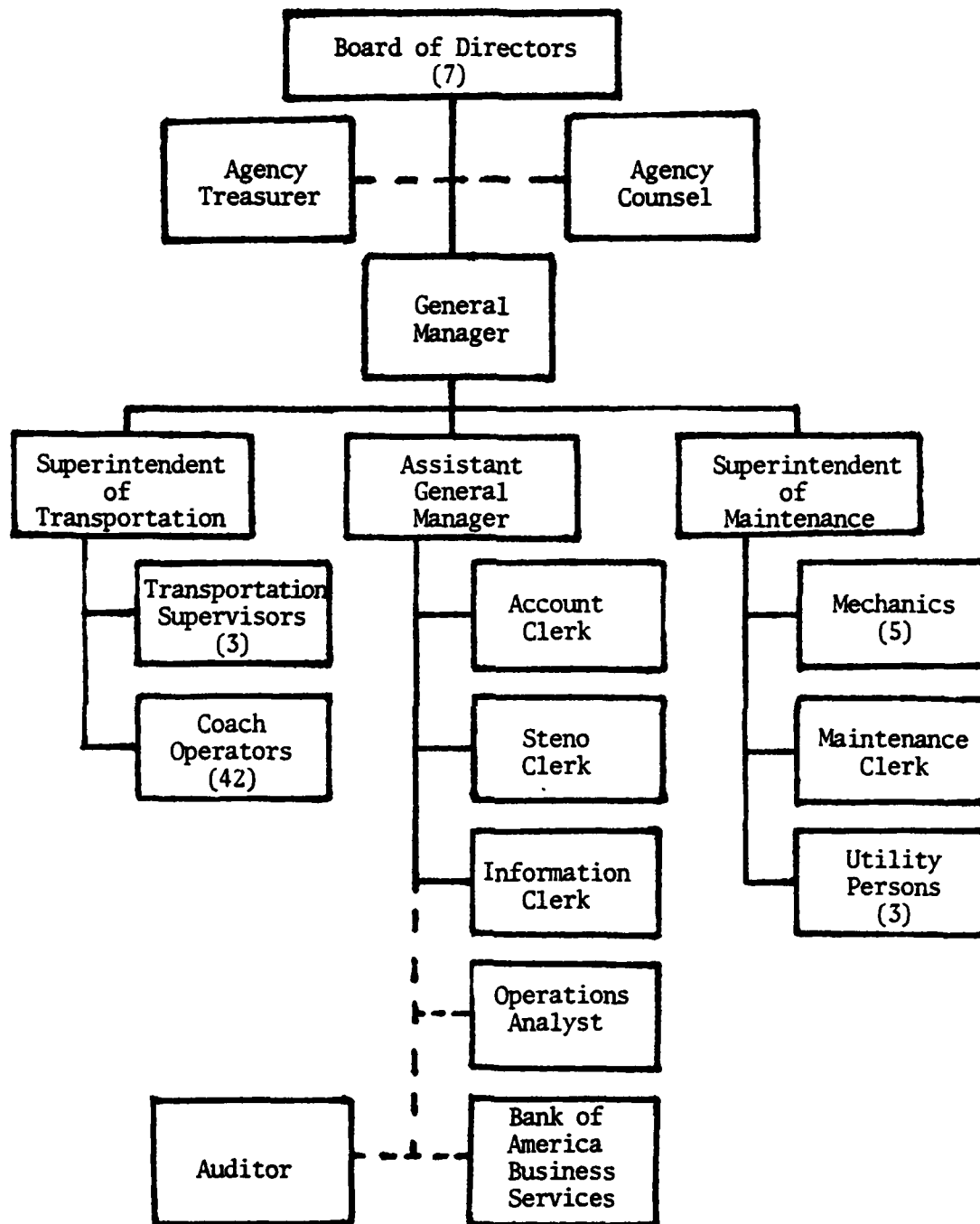


Figure 2. MPT Organizational Chart.

Source: Monterey Peninsula Transit, Annual Report Fiscal Year '79, December 1979, p. 4.

a formalized structure with essentially three personnel reporting directly to the general manager, the relatively small size of the agency and management style have prompted routine contact between the general manager and any of the transportation supervisors, administrative personnel, and the maintenance clerk. The dashed line in the figure depicts auditing and business services and personnel that are utilized by MPT but are not internal to the operation.

C. MANAGEMENT

1. Establishing Objectives

The current goals, objectives, and policies as adopted by the Board of Directors are contained in Appendix B. The majority are stated in qualitative vice quantitative terms. This situation precludes effective measurement of desired results. However, the MPT operations analyst is currently developing a set of quantifiable standards. Once these goals, objectives, and policies have been formulated and adopted, actual agency performance will be monitored and a quarterly status report will be submitted to the board. At present, the board conducts a semi-annual review of these criteria.

2. Setting Priorities

The general manager has established priorities for MPT that focus employee effort on operational matters. Specifically, the priorities are to offer the public an attractive alternative to the automobile, to increase ridership on routes where demand is marginal, and to improve the operational

performance of the recently acquired Grumman-Flexible 870 buses. Interviews with employees reveal that the relative importance of these objectives is effectively communicated throughout the organization. In fact, there appears to be a unity of purpose among the majority of employees: to provide public transit of a superior quality.

3. Structuring the Organization

As discussed earlier in this chapter, MPT is divided into three sections: transportation, administration, and maintenance. Job descriptions clearly delineate responsibilities, specify the education and experience required, and the knowledge and abilities necessary to effectively perform in that capacity.

In addition to the coordination and general supervision of MPT activities, the general manager is the agency's chief spokesman, and, subject to board approval: formulates and executes the system's budget, drafts the agency's service schedule, and decides upon bus specifications for capital grant projects. The assistant general manager is responsible for the preparation of grant applications, grant administration, the development and administration of a marketing program, personnel administration, the coordination of transportation planning, accounting data processing, and the supervision of administrative personnel. The superintendent of transportation is responsible for the administration of the transportation section. Maintenance of vehicles,

facilities, and grounds comes under the cognizance of the superintendent of maintenance.

While union contract agreements impose restrictions on the ability of management to utilize personnel in unspecified capacities, a philosophy of shared responsibility has fostered a situation in which management, if required, readily assists in such tasks as transportation supervision, dispatching, providing telephone information, and fare/revenue counting. A similar situation exists in the transportation and maintenance functions. Though responsibilities are defined, all job descriptions include the phrase "and other duties as required." Therefore personnel are not "hemmed-in" by these descriptions to the detriment of MPT.

4. Directing Performance

Regarding the direction of performance, the relatively small number of employees (approximately 65), permits the rapid transmission of management's expectations. Management makes extensive use of informal contacts to ensure directives are clearly understood by subordinates.

5. Monitoring Performance

Management monitors agency performance through the use of primarily one weekly and three monthly reports. The weekly maintenance report provides a listing of all revenue vehicles with the current mileage and date and mileage since the last maintenance service (2,000, 12,000, and 48,000 mile services). This report serves to notify management of any

overdue maintenance service. The monthly maintenance report includes a summary of vehicle miles traveled, miles per gallon, oil and automatic transmission fluid (ATF) consumed, the number of roadcalls due to mechanical and nonmechanical causes, service delays as a result of these causes, and total coach changes. These statistics are listed by type of bus and aggregated for the bus fleet and service vehicles. In addition, the report includes a reconciliation between beginning and ending inventory while considering purchases and quantities of petroleum, oil, and lubricants consumed for the month.

Through a data processing business service, management is furnished with an accounts payable/cash disbursements journal which itemizes all monthly expenditures by general ledger account number. The monthly comparative statistics report provides an aggregate listing of the data utilized to compute the five performance indicators required by the Transportation Development Act (TDA) of 1971. Also, the report furnishes the following performance indicators for MPT:

- a. total operating cost per passenger
- b. total operating cost per revenue vehicle hour
- c. total passengers per revenue vehicle mile
- d. total passengers per revenue vehicle hour
- e. revenue vehicle hours per employee

The information in this report includes current and previous fiscal year data on a monthly basis.

6. Ensuring Good Communication

Internal communication is conducted in a variety of ways, the primary means being informal verbal communication. Office memoranda and the Gilley room bulletin board supplement verbal discourse.¹⁶¹ To increase public awareness of MPT, management maintains extensive liaison with media sources through telephonic contact and the issuance of press releases.

7. Recommendations

Because of conformance with the provisions contained within the applicable sections of the model presented in Chapter III, management techniques and methods should continue to be utilized as they are presently.

D. SERVICE PLANNING

1. Conducting Research

In cooperation with the local metropolitan planning organization, the Association of Monterey Bay Area Governments (AMBAG), a market segmentation study was conducted by an independent consultant in May 1979. A report of extensive detail, the study provides a socioeconomic profile of the population within MPT's service area. The study also includes an in-depth survey of user and non-user attitudes to include:

¹⁶¹ The term, Gilley room, refers to the employee lounge at MPT.

- a. overall attitude toward MPT
- b. reasons for positive and negative attitudes
- c. sources of information regarding MPT
- d. reasons for using and not using the bus
- e. preference for method of fare payment
- f. specific improvements desired

Additional research is performed annually by MPT personnel to ascertain the level of ridership on existing routes. Through these endeavors, management possesses an awareness of potential demand and an assessment of current efforts to meet that demand. The route utilization data is used to indicate routes experiencing marginal ridership. Those routes with an average load, passenger-miles divided by vehicle-miles, less than five, are the subject of public hearings from whence the decision is made by the Board of Directors to continue, adjust, or eliminate that particular route.

2. Meeting Federal Planning Requirements

The management of MPT has fulfilled federal planning requirements through the issuance of a transportation improvement program (TIP), a transportation system management element (TSME), and a handicap accessibility transition plan. Both the TIP and TSME have received the endorsement of AMBAG. The primary thrust of MPT's TSME is directed toward the reduction of headways on existing routes, the more extensive coordination of service between MPT and the Salinas Transis System (STS), and the inauguration of service to those areas presently not in receipt of service.

Among the major capital expenditures included in the five-year schedule of projects for improving local and regional transportation are the acquisition of bus stop shelters and traffic signal preemption equipment for fiscal year 1980-81. For fiscal year 1982-83, management has identified the purchase of eight additional advanced design buses (ADB's), replacement bus stop shelters, and the construction of a paint booth.

In conformance with Section 504 of the Rehabilitation Act of 1973, MPT has prepared an accessibility transition plan. This plan details a multi-year program which explains the means management will employ to achieve program accessibility for the handicapped. "Program accessibility refers to four elements: rolling stock, fixed facilities, services, and policies and practices....The transition plan contains a comprehensive evaluation of accessibility for the MPT system and itemizes the action necessary to reach program accessibility."¹⁶²

3. Preparing Grant Applications

The assistant general manager is responsible for the preparation and monitoring of grant applications. The progress of the grant, subsequent to and following approval, through administrative channels is closely monitored by the

¹⁶² Monterey Peninsula Transit, Accessibility Transition Plan, Monterey, California, April 1980 (typewritten).

assistant general manager. Through the use of a set of judgmental time frames, the assistant general manager tracks grant progress and therefore is able to identify administrative problems on a relatively rapid basis. In professional spheres, MPT has a reputation for maintaining the aggressive pursuit of federal and state financial assistance.¹⁶³

4. Evaluating and Improving Service

As discussed in section D.1 of this chapter, service is initiated in accordance with priorities established by management. Basically, this concerns the reduction of headways on existing routes and the initiation of service to those areas presently not receiving service. In addition to the annual rider surveys designed to ascertain route usage levels, management incorporates suggestions presented by individuals at monthly board meetings and letters from special interest groups when formulating service changes.

5. Recommendations

Because of the conformance with the provisions contained within the applicable sections of the model presented in Chapter III, MPT's methods of service planning are satisfactory and should be maintained under the present circumstances.

¹⁶³ Passenger Transport, p. 20.

E. SCHEDULING

1. Conducting Research

The annual rider surveys include the precise timing of buses at every bus stop and time point. Additionally, transportation supervisors monitor schedule adherence of buses on a random basis. The daily dispatch sheet is used by the supervisors to record the dispatch of additional buses, or trippers, to meet increased public demand on certain routes. This information is supplemented by verbal reports from supervisors on a frequent basis which enables management to possess current data on system performance. Disparity between the schedule and system performance is examined and schedule modifications are made where appropriate.

2. Developing Schedules

Schedule formulation is the responsibility of the general manager. In developing the MPT schedule, the general manager is guided by the policies generic to the goals of providing a reliable public transportation system and providing a public transportation system which meets the needs of the user. Refer to Appendix B.

3. Cutting Runs

The basic process of dividing the newly-formulated service schedule into segments is performed by the general manager with assistance from personnel of the transportation section. The routes are divided into segments from which the general manager attempts to reconstruct the segments into as

many eight-hour driver assignments as possible. In accordance with labor union contract provisions, the bus drivers bid for the runs they want to drive based upon seniority.

4. Recommendations

Because of conformance with the provisions contained within the applicable sections of the model presented in Chapter III, scheduling methods should continue to be conducted as they are presently.

F. TRANSPORTATION

1. Assigning Buses and Drivers

Currently MPT is staffed with 29 regular and 15 extra-board bus drivers. Regular drivers normally work a five day week with two consecutive days off. The extra-board drivers are in an "on-call" status, but are guaranteed two days off each week and four days off, though not necessarily consecutively, every two-week pay period. These extra-board drivers are assigned to work on a first in, first out basis. That is, the extra-board driver who completed his previous assignment before the other replacement drivers will be called to work first. By 1:00 P.M. each day, a transportation supervisor has completed the driver assignments for the next day. Any driver unable to report for work is required to call the dispatch office as early as possible to facilitate the personnel assignment function.

The MPT fleet is composed of: a. 15 1976 Flxible coaches with 41 seats each; b. 11 Grumman-Flxible Advanced

Design Buses (ADB) with 39 seats each, air conditioning, and wheelchair lifts; c. two 1977 Minibuses with 25 seats each. Bus assignments are made by a transportation supervisor every morning prior to vehicle dispatch. The same buses are not used continuously on the same route to preclude the excessive wear on those vehicles that would have to negotiate particularly demanding routes repeatedly. However, the supervisor is limited in the vehicle assignment process by two factors. Because portions of certain routes cannot be successfully negotiated by the ADB's, another type of bus must be used. Secondly, the supervisor is guided by the information contained in the equipment assignment slip which is compiled by the maintenance section daily. This document lists the status of every MPT vehicle as determined by the superintendent of maintenance. Specifically, the form provides which buses can be used unconditionally, as trippers, spares, or not at all.

2. Monitoring Daily Operations

The transportation supervisors employ two methods to monitor daily bus operations: two-way radios and MPT automobiles. Because the entire fleet is equipped with these radios, the supervisors can determine drivers' on-time performance at specific points along the routes since all radio communications must go through the MPT dispatch. On the daily dispatch sheet, the supervisor records schedule delays of ten minutes or more and missed transfer connections.

Additionally, the transportation supervisors oversee the road performance in regard to such items as driver adherence to published schedules, management directives, agency procedures, and safe driving practices. In the course of performing tasks that require management or principle staff members to travel within the MPT service area, an attempt is made by these personnel to observe operations whenever feasible.

While the superintendent of transportation has directed that a minimum of one supervisor will observe transit operations over the road for a portion of each day, collateral administrative duties often prevent the supervisors from performing this function to the full extent. Because of certain responsibilities, the supervisors are ordinarily unable to operate in the over-the-road capacity until the afternoon. In an effort to alleviate this problem, management has decided to hire an additional information clerk to assume a portion of these administrative responsibilities.

3. Handling Emergencies

Because all MPT buses are equipped with two-way radios, the ability to rectify operational difficulties is greatly enhanced. Through the radio dispatcher's direction, buses are held, within certain temporal limitations, at transfer points to enable passengers riding on those buses operating behind schedule to meet their connection. As a result, missed transfer connections are very rare. Other problems,

such as difficulties associated with using the wheelchair lift, are discussed and routinely solved over the radio. In the event of a crime or accident, each driver has the ability to contact the police.

4. Recommendations

Although the impact of another information clerk is presently unknown, the road supervisor function should assume a more integral role within the transportation section. While over-the-road supervision is conducted on a random basis, greater coordination between supervisors is needed to preclude duplication of effort. Supervisors should be sufficiently freed from administrative tasks to enable them to have equal opportunity to observe morning and afternoon functions. Involvement with administrative duties to the detriment of over-the-road supervision precludes the thorough evaluation of driver ability and adherence to agency policy.

G. MAINTENANCE

1. General

As shown in Figure 2, the maintenance section of MPT is composed of a superintendent, clerk, five mechanics, and three utility personnel. The superintendent of maintenance oversees all vehicle and property maintenance activities to include planning maintenance work, diagnosing vehicle problems, repairing vehicles, and hiring, counseling, and discharging maintenance employees. The maintenance clerk is

responsible for the continuous update of vehicle records, completion of various maintenance reports for management review, compiling cumulative vehicle mileage for the scheduling of preventative maintenance (P.M.), maintaining the petroleum, oil, lubricant, and parts inventories, and ordering said items. The mechanics perform P.M. and repair services encompassing major overhauls and body work. Utility personnel clean and refuel buses, inspect vehicle fluid levels daily, as well as maintain the grounds and facilities of MPT. All maintenance personnel must account for productive and nonproductive time by recording all activities performed during the work day on an eight-hour shift report. These reports are reviewed daily by the maintenance superintendent.

2. Planning Maintenance Work

The superintendent of maintenance schedules all maintenance operations using prioritized work orders. Though formalized labor standards have not been established, the superintendent has labor/time estimates for the performance of certain activities which assists in the planning function. Deadlined vehicles and those requiring preventative maintenance services are of the first priority. The superintendent drafts a set of work orders daily which become the mechanics' work assignments for the following day.

3. Performing Preventative Maintenance

In order to prolong vehicle service life, reduce costly breakdowns, provide, clean, attractive vehicles, and meet California Highway Patrol (CHP) safety criteria, MPT has developed a thorough P.M. program. Prior to pulling out, every operator is required to inspect his vehicle using a check list on the vehicle inspection report. If any defects are noted during this inspection or vehicle operation, the driver must indicate it on the inspection report. The report is signed by the operator before leaving the bus. As each bus completes daily operations, utility personnel inspect all fluid levels, replenish oil and ATF as required, and refuel. Then, buses with inspection reports denoting discrepancies are driven to the maintenance shop where the evening mechanic initiates corrective action.

Every 2,000 miles each bus undergoes a modified CHP safety inspection. Additionally, mechanics perform more comprehensive services every 12,000 miles in which certain vehicle parts are adjusted or replaced, if necessary. To assist the superintendent in keeping track of inspection and service due dates, the maintenance clerk publishes a daily and weekly maintenance report which lists current vehicle mileage, the date of the last inspection/service, and mileage remaining until the next inspection/service. An examination of vehicle records by the author verified that these inspections and services are performed in a timely manner.

Because of rapid dirt buildup, the back end of all buses are washed daily; the vehicle interiors are vacuumed daily. Using an automatic washer, all vehicles are washed every other day. Without exception, the MPT fleet appears to be clean and well-maintained.

4. Reacting to Breakdowns

The ability of maintenance personnel to rapidly respond to vehicle breakdowns is enhanced by a radio receiver in the maintenance office. Based on the operator's transmission, the superintendent determines whether the problem warrants vehicle replacement or other corrective action. The superintendent strives to effect required substitutions in the vicinity of the maintenance facility to minimize service disruption and the time mechanics spend in transit.

According to the superintendent, his section attempts to have a replacement vehicle at the breakdown site within 20 minutes of the operator's initial call. The superintendent or a designated mechanic will drive the replacement vehicle to a predetermined location or, if the problem is severe, the breakdown site. With passengers and operator transferred to the spare vehicle, the mechanic begins work on the disabled bus. If the vehicle cannot be driven to the shop or repaired at the scene, a tow truck will be dispatched from a local garage. The availability of spares ranges from three during peak hours to four or five in off-peak periods.

5. Recommendations

Because of conformance with the provisions contained within the applicable sections of the model presented in Chapter III, maintenance operations should continue to be conducted as they are presently.

H. PERSONNEL

1. Developing and Maintaining the Personnel Structure

Position descriptions and job requirements are written for every position at MPT and are reviewed annually by management. These documents describe the specific duties associated with each position and the education, experience, knowledge, and ability required. Any alterations to the personnel structure, such as changes in reporting responsibilities or additional staffing, are the result of management decision, subject to board approval, based on a sectional request or environmental demands.

2. Recruiting and Hiring

As the personnel officer, the assistant general manager is responsible for the active recruitment of qualified personnel to fulfill MPT requirements. Working in cooperation with the agency's Affirmative Action Officer, the assistant general manager employs a variety of means to notify prospective applicants of positions available. The Board of Directors has adopted an Affirmative Action Plan in an attempt to reach as many in the community as possible. Job openings are

advertised in the local newspaper, weekly minority-oriented newspapers, and the MPT bulletin board. Also, the Employment Development Office, employment agencies, and over 20 local entities, to include local educational institutions and civic and minority organizations, are notified of these opportunities. Primary staff positions are advertised at state and national levels through contact with other transit systems and trade publications.

Applicants must complete an application form which includes a statement of MPT's equal opportunity policy and a pamphlet listing the qualifications and criteria for hiring. Once applications are reviewed, successful candidates are administered a battery of tests. Prospective bus operators must take a validated written examination developed by the University of Chicago, vehicle controls test, oral interview, and a physical exam. While those personnel applying for non-operator positions are subject to the same criteria as the operators, the general manager may waive the vehicle controls test and/or the written test.

One who successfully completes these examinations is eligible for employment at MPT pending a background investigation. Those qualified as vehicle operators are ranked on an eligibility list according to written exam scores; others are ranked according to performance during an oral interview. Personnel are drawn from the list in consecutive sequence. This list remains in effect for at least six months or until

all personnel listed have been contacted, whichever occurs first. However, the general manager may extend the list beyond six months.

3. Training and Development

Every new employee is given, at minimum, a one-day orientation which includes organizational procedures and employee responsibilities. Depending upon the specific position, the training program varies in length, scope, and methodology.

a. Primary Staff Personnel

These personnel are expected to be able to assume the responsibilities inherent in the position with minimal training as previous experience is a prerequisite for selection.

b. Coach Operators

A three to four week training program is conducted by the MPT staff for new coach operators. The program consists of classroom instruction which emphasizes passenger relations, safety, preventative maintenance, and the details of operational duties such as transfer issuance and fare collection. However, the majority of the training program involves vehicle operation in service under the guidance of specially-selected line instructors. In addition to periodic written examinations during the training program, each trainee receives daily evaluations when driving.

Successful completion of a written final examination and a satisfactory rating from the line instructor qualify the individual as an MPT coach operator. New drivers are sent to an effective public contact class sponsored by the Monterey Bay Area Regional Training Center (MBARTC). Annually, all drivers attend one day of classes taught by the MPT staff in which safety, organizational policies and procedures, and other matters of significance are presented. Also, drivers receive instruction on an "as needed" basis.

c. Clerical Staff Employees

These personnel receive on-the-job training. Additionally, they are permitted to attend classes taught at MBARTC.

d. Mechanics

The superintendent of maintenance conducts on-the-job training for mechanics, though MPT recruitment policy requires that applicants possess some experience in diesel engine repair. Mechanics may attend, at no cost, classes in engine overhaul and transmission repair. Periodically, bus manufacturers send representatives to MPT to present classes on particularly complex or troublesome vehicle components.

4. Evaluating Employee Performance

Work performance is reviewed with the employee by the section supervisor at the end of the first, third, and sixth months of employment. Thereafter, each employee receives a semiannual written evaluation.

Coach operator performance is evaluated periodically by a transportation supervisor from an agency automobile. Required semiannual operator evaluations consist of an on-board supervisor who evaluates the driver in regard to customer courtesy, adherence to agency policies and schedules, and safe driving practices. The driver's personnel file contains all documentation concerning performance to include incident and accident reports, commendations, evaluations, and substantiated passenger comments. Thus, the personnel folder and semiannual evaluation are the supporting documents used by the superintendent of transportation during the semi-annual counselling sessions.

Discussions with transportation supervisors indicate a randomness to the over-the-road driver evaluations that sometimes results in duplication of effort. Because different supervisors may perform evaluations on sequential days, there have been situations where the same drivers have been reviewed three times during a period when a driver of equal ability has not been evaluated once. A review of all 42 operator personnel files revealed that semiannual reviews for seven operators were overdue.

5. Compensating Employees

A collective bargaining agreement between MPT and the Amalgamated Transit Union, Local 1225 has established wages and benefits for union employees. Non-union employees, exclusive of the general manager and assistant, are members

of the Monterey Peninsula Transit Employees Association (MPTEA). Salaries and benefits for MPTEA members are negotiated between representatives from the Association and MPT Board of Directors. All employees are eligible for the next level of their wage/salary schedule annually. The Board of Directors is responsible for establishing all salaries and benefits.

6. Recommendations

Interviews with the assistant general manager indicate the need for a more thorough method of recording employee training. Employee personnel files should include a record of training section to enable management to ascertain those in need of specific instruction. As this information would supplement the individual's file, it would provide a more complete record when considering the employee for such items as promotion and pay increases. In the event of litigation, such a record would offer comprehensive documentation of occupational training.

To assist in the balanced conduct of over-the-road evaluations and ensure the timely performance of semiannual operator evaluations, the author recommends a document similar to that presented in Figure 3. Prior to the conduct of over-the-road evaluations, a supervisor would review this document to determine which operators require performance review. This document would also alert the superintendent as to those operators in need of a semiannual on-board evaluation.

Covered with acetate, the dates would be changed as new reviews would be conducted. The supervisor performing the review would be responsible for recording the date.

RECORD OF OPERATOR EVALUATIONS

<u>Operator</u>	<u>Date of Last Semiannual Evaluation</u>	<u>Date of Last Over-the-Road Review</u>
.	.	.
.	.	.

Figure 3

I. PURCHASING

1. Making Routine Purchases

Any item or aggregate purchase in excess of \$100 requires the issuance of a purchase order which must be signed by the general manager. Most aggregate purchases below \$100 can be made by the applicable section without approval by the general manager. Purchasing is demand-generated, as no minimum stock levels, reorder points, or economic order quantities have been established. However, in an effort to anticipate requirements for certain items and thereby avoid stockouts, the maintenance clerk orders sufficient quantities of those repair parts that are replaced on all vehicles during a maintenance service.

The clerk maintains current parts catalogs of the largest national suppliers. The supplier listing the lowest

price receives the order provided the supplier has a reputation for timely delivery and quality repair parts.

2. Making Major Purchases

Previous discussions in section D.2 of this chapter revealed the requirement for MPT management to schedule major capital expenditures within transportation planning documents. Limited financial resources have prompted the need to thoroughly plan for such purchases. During the formulation of the MPT annual budget, the general manager requires input from the primary staff assistants as to items required during the coming fiscal year. Without sound justification, such as the resultant time or pecuniary savings stemming from prospective purchases, the general manager does not budget for these items.

Purchases in excess of \$1,000 must be acquired through competitive bidding, usually in the form of written price quotations. Those purchases over \$10,000 require a formal invitation for bids process, i.e., sealed bids, and purchase approval by the Board of Directors.

3. Safeguarding Inventory

Because of an investment in excess of \$70,000 in repair parts, this discussion focuses on measures in effect to protect these items. The fact that these parts are designed for use on heavy-duty diesel vehicles discourages pilferage since they are not transferable to automobiles. Periodic inspections, conducted by the author, of the security

of the door leading from outside the maintenance building directly into the stock room revealed this door always unlocked despite a conspicuously posted sign to "Keep This Door Locked."

The maintenance clerk utilizes a cardex system to record the receipt and issuance of bus repair parts; however, ADB parts have not yet been entered on cardex. During normal working hours, the clerk issues parts to mechanics, but in her absence, the mechanics enter the stock room and draw the items needed. Discussions with the clerk reveal that unaccounted repair part losses occur because of the mechanics inadvertently failing to record part issuances in her absence.

A complete physical inventory of stocks is taken annually with the clerk taking periodic inventory of high turnover items.

4. Disposing of Items

The Board of Directors approves disposition of obsolete, scrap, and surplus items. Periodic public auctions are held to dispose of this material.

5. Recommendations

Formal procedures should be written to address matters concerning routine purchases and inventory control. At minimum, MPT management should direct the establishment of economic order quantities for the most frequently ordered repair parts to take advantage of available quantity discounts.

Regarding inventory control, the physical security of stocks should be increased. Without an additional employee to issue repair parts during the maintenance clerk's absence, inventory shortages will continue to occur. Efforts short of this measure include the periodic re-emphasis to mechanics of the importance of parts accountability and the random inventory of frequently-used and high-value items.

Expanding the use of pre-expended bins for a wider variety of commonly used parts would facilitate the record-keeping function and therefore enhance inventory control. To enable management to ascertain progress in obtaining inventory control, the maintenance clerk should, upon completion of the annual inventory, submit a record of shortages by item and dollar amount to the general manager.

J. MARKETING

1. Conducting Research and Designing a Marketing Program

A detailed presentation of the methods employed by MPT management to conduct market research is contained in section D.1 of this chapter. Utilizing the information presented in the latest market segmentation study, management has formulated certain strategies to modify and enhance service to the region. Responsible for designing a marketing program, the assistant general manager is guided by the policies generic to the goal of encouraging transit usage. Refer to Appendix B.

2. Designing and Pricing Transit Service

Section D of this chapter provides an in-depth examination of the means utilized to plan and design transit service for MPT.

Certain sections of the California Statutes of 1979 require that MPT recover approximately 33.6% of its annual operating costs through fare box receipts to remain eligible for state financial assistance. To meet this requirement during a period of rapidly rising operating costs, the Board of Directors authorized a 50¢ per zone fare, effective July 1, 1980. There are six zones within MPT's area of operation with free transfers issued when required to complete a one-way trip.

Additional revenue is obtained through charter service within the MPT service area. In accordance with federal regulations which prohibit unfair competition with private operators, the charter service is not advertised. Requests for charter are fulfilled provided normal public transit operations are unaffected.

The Neighborhood Center in Monterey issues MPT Courtesy Cards to individuals 65 years or older and handicapped persons. This card enables the bearer to ride free from 9 A.M. to 2:30 P.M., Monday through Friday, from 6:15 A.M. to 2:30 P.M. on Saturday, and all day on Sundays and holidays. To ensure customer convenience and simplicity of collection, MPT offers the following methods of fare payment:

- a. exact coinage
- b. monthly pass
- c. courtesy card
- d. ticket book.

Exact fare is required as operators do not carry any change. A monthly pass is \$18 for a single-zone pass and \$35 for a multi-zone pass. During the month specified on the pass, the bearer is entitled to unlimited rides for the zone specified. Passes are sold at approximately 30 locations within the MPT service area and are available by mail from MPT. Forty-ride ticket books are \$20 each and are honored for six months from the purchase date. Ticket books are only sold by mail or through the MPT office. Management is attempting to discourage the sale of tickets and encourage the purchase of monthly passes in an effort to reduce the volume of paper that has been jamming farebox vaults.

3. Promoting Service

Management philosophy concerning service promotion is founded upon the provision of reliable service to the public. With a favorable reputation established, management believes word-of-mouth advertising fosters a more stable growth in ridership. Limited passenger capacity with increasing ridership system-wide makes blanket service promotion unnecessary and undesirable at present. Instead, promotional efforts are concentrated on those routes with an average load of five or less; these efforts include door-to-door distribution of schedules and free-ride coupons along certain segments of the route.

Management often issues news releases to keep the public informed of schedule or service changes and other matters concerning MPT operations such as comparative monthly ridership statistics, new bus purchases, and other major acquisition projects. In presenting a more personal side of MPT, "Ride On!" is a quarterly publication which contains features on vehicle operators, new sales outlets for monthly passes, and other articles designed to increase passenger awareness of MPT services. This pamphlet is available on all MPT buses and by mail on request.

Timetables and route maps are contained in the "Rider's Guide." This pocket-sized schedule clearly presents information about MPT's routes as well as the telephone numbers of adjacent public transit systems and privately-owned passenger transport firms. The "Rider's Guide" is available on MPT buses and over 200 locations within the service area. A separate route map is presented in the yellow pages of the local telephone directory. Also, telephone information is provided between 6 A.M. and 8 P.M. every day. In addition to information regarding MPT, telephone information is provided on the Salinas Transit System, the Santa Cruz Metropolitan Transit District, Amtrak, and other transit services with which MPT connects.

The majority of the 900 MPT bus stops have benches and/or signs. However, most bus stops have no schedule information. Complete schedules are posted at the central

transfer point in downtown Monterey, the Monterey Peninsula Airport, and a large shopping mall in Monterey. Signs at transfer points display route name and number and the MPT telephone information number.

Other marketing efforts include a speaker's bureau in which the general manager or a member of his primary staff attend local civic or private luncheons to present up-dates on MPT operations and future plans. To provide further insight into agency operations, free copies of the MPT Annual Report are available upon request.

4. Recommendations

Because of conformance with the provisions contained within the applicable sections of the model presented in Chapter III, MPT's marketing methods are satisfactory given the present situation.

K. ACCOUNTING AND FINANCE

1. Budget Formulation

The general manager is responsible for the formulation of the MPT annual budget. Primary staff assistants provide the general manager estimates of departmental operating expenses and justification for major capital expenditures. Based on historical data, revenues and expenses are estimated for projected service levels. The deficit between estimated expenses and revenues must then be apportioned between projected state and federal subsidies. If necessary, fare increases are contemplated as a means of matching

estimated outlays not covered by subsidization. In short, there is not an incremented approach to budget formulation at MPT, but rather an in-depth analysis of costs associated with projected service levels.

Once prepared by the general manager, the budget is reviewed and approved by the finance committee of the Board of Directors. Review and final approval by the entire board concurs prior to April 1 with the fiscal year commencing on July 1.

2. Monitoring Revenues and Expenditures

In regard to monitoring performance, i.e., actual versus budgeted outlays, the MPT staff prepares a quarterly report for board review that lists actual expenditures against budgeted amounts on a line-by-line item basis. As discussed in section C.5 of this chapter, management is furnished with an accounts payable/cash disbursements journal which itemizes all monthly expenditures by general ledger account number. A monthly comparative statistics report furnishes an aggregate listing of the data utilized to compute the five performance indicators required by the TDA of 1971. Appendix C provides a discussion and analysis of MPT performance utilizing these required performance indicators.

3. Supporting an Internal Control System

The farebox vaults of MPT buses are removed twice each week and placed in the money room. The money room is a small compartment in the MPT office building that provides

storage space for empty farebox vaults, unsold monthly passes and tickets, lost and found items, an automatic coin counter, and a built-in safe. Here, a transportation supervisor and one other staff member, usually the information clerk, count the coinage and currency, respectively. The total dollar amounts by vault and vehicle number are then recorded on a revenue summary form which is reviewed by the general manager. While coinage is counted and segregated automatically by a counting machine, paper money is unfolded, counted, bundled, and recorded. Bus tickets are removed from the vaults and placed into cardboard boxes that are taken to a public land fill site for disposition.

4. Complying with Grant Requirements

In compliance with Section 15 of the Urban Mass Transportation Act of 1964, as amended, MPT uses a uniform reporting system for financial data.

5. Recommendations

Efforts should be initiated to improve MPT's system of internal control with respect to the counting, handling, and recording of farebox receipts, particularly paper money. The transportation supervisor should randomly count the paper money collected from certain buses and compare the totals with figures recorded by the information clerk. This procedure would alert the supervisor to any recording falsification and enhance internal control. Because bus passes and tickets are stored in the money room, limited access is necessary to preclude theft of these items.

L. SUMMARY

The purpose of this chapter has been to evaluate the performance of MPT management utilizing the model presented in Chapter III. Review of procedural manuals, management reports, budgets, interviews, and direct observation of operators were among the methods used to gather the information required to assess management performance. Detailed working papers are available to support the author's findings and recommendations. The recommendations contained within this chapter are based on the preferred practices of this model and their plausibility assessed through discussions with MPT management. Chapter V examines the viability of this model in terms of its usefulness to management, presents conclusions, and provides potential topics for future research.

V. CONCLUSIONS

A. GENERAL

Mideastern instability and quantum leaps in oil prices have underscored the vulnerability of industrialized nations and the inability to effectively influence the course of events in that part of the globe. Consequently, several methods to reduce this nation's dependence on foreign oil are being explored by publicly and privately-funded research groups. More efficient, better-integrated transportation is one area where significant effort is being expended. Simultaneously, though not out of self-sacrifice, many people, appalled at high fuel costs, are utilizing public transit facilities instead of the automobile.

Always a needed public service, mass transit has sustained tremendous fluctuations in popularity. Threatened to the point of near extinction by mismanagement, unsympathetic politicians, and the public's infatuation with the automobile, once powerful monopolies were reduced to fragmented operations desperately in need of public support. Slowly revived through substantial subsidization and, ultimately, public ownership, the mass transportation system of the United States is the focus of a significant amount of attention today.

B. THE PERFORMANCE EVALUATION

While federal, state, and local monies initially poured into public transit agencies in reparations for decades of neglect, the demand for financial relief to support other public projects is ever-increasing. Therefore, a need exists to ascertain transit agency progress; in short, a means to determine if public monies are well spent. In regard to measuring the relative efficiency and effectiveness of transit systems, performance indicators have been developed and refined. Similarly, the management performance audit is utilized to not only determine system efficiency and effectiveness in regard to predetermined goals, objectives, and policies, but to foster the development and subsequent employment of sound managerial practices.

Though environmental conditions place certain constraints on management's actions, sound management practices transcend these conditions. The model presented in this thesis was developed, in large part, by the Institute for Urban Transportation, Indiana University. Embellished with additional research, the model presents, by functional category, those criteria that characterize a soundly-managed public transportation system.

Using the model as a standard, the author began a detailed examination of the operational aspects of Monterey Peninsula Transit. Departures from the model's tenets became areas of additional study to determine the cause for

such deviation. Major and minor recommendations have been made to assist management with the intention of improving future system operation. Minor recommendations were presented to management but not discussed in Chapter IV.

C. MONTEREY PENINSULA TRANSIT

The management of MPT maintains centralized control over all operational sections through an extensive informal communication network that is reinforced with routine reports. While the development of more quantitative goals, objectives, and policies will assist the Board of Directors in its oversight, and, to a certain extent, management's supervision of MPT operations, the present manager and assistant general manager have a keen insight into the functional areas that precludes reliance on extensive formalized reporting processes. Given MPT's present size and current management personnel, this method seems well suited to supervising operations. However, the need for formalized reporting procedures could increase in direct proportion to the growth of the agency itself in order to successfully maintain the degree of control and supervision that currently exists.

Procedural manuals and the administrative handbook should be updated and expanded, where necessary, to provide a more comprehensive, permanent body of corporate knowledge. This information would provide new managers with "tried and proven" methods of coping with the intricacies of the environment

in which MPT exists and thereby provide a framework that would, to a certain degree, supersede differences in managerial expertise. As a result, the transition between managers would have negligible impact on operational efficiency.

Professionally competent and intensely proud of agency performance, primary staff assistants exercise a certain degree of autonomy that encourages initiative and stimulates innovation. Detailed job descriptions/requirements and a thorough training program have developed a relatively stable labor force. Employees are aware of specific, job-related responsibilities and are cognizant of the relation between these responsibilities and the image MPT portrays in the community. A sense of common purpose pervades the work force in a manner that, within contract provisions, encourages a shared responsibility for task completion.

With the exception of those findings cited in Chapter IV, the management of MPT is found to be in conformance with the model presented in Chapter III. The author finds that MPT is an exceptionally well-managed system that is an excellent example of the manner in which a public transportation system should be managed and operated.

While the benefits of this performance evaluation cannot be determined at present, discussions with management indicate agreement with, and a willingness to implement the recommendations provided in Chapter IV. By merely increasing management awareness of situations that present, or have the

propensity to present difficulties, as well as offering methods to enhance system operation, the management performance evaluation has potential application in all facets of public administration.

D. POTENTIAL RESEARCH TOPICS

1. Currently California is one of the only states in the Union that requires a performance audit of public transit properties. By July 1, 1980, all properties receiving state funds were to have received a performance evaluation, with these audits to be conducted triennially thereafter. In an attempt to assess the impact of these audits on public transit agency performance, one might compare a group of selected California transit properties with those in a state where performance evaluations are not performed. Effectiveness and efficiency indicators, ridership, and trend analysis would be but a few of the methods used as a basis for comparison.

2. Another means of assessing the utility of the performance evaluation would be the examination of selected transit properties before and a sufficient time after evaluation to permit implementation of recommendations in order to determine the relative impact on agency efficiency and effectiveness.

3. While substantial research has been conducted in regard to performance indicators and a means to compare

transit systems using such indicators, additional effort could be devoted to examining a method of stratifying transit properties according to environmental and political factors to permit credible comparison.

4. This model, composed of a basic structure supplemented with criteria from additional sources, may be utilized for the interim evaluation of local transit properties and even to further refine the model itself.

Whatever the direction of future research, it is hoped that the effort will contribute to the development of a sound public transit network.

APPENDIX A

DESCRIPTION OF PERFORMANCE INDICATORS

Massive financial assistance to revitalize the transit systems of the United States has prompted the formulation of several performance indicators in an attempt to ascertain the actual impact of such support. Essentially these indicators and ratios describe, in quantitative terms, aspects of transit system efficiency and effectiveness. Some indices measure aggregate system performance and/or route performance while others are used in the evaluation of a particular functional area. However, sole use of these indicators is insufficient for the evaluation of system performance as they ignore environmental constraints that impact on performance.

Because of the substantial efforts of academicians and transit industry representatives in the development and study of these performance indicators and the controversy surrounding the validity of such measures, a brief explanation is provided. The following is an excerpt from Fielding, Glauthier and Lave's Development of Performance Indicators for Transit.

Development of Potential Indicators

Utilizing the twin goals of efficiency and effectiveness, potential performance indicators may be specified for transit service. To accomplish this end, the goals of efficiency and effectiveness must be clearly defined, operational objectives must be determined, and then performance indicators identified.

Efficiency

Efficiency concerns the processes by which transit services are produced, particularly through the relationship of inputs to produced output--that is, "doing things right." Because efficiency deals with the process of providing transit services and specifically with the use of inputs in that process, it utilizes only measures of produced rather than consumed output. Produced output is represented in measures such as vehicle hours and miles rather than passengers and passenger-miles.

The inputs to the provision of transit services are those of labor, capital, and energy. In an aggregate form, these three inputs are represented in the statistic "operating expense," which is utilized in measures of total input efficiency. Possible indicators of expense per produced output unit are operating expense per seat mile, operating expense per revenue vehicle mile, operating expense per total vehicle mile, and operating expense per revenue vehicle hour.

Labor is not homogeneous. Among transit properties, however, the same types of labor are found in approximately the same proportions. This similarity of labor inputs between properties permits labor productivity to be evaluated through a ratio measure of total labor input (total employees or man-hours) to produced transit service. Because man-hours or employee hours are not generally available from transit operators, indicators using them will not be analyzed. Indicators are revenue vehicle miles per employee, total vehicle miles per employee, and revenue vehicle hours per employee.

Capital inputs are limited to the consideration of revenue vehicles. This definition ignores capital involved in buildings and land, equipment, and maintenance

and supervisory vehicles. These types of capital are unequal between properties and difficult to measure. However, the costs incurred in their use in the transit operation are included in the total operating expenses of the property. Equipment utilization, or capital efficiency, shall be a ratio of produced output to total revenue vehicles. Possible measures are revenue vehicle miles per vehicle, total vehicle miles per vehicle, and revenue vehicle hours per vehicle.

Energy is the third input to transit. The conservation of energy has been widely used as an argument for the promotion of public mass transportation. Fuel consumption figures are generally available and may be standardized as a British Thermal Unit (BTU) statistic. Possible indicators of energy efficiency are energy consumption per revenue vehicle mile, energy consumption per total vehicle mile, and energy consumption per revenue vehicle hour.

Effectiveness

Effectiveness is the comparison of produced output (provided service) to intended output or objectives--that is, "doing the right things," Measures of effectiveness are concerned with the extent to which the service provided--in terms of quantity, location, and character--corresponds to the goals and objectives established for it by government and to the needs of the citizens.

Effectiveness of service is evaluated through the accessibility of provided service to the residents of the area and the "fit" of provided service to travel demands.

Accessibility of provided service to the area's residents may be evaluated using the indicator "Percent Population Served," which measures the proportion of the

service area population within 1/4 mile of a regularly scheduled transit route. More comprehensive measures could be developed to consider, for example, special target populations and levels of service, but would require generation procedures and data which are not commonly available.

The "fit" of provided transit service to the needs and travel demands of an area is approximated by the number of passengers utilizing that service. measures of service utilization are revenue passengers per revenue vehicle mile, and revenue passengers per revenue vehicle hour.

In addition, the effectiveness of the total transit system is reflected in the operating expense per unit of consumed output. While this category of measure may be viewed as a combination measure of efficiency and effectiveness, it is classed as an effectiveness indicator because it uses consumed-service statistics. Examined measures of expense per consumed output are operating expense per total passenger, operating expense per revenue passenger, and operating expenses per passenger mile.

Many other measures, for example those of quality and social and environmental impact, could qualify as indicators. They are not easy to quantify nor are they necessarily appropriate for different areas and transit systems. These indicators could be included in response to local goals and objectives and would provide a means of evaluating the achievement of these goals.

The potential performance indicators specified in this section are summarized in Figure A-1.

EXAMINED PERFORMANCE INDICATORS

		<u>As Measures of:</u>
EFFICIENCY:		
Revenue Vehicle Miles Per Employee	}	Labor Productivity
Total Vehicle Miles Per Employee		
Revenue Vehicle Hours Per Employee		
Revenue Vehicle Miles Per Vehicle	}	Vehicle Utilization
Total Vehicle Miles Per Vehicle		
Revenue Vehicle Hours Per Vehicle		
Operating Expense Per Seat Mile	}	Expense Per Pro- duced Output Unit
Operating Expense Per Revenue Vehicle Mile		
Operating Expense Per Total Vehicle Mile		
Operating Expense Per Revenue Vehicle Hour		
Energy Consumption Per Revenue Vehicle Mile	}	Energy Efficiency
Energy Consumption Per Total Vehicle Mile		
Energy Consumption Per Revenue Vehicle Hour		
EFFECTIVENESS:		
Percent Population Served	}	Accessibility
Revenue Passengers Per Service Area Population		
Total Passengers Per Vehicle		
Revenue Passengers Per Revenue Vehicle Mile	}	Utilization of Service
Revenue Passengers Per Revenue Vehicle Mile		
Operating Expense Per Total Passenger		
Operating Expense Per Revenue Passenger	}	Expense Per Con- sumed Output Unit
Operating Expense Per Passenger Mile		

Figure A-1

APPENDIX B

MONTEREY PENINSULA TRANSIT GOALS, OBJECTIVES, AND POLICIES

Adopted April 78

Goal	Objective	Policy
1. Provide an accessible public transportation system.	a. Provide service within approximately one-half mile walking distance, except in remote areas.	(1) Initiate service to areas which have a reasonable prospect of generating adequate patronage. (2) Encourage improvements to pedestrian access.
	b. Locate, design, and mark all bus loading zones to be safe, convenient, and readily identifiable.	(1) Assume the burden of sign installation and maintenance; pay initial cost of curb markings. (2) Encourage the inclusion of bus loading zones in street construction projects.
	c. Encourage strict enforcement of parking restrictions in bus zones.	(1) Publicize the importance to passengers and vehicle safety.
	d. Provide benches where significant numbers of passengers board, especially in areas of senior citizen and/or handicapped concentration.	(1) Encourage other public and private efforts to install benches. (2) Install and maintain benches in other areas at Agency expense.

Source: Monterey Peninsula Transit, Annual Report, Fiscal Year 1979, Monterey, California, December 1979, Attachment A.

Goal	Objective	Policy
2. Provide a public transportation system which meets the needs of the user.	a. Design routes and schedules to provide transit users with a level of mobility which meets their essential travel needs. b. Minimize transfer connections. c. Provide a service which most users can understand. d. Meet the special needs of groups such as senior citizens and the handicapped. e. Provide service based upon passenger origins and destinations rather than jurisdictional boundaries.	(1) Institute service at least hourly on routes within the urbanized area. (1) Operate vehicles through from one route to another where practical. (1) Avoid unnecessary complexity in routes, fares and schedules. (1) Purchase wheelchair lifts on new buses until one-half the fleet is so equipped. (2) Provide additional rails and stanchions on bus interiors as necessary. (1) Consider route and schedule changes in terms of the system as a whole.
3. Provide a reliable public transportation system.	a. Maintain schedule reliability.	(1) Provide approximately 10% recovery time in schedule. (2) Equip all vehicles with radios. (3) Cut in additional vehicles to restore delayed schedules.

Goal	Objective	Policy
4. Coordinate services with other existing transit operators and other transportation modes.	b. Maintain scheduled transfer connections with 99+% reliability.	(1) Hold connecting buses whenever possible to maintain scheduled connections (2) Do not schedule transfers which cannot meet this criterion.
	c. Provide a seat or standing room for all persons at stops.	(1) Operate additional vehicles as needed to prevent overloads.
	d. Operate 99.9+% of scheduled service	(1) Maintain sufficient spare vehicles to accommodate maintenance requirements and to restore interrupted schedules.
	a. Provide coordinated schedules and convenient transfers.	(1) Encourage cooperation among operators and joint development of interconnecting schedules. (2) Provide transfers without charge to patrons. (3) Oppose prohibitions against local transportation of passengers within any jurisdiction.
	b. Offer telephone information for trips involving two or more systems.	(1) Train MPT employees to provide information for all operators in the region.
	c. Encourage uniformity in fare structure.	(1) Develop regional fare zones.

Goal	Objective	Policy
	d. Develop common eligibility criteria and identification for passengers entitled to special fares.	(1) Consult and coordinate with other operators prior to changing Agency policies.
5. Encourage transit usage.	a. Have the public informed of the advantages and usability of transit.	(1) Make maximum use of no cost or low cost advertising. (2) Purchase advertising in media as necessary. (3) Provide instruction of public transit for interested potential users. (4) Provide comprehensive public timetables and maps of all transit service.
	b. Compensate the transit rider for foregoing the convenience of the automobile	(1) Encourage employers and merchants to subsidize transit trips.
6. Minimize gross operating costs.	a. Develop improved management information systems to assist in evaluating system performance.	(1) Provide information to Board on significant productivity measures.
	b. Consider for abandonment unproductive services.	(1) Hold public hearing on abandonment of services whose average load is less than 5.
	c. Reduce maintenance costs.	(1) Purchase only heavy duty vehicles which will minimize maintenance costs. (2) Avoid methods or equipment whose reliability or suitability is unknown.

Goal	Objective	Policy
	d. Encourage improvements to the design and operation of the street system which will increase transit schedule speeds.	(1) Oppose unnecessary or unrealistic impediments to the flow of traffic. (2) Develop and install traffic signal preemption equipment for transit vehicles.
	e. Minimize the total expenditures for public transportation.	(1) Oppose a proliferation of uncoordinated specialized services. (2) Oppose the addition of new transit operators within the service area of existing systems.
	f. Coordinate transportation and land use pattern.	(1) Oppose land uses which are incompatible with efficient public transportation.
7. Minimize costs to the non-user.	a. Avoid the imposition of new taxes or subsidy from local governments.	(1) Fund capital improvements and operating support entirely from State and Federal transportation monies.
	b. Minimize operating deficits.	(1) Maintain and increase fare levels so that users pay at least 1/3 of operating costs, excluding depreciation. (2) Avoid discounted fares which place undue burdens on other users and non-users. (3) Develop auxiliary services which reduce operating deficits.

APPENDIX C

PERFORMANCE INDICATORS FOR MONTEREY PENINSULA TRANSIT

The following is an excerpt from a performance audit conducted by Arthur Anderson and Company conducted May 27, 1980.

The data contained in Tables I-III indicates a trend that the cost of providing service, the amount of service provided and the amount of services consumed are all steadily rising. As shown below, during the period from FY 76-77 to FY 78-79, total operating costs at MPT rose 48.5%. During that same period, revenue vehicle hours rose 23.3% and revenue vehicle miles rose 20.9%, while ridership increased 35.9%. Accordingly, cost per hour, mile and passenger increased by 19%, 22% and 10%, respectively, over the three-year period. Data which was available from previous fiscal years back to 1973-74 indicated that cost per mile and passenger only increased 13% and 8%, respectively, from 1973-74 to 1978-79.

The increase in total costs of 48.5% from 1976-77 to 1978-79 can be primarily attributed to the following factors: increase in service (contributing to about half of the increase), additional maintenance of vehicles 20-30 years old starting in 1978, delivery of new advanced design buses in October 1979 and their maintenance, move into a new facility in September 1978, and an increase in deadhead time resulting from the move. Because of a reclassification of some expenses by function resulting from a conversion to a Section 15/State Controller accounting system, more detailed functional analysis across years was not practical.

The increase in hours of service can also be analyzed in conjunction with the increase in total ridership.

As has already been discussed, the amount of service provided (revenue vehicle hours) by MPT has increased 23.3% from FY 76-77 to FY 78-79. Total ridership has increased 35.9%. Service consumption has, therefore, increased at a rate greater than service supplied. This implies that MPT has not yet reached the point of diminishing marginal productivity with respect to service expansion. In addition, passengers per revenue vehicle mile and passengers per revenue vehicle hour have continued to rise. Total costs per passenger have increased slightly as costs have risen faster than ridership. That is, although the amount of service supplied continues to grow, service consumption has grown at a faster rate.

In summary, this data evaluation indicates several conclusions. First, increases in consumption of services exceed increases in supply of service, implying an increasing rather than decreasing marginal productivity of service. Second, although costs have increased substantially, the primary component of that increase is the increase in service provided.

TABLE I

BASE STATISTICS

	76 - 77	ACTUAL 77 - 78	78 - 79	YTD 7/79 - 12/79	BUDGET 79 - 80
Total Operating Costs:	\$812,043	\$967,530	\$1,206,200	\$809,222	\$1,575,069
Operations Cost	540,602	679,006	734,413	---	956,210
Maintenance Cost	165,108	160,935	290,786	---	332,597
General Administration	106,333	127,589	181,001	---	286,252
Farebox Revenue	301,509	356,195	400,779		490,517
Total Passengers	1,396,797	1,592,248	1,897,719	1,197,138	2,103,395
Revenue Vehicle Miles	703,301	765,345	850,194	512,198	1,125,220
Revenue Vehicle Hours	47,520	49,697	58,634	33,698	68,000
Total Roadcalls	184*	249	343	342	---
Total Accidents	63	55	61	---	---
Employee Equivalents	43	49.5	56	64.7	---

* Only last 6 months figure available. Estimate shown is twice 6-month figure of 92.

Source: Arthur Anderson and Company, "MPT Performance Audit," May 27, 1980.

TABLE II
PERFORMANCE INDICATORS

PERFORMANCE INDICATOR	ACTUAL			YTD
	76-77	77-78	78-79	7/79-12/79
REQUIRED BY TDA				
Total operating cost per passenger	0.58	0.61	0.63*	0.69
Total operating cost per revenue vehicle hour	17.09	19.47	20.34*	24.01
Passengers per revenue vehicle mile	1.99	2.08	2.33	2.34
Passengers per revenue vehicle hour	29.4	32.0	32.4	35.5
Revenue vehicle hours per employee	1105	1004	1047	521

* Excludes charter expenses of \$13,569 from total operating costs.

Source: Arthur Anderson and Company, "MPT Performance Audit," May 27, 1980.

TABLE III
MISCELLANEOUS STATISTICS

	<u>Actual</u>		
	<u>FY76-77</u>	<u>FY77-78</u>	<u>FY78-79</u>
Operations cost/Total cost	66.6%	70.2%	60.9%
Maintenance cost/Total cost	20.3%	16.6%	24.1%
General Administration cost/Total cost	13.1%	13.2%	15.0%

	<u>Percentage Changes</u>		
	<u>FY76-77 to FY77-78</u>	<u>FY77-78 to FY78-79</u>	<u>FY78-79 to FY79-80 (budget)</u>
Operating costs	19.1%	24.7%	30.6%
Operations costs	25.6%	8.2%*	---
Maintenance costs	(2.5%)	80.7%*	---
General Administration costs	20.0%	41.9%*	---
Total Passengers	14.0%	19.2%	10.8%
Revenue Vehicle Miles	8.8%	11.1%	32.3%
Revenue Vehicle Hours	4.6%	18.0%	27.0%

* Major expenses, such as public liability and property damage and physical damage, classified differently across years due to implementation of accounting system to comply with Sec. 15 and the State Controller's System.

Source: Arthur Anderson and Company, "MPT Performance Audit," May 27, 1980.

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